STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

BOARD OF PESTICIDES CONTROL

December 1, 2023

9:00 AM Board Meeting

MINUTES

Present: Adams, Bohlen, Carlton, Ianni, Jemison, Lajoie, Neavyn

1. Introductions of Board and Staff

   - Boyd, Bryer, Couture, Pietroski, Peacock
   - Assistant Attorney General, Carey Gustanski

2. Minutes of the October 13, 2023 Board Meeting

   Presentation By: John Pietroski, Acting Director
   Action Needed: Amend and/or approve

   - **Jemison/Lajoie: Moved and seconded to approve minutes as amended**
   - **In Favor: Unanimous**

3. Funding Request for DACF IPM Program

   The Integrated Pest Management Program is requesting funds to assist with ongoing efforts for the advancement of IPM in Maine. The Maine IPM Program works closely with the BPC to educate and promote IPM across the entire State of Maine, including giving talks annually for applicator credits across several categories, updating the GotPests website with new factsheets and research, and referring to the BPC website in all presentations and educational materials. While the IPM Program is supported, in part, by grant funding this funding is insufficient to support all outreach opportunities. The Board originally heard this request at their September 1, 2023 meeting and decided to table it until the budget could be reviewed. The IPM Program is requesting a grant of $38,911 to support outreach and education in calendar year 2024.

   Presentation By: Hillary Peterson, Ph.D., IPM Specialist
   Action Needed: Discussion and decision to amend/approve/disapprove funding

MEGAN PATTERSON, DIRECTOR
90 BLOSSOM LANE, DEERING BUILDING

PHONE: (207) 287-2731
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- Peterson provided the Board with a memo detailing expenses needed for the IPM program. She explained that the monies listed for the Rodent Academy would be reimbursed by the fee for attendance to the academy. Peterson stated that the total ask that would not be reimbursed was $27,801. There was an increase in the funding request for the mosquito monitoring program because more hours were needed for the mosquito monitoring intern.
- Adams stated that registrations were back up and projected numbers were reasonable. He asked if this line item had been added to the projected budget.
- Pietroski responded that the request was added under expenditures.
    - **Carlton/Jemison: Moved and seconded to approve funding request for DACF IPM Program**
    - **In Favor: Unanimous**

4. Workshop Session to Review the Rulemaking Record on the Proposed Amendments to Chapter 41

(Note: No additional public comments may be accepted at this time.)

On August 9, 2023 a Notice of Agency Rulemaking Proposal was published in Maine's daily newspapers, opening the comment period on the proposed amendments to Chapter 20, 31, 32, 41. A public hearing was held on September 1, 2023 by a hybrid meeting in Deering Building 101 at 90 Blossom Lane, Augusta and on the Microsoft Teams platform. The written comment period closed at 5:00 PM on September 11, 2023. Nine people spoke at the public hearing and six written comments were received by the close of the comment period. The Board moved forward and voted to adopt Chapters 20, 31, and 32. The Board changed language in Chapter 41 related to acreage requirements for dealers and re-posted the proposed rulemaking to allow for public comment until November 24, 2023 at 11:59 PM. The Board will now review the rulemaking comments for Chapter 41 and determine how it wishes to proceed with the rulemaking proposals.

Presentation By:	Karla Boyd, Policy & Regulations Specialist
Action Needed:	Discussion and determination on how the Board wishes to proceed with the rulemaking proposals

- At the previous meeting the Board had voted to go back out for comment regarding the acreage size limit for *Bt* corn seed detailed in Chapter 41.
    - **Lajoie/Carlton: Moved and seconded to accept as written**
    - **In Favor: Unanimous**

5. Update on Implementation of LD 1770: Resolve, Directing the Board of Pesticides Control to Transition to Electronic Submission of Pesticides Sales and Use Data

At the September 1, 2023 Board meeting, staff brought forward a memo regarding the implementation of LD 1770. Bohlen agreed to join staff for a meeting with developers and licensed applicators/dealers that use Maine Pesticide Enforcement, Registration, and Licensing Software (MEPERLS) to discuss changes that would be needed to simplify the data entry process for annual reports. Staff will provide an update from these meetings. In addition, the Board discussed potential rulemaking to require electronic submissions of records. Staff will give a brief

update on the discussions at the sales and use meetings. These discussions will be included in the report on the implementation of LD 1770 is due to the legislature by March 1, 2024.

Presentation By: John Pietroski, Acting Director
Action Needed: Discussion

- Pietroski stated that this change was prompted by LD 1770 and Boyd would be preparing the legislative report that is due March 1, 2024. He outlined the details and persons who attended the last two meetings discussing use and sales changes. Pietroski stated there would be another upcoming meeting.
- Bohlen explained some of the types of errors that crop up in the data on a regular basis. He stated there needed to be clarity on the purpose of these data and the critical questions to be answered by it. Bohlen added that consideration must be taken regarding how to present the findings in a fair, honest and informative manner. He posed the suggestion of possibly reporting on the twenty most common actives used in the state. Bohlen added that it would be a fair amount of work to do to pull this together and there would be a lot of back and forth with the regulated community to get the the most accurate data possible.
- Bryer asked what the questions were that BPC staff should focus on trying to answer.
- Bohlen stated that that answer was fairly broad but staff should focus on how people are using pesticides, if there were trends in pesticide use and which pesticides were being used most often.
- There was discussion about the duplication of reporting if both applicator reports and dealer reports were counted. Bohlen stated that the two reports could not be added together.
- Patterson noted that the ACF committee was open to the fact that collecting these data electronically would be challenging.
- There was further discussion of the limitations of these data and the regulated community who are unable to comply with electronic reporting.
- Lajoie noted that much pesticide use was seasonal and some pesticides did not get used some years depending on weather patterns.
- Patterson explained those that could not submit an annual report would not be able to renew their license.
- Bohlen noted he would like the discussion about difficulties in entering electronically to be addressed in the rulemaking process. Other Board members agreed.
- Jemison stated it may be beneficial for the ACF Committee to hear this discussion.
- Adams stated that the Board needed to know the percentage of applicators that could submit electronically. He suggested staff reach out to those doing the reporting to find out what would be a hardship.

6. Draft Adjuvant Policy

At the February 24, 2023 Board meeting, the Board voted on developing a policy that excluded colorants as adjuvants following the implementation of PL 2022 c. 673 (130st Legislature LD 2019), which includes spray adjuvants in the definition of pesticides. At the July 21, 2023 Board meeting, the Board voted to implement a policy related to the distribution of adjuvants that were not previously registered in Maine. Additionally, there is a need to develop a policy regarding recordkeeping requirements for spray adjuvants. Staff have combined these concepts into one policy for consideration.

Presentation By: Karla Boyd, Policy & Regulations Specialist
John Pietroski, Acting Director
Action Needed: Discuss; approve/disapprove adoption by interim policy

- Staff brought forward a draft policy regarding reporting adjuvants and what products would be considered adjuvants.
- Adams noted that policy was non-enforceable, so it would need to be added into rule.
- Patterson stated that it may be clearer to state what regulations do not pertain to adjuvants.
- Adams stated he did not see the urgency in adopting this policy today and would like some time to review adjuvant labels.
- The Board discussed the details of what needed to be reported and how label violations of adjuvants would be handled.
- Adams asked staff to come back at the next Board meeting with either rulemaking and/or a policy regarding what would not be required for adjuvants.
- Bohlen had questions about which pieces needed to go through rulemaking and which could be done via policy.
    - **Carlton/Jemison: Moved and seconded to table until next meeting**
    - **In Favor: Unanimous**

7. Pesticide Regulatory Changes Announced by EPA regarding Bulletins Live! Two and the Endocrine Disruptor Screening Program

Board staff received a request to bring forth a discussion of several recently released "EPA Update" press releases. Bulletins Live Two is a web map service run by EPA that instructs pesticide applicators about geographic areas where applications must be modified or avoided. Applicators in Maine have not needed to make changes to applications based on Bulletins Live! Two until very recently. Additional focus on Bulletins Live! Two comes from its proposed role in implementing the changes to pesticide registration that have been recently proposed due to changes brought on by the Endangered Species Program. EPA has also announced a revitalization of the Endocrine Disruptor Screening Program (EDSP). The EDSP covers all chemicals under EPA's authority; changes in this program are likely to affect pesticide registration review and re-review.

Presentation By: Pamela Bryer, PhD, Pesticides Toxicologist
Karla Boyd, Policy & Regulations Specialist
Action Needed: Discussion

- Boyd explained the documents provided to the Board regarding Bulletins Live! Two and the Pesticide Use Limitation Area, PULA, designated by EPA in part of Aroostook County. There will likely be more PULA's in Maine in the future. She explained that EPA was evaluating pesticides in large groups rather than by specific active ingredients. The first group resulted in the Herbicide Strategy presented to the Board at the last meeting. The next groups were slated to be the insecticide and the fungicide strategies. Boyd stated there was an example label of one of the products in the Board packet that would be subject to the PULA and applicator's would need to navigate to the Bulletin's Live! Two website for further application direction.
- AV equipment in the meeting room was not functioning so Bryer was unable to present the prepared presentation to the Board regarding the Endocrine Disruptor Screening Program (EDSP). The Board agreed this would be better to present at a later date.

8. Update on Agricultural Container Recycling in Maine by Mark Hudson

At the September 1, 2023 Board meeting members expressed interest in receiving an update regarding the current landscape of agricultural container recycling in Maine. In response, staff spoke with Mark Hudson, Executive Director, of the Ag Container Recycling Council (ACRC). Hudson offered to give an update on agricultural container recycling.

Presentation By: Mark Hudson, Executive Director, Ag Container Recycling Council
Action Needed: Discussion

- Hudson explained the history of the Ag Container Recycling Council, ACRC, and presented a PowerPoint presentation to the Board. He explained that the program was not only for pesticide containers but for all agricultural containers, including fertilizers, adjuvants and more. After containers were properly rinsed, the goal of the ACRC was to store, collect, inspect, grind, and recycle the plastics into various end uses. The ACRC has collected over 240 million pounds since its inception.
- Hudson explained the current ACRC situation in Maine and explained the importance of proper container rinsing. He said dirty containers were the number one threat to the program. Hudson stated that ACRC collected approximately 10,000 containers in Maine in 2023 and had the low rejection rate of less than 1.6%, which was promising. He stated that ACRC was actively looking for additional collection sites in Maine. The current sites were at Nutrien, Helena, and Carovail.

9. Consideration of Consent Agreement with Green Shield Pest Solutions Saco, Maine

On June 3, 1998, the Board amended its Enforcement Protocol to authorize staff to work with the Attorney General and negotiate consent agreements in advance on matters not involving substantial threats to the environment or public health. This procedure was designed for cases where there is no dispute of material facts or law, and the violator admits to the violation and acknowledges a willingness to pay a fine to resolve the matter. This case involved an unauthorized application, use of a pesticide inconsistent with the label and use of a pesticide in a negligent manner.

Presentation By: Alex Peacock, Manager of Compliance
Action Needed: Review and/or Approve

- Peacock stated that the company failed twice to notify the same person on the notification registry this year.
    - **Carlton/Jemison: Moved and seconded to approve the consent agreement**
    - **In Favor: Unanimous**

10. Other Old and New Business

a. EPA request for comment on WHITE PAPER: Benefits of the Adoption of Structured Content and Digital Pesticide Labels

b. EPA Update: EPA Issues Advanced Notice of Proposed Rulemaking for Public Comment to Seek Additional Information on Use of Pesticide Treated Seed and Paint
c. EPA Update: EPA Releases Draft Biological Evaluations of Dinotefuran and Acetamiprid Effects on Endangered Species
d. EPA Update: EPA Publishes New Webpage to Answer Frequently Asked Questions on the EPA/FDA Whitepaper on Modernizing Oversight of Products for Animals Regulated as Pesticides or New Animal Drugs
e. EPA Update: The Coordinated Framework for the Regulation of Biotechnology
f. EPA Update: EPA Proposes Updates to Strengthen the Safer Choice Standard
g. EPA Update: EPA Approves Strengthened Pesticide Safety Plans for Certifying Applicators
h. Article: Federal appeals court sides with agriculture on chlorpyrifos

9. Schedule of Future Meetings

January 10, 2024, February 23, 2024 and April 5, 2024 are the next scheduled Board meeting dates. The Board will decide whether to change and/or add dates.

Staff reserved Augusta Civic Center Kennebec/Penobscot Room for January 10, 2024; Marquardt Room 118 for February 23, 2024; and Deering Room 101 for April 5, 2024.

Deering Building Room 101 has been reserved for the following tentative dates: May 17, June 28, and August 16, 2024

Adjustments and/or Additional Dates?

11. Adjourn

- **Carlton/Jemison: Moved and seconded to adjourn at 11:50 AM**
- **In Favor: Unanimous**

MAINE MOBILE HEALTH PROGRAM

Improving the health status of Maine's seasonal workers and their families by providing culturally appropriate care and services.

January 21, 2024

John T. Pietroski
Maine Board of Pesticides Control
28 State House Station
Augusta, ME 04333-0028

Dear Mr. Pietroski,

I am contacting you on behalf of the Maine Mobile Health Program (MMHP) with a request for support from the Maine Board of Pesticides Control for a continued effort to deliver EPA Worker Protection Standard (WPS) education to Maine's farmworkers during the 2024 harvest season.

Throughout the 2023 season, the Maine Mobile Health Program worked to provide the Worker Protection Standard (PST) training to farmworkers across the state. The program trained a currently employed community health worker and also recruited a new trainer who was bilingual with the capacity to speak in Spanish and English. One highlight from the season included offering both WPS and Heat Stress trainings to all workers who participated in our sessions. MMHP is increasingly interested in promoting heat safety and looking for ways to pair that with ongoing pesticide safety trainings and other occupational safety trainings. We were also able to offer interpretation and health education in support of a Board of Pesticides investigation. For the second season in a row, we experienced a couple of last-minute cancelations from farms that limited the number of workers we could support. The challenging labor market also made it difficult for us to hire a trainer early in the season. However, training a current employee allowed us to complete our commitments for 2023 and start thinking about expanding more in 2024. Two new farms have already reached out to MMHP about training their workers next year.

Despite the challenges, our PST trainers were able to offer training on the WPS to 101 farmworkers across Maine in addition to curricula from the Association of Farmworker Opportunity Programs (AFOP) on occupational safety. The table included here breaks down, by education topic, important outcomes in 2023 completed by our trainers.

FWs trained in Worker Protection Standard	101
Heat Stress Trainings	101

MAINE MOBILE HEALTH PROGRAM

Improving the health status of Maine's seasonal workers and their families by providing culturally appropriate care and services.

The Association of Farmworker Opportunity Programs awarded $1,600 to MMHP in support of on-going WPS training in 2024. MMHP plans to use these funds to support the staff time for multilingual WPS and occupational health trainings to farmworkers across the state. We request from the Maine Board of Pesticides Control a contribution of $6,432 which we would leverage with the funds from AFOP. The funding from the Board of Pesticides Control will be used to support the staff positions who provides WPS trainings; including both the hourly wage and the travel and lodging required to reach farmworkers, growers and partners, and the overhead of managing the grant and project. We request that the funding be made directly to MMHP.

We thank the Board for its past support and for considering this current proposal. To connect with us about this request or our activities, please feel free to contact Hannah Miller (hmiller@mainemobile.org, 207-441-1633).

All the best,

Hannah A. Miller

Hannah Miller
Director of Outreach
Maine Mobile Health Program

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BOARD OF PESTICIDES CONTROL
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JANET T. MILLS
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COMMISSIONER

Memorandum

To: Board of Pesticides Control
From: John Pietroski, Acting Director
Subject: LD 1770: Resolve, Directing the Board of Pesticides Control to Transition to Electronic Submission of Pesticides Sales and Use Data

February 9, 2024

Background:

On June 23, 2023, LD 1770 "Resolve, Directing the Board of Pesticides Control to Transition to Electronic Submission of Pesticides Sales and Use Data" (RSLV 2022 c. 71) was signed by the governor. This resolve directs BPC to conduct rulemaking requiring electronic submission of annual commercial applicator reports and pesticide dealer reports. The Board is also obligated to submit a report to the legislature by March 2024 that reports on the progress made on the implementation of this resolve.

> **L.D. 1770 Resolve, Directing the Board of Pesticides Control to Transition to Electronic Submission of Pesticides Sales and Use Data**
>
> Sec. 1. Board of Pesticides Control; pesticides sales and use data. Resolved: That, pursuant to the Maine Revised Statutes, Title 22, section 1471-M, subsection 2, paragraph D, the Department of Agriculture, Conservation and Forestry, Board of Pesticides Control shall adopt any rules necessary to implement the transition from paper to electronic format of reports required to be submitted to the board as required by Title 22, section 1471-G. The board shall implement a system of electronic data collection that is efficient for those required to submit reports to the board under Title 22, section 1471-G and useful to the board and members of the public. Rules adopted pursuant to this section are routine technical rules as defined in Title 5, chapter 375, subchapter 2-A.
>
> Sec. 2. Report. Resolved: That, no later than March 1, 2024, the director of the Board of Pesticides Control within the Department of Agriculture, Conservation and Forestry shall submit a report regarding rulemaking and implementation of electronic reporting under

section 1 to the Joint Standing Committee on Agriculture, Conservation and Forestry, which may report out a bill to the Second Regular Session of the 131st Legislature based on the report.

The Board has appointed a member to engage with staff, stakeholders and developers to discuss changes to BPC's existing software solution, MEPERLS. There have been two stakeholder meetings. At an October 11, 2023, stakeholder meeting, staff reviewed the process for submitting reports to those in attendance and identified several needs. Since then, the board has implemented a 'review' section of the submission that gives users the ability to identify errors or mistakes and re-submit their information. Additionally, at a stakeholder meeting held November 17, 2023, participants identified the need to add adjuvants to the reports, as they are now considered pesticides under state law.

Potential Rulemaking

The Board will need to engage in rulemaking to implement LD 1770 in Chapter 50: Recordkeeping & Reporting. The Board may want to consider:

1. Adding language that requires reports be submitted electronically through a portal;
2. Creating a timeline for implementation and start year that electronic reports will be required;
3. Additional language for the transition from paper to electronic reports, especially for individuals that do not have computer or broadband access; and
4. Requiring additional information in reports that will aid in the data compilation process.

01 DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY

026 BOARD OF PESTICIDES CONTROL

Chapter 50: RECORD KEEPING & REPORTING REQUIREMENTS

SUMMARY: These regulations describe the types of records and reports which commercial applicators, commercial agricultural producers, limited/restricted use pesticide dealers, spray contracting firms and monitors must maintain and submit to the Board.

Section 1. Records

A. **Pesticide Application Records**

I. Commercial agricultural producers and commercial applicators shall maintain pesticide application records consistent with paragraph II. below for a period of two years from the date of application. Such records shall be kept current by recording all the required information on the same day the application is performed. These records shall be maintained at the primary place of business and available for inspection by representatives of the Board at reasonable times, upon request.

II. Pesticide application records shall include, at a minimum:

a. Site information including town and location, crop or site treated, target organism, customer and customer address (where applicable); and

i. for broadcast applications, size of treated area (when completed);

ii. for volumetric applications as described on the label, the volume treated;

iii. for non-broadcast applications (such as spot treatments, crack and crevice or stump treatments) a practical description of the scope or extent of the application (such as number of trees, stumps or rooms treated).

b. **Application information**. For each distinct site, records must include date and time of application(s), brand name of pesticide(s) applied, EPA registration number(s), active ingredient(s), restricted entry interval(s) and/or ventilation period(s) (where applicable), method of application (type of equipment), dilution agent(s) (other than water), the licensed applicator's name and certification number, the name of any noncertified applicator that made the application (where applicable), and spray contracting firm (where applicable).

c. **Rate information**. For each distinct site, application rate information must be maintained as follows:

i. **Restricted Use Pesticides**. For restricted use pesticides, applicators shall record the total amount of pesticide applied (undiluted).

ii. **General Use Pesticides**. For general use pesticides, applicators shall record:

(1) rate information as described in (i.) above; or

(2) the mix ratio and the total mix applied; or

(3) the mix ratio and the mix per unit area applied.

d. For outdoor applications, except those listed below, weather conditions including wind speed and direction, air temperature and sky conditions recorded such as sunny, partly cloudy, overcast, foggy or rainy. No weather condition records need be kept for outdoor applications involving:

i. pesticides placed in bait stations;

ii. pesticide-impregnated devices placed on animals, such as ear tags; or

iii. pesticides injected into trees or utility poles.

e. For TBT applications to marine vessels, applicators must also record the vessel identification and size, and the disposition of TBT wastes including chips/dust removed prior to application and empty containers.

B. **Limited Use/Restricted Use Pesticide Sales Records**

I. Licensed pesticide dealers shall maintain records of each sale of a restricted/limited use pesticide on their sales slips and the customer's name, and license number must be recorded on every invoice or electronic record involving that individual. Licensed pesticide dealers must also maintain records to verify that sales of restricted/limited use pesticides to unlicensed purchasers are only made where a licensed applicator is employed to supervise the use of the restricted/limited use products. These records must include the name, address, license number, issuing agency, expiration date, and categories of certification (if applicable) of each person to whom the restricted use pesticide was distributed or sold. These records are to be available for inspection by representatives of the Board at reasonable times, upon request, and are to be maintained for two calendar years from the date of sale.

II. Pesticide dealer records shall also include the signature of purchaser or his/her agent, the product name, the EPA registration number, state special local need registration (SLN) number (if applicable), the quantity and size of containers purchased, and the date of purchase.

III. Any pesticide dealer who discontinues the sales of restricted/limited use pesticides shall notify the Board in writing and shall provide the Board, upon request, with all required records including a final sales report up to the date of discontinuance.

Section 2. Reports

A. **Annual Summary Reports by Commercial Applicators**. Annual summary reports must be electronically submitted for each calendar year by January 31 of the following year through a Board-approved software solution. In the event a required report is not received by the due date, the person's license may be temporarily suspended until the proper report is received or until a decision is tendered at a formal hearing as described in 22 M.R.S.A. §1471-D(7). The report filed with the Board by or on behalf of commercial applicators shall contain the following information for each site or crop treated: quantity of each pesticide used, EPA registration number and total area treated (where applicable) for each pesticide.

B. **Annual Pesticide Sales Reports**. Pesticide dealers licensed to sell limited and restricted use pesticides must provide the Board with a calendar year-end report of total sales of all limited, restricted and general use pesticides electronically through a Board-approved software solution before their pesticide dealer license can be renewed. ~~The Board will furnish report forms.~~

C. **Spray Incident Reports**

I. Commercial agricultural producers, commercial applicators, spray contracting firms and licensed pesticide dealers shall be responsible for telephoning a spray incident report to the Board as soon as practicable after emergency health care has been obtained for injured parties and efforts have been initiated to contain any spills.

II. A reportable spray incident is any significant misapplication or accidental discharge of a pesticide. Such incidents shall include: fires involving pesticides; vehicle and aircraft accidents resulting in a spill or human contamination; failure to turn off spray booms or other spray equipment resulting in application to sensitive areas (such as water bodies, accidentally applying pesticides to the wrong site or places of human habitation) when such application is a violation of label instructions or other law; overfilling of spray equipment resulting in risk of contamination of water; and any other equipment breakage or malfunction or pesticide handling activity which causes a pesticide release which may result in a threat to human health or the environment.

STATUTORY AUTHORITY: Title 22 M.R.S. Chapter 258-A §1471-G, M and R

EFFECTIVE DATE:
July 6, 1979 - as "Reporting Requirements," filing 79-338

AMENDED:
August 12, 1985 - filing 85-275

REPEALED AND REPLACED:
April 5, 1995 - as "Record Keeping and Reporting Requirements," filing 95-149

AMENDED:
October 2, 1996

EFFECTIVE DATE (ELECTRONIC CONVERSION):
March 1, 1997

AMENDED:
November 11, 2001 - filing 2001-483
March 5, 2003 - filing 2003-61
January 4, 2005 – filing 2004-606 affecting Section 1.A.I.
December 23, 2012 – filing 2012-348 affecting Section 1.B.II.

CORRECTIONS:
February, 2014 – agency names, formatting

AMENDED:
July 23, 2019 – filing 2019-133

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
DIVISION OF ANIMAL AND PLANT HEALTH
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AMANDA E. BEAL
COMMISSIONER

MAINE BOARD OF PESTICIDES CONTROL POLICY REGARDING THE TREATMENT OF ADJUVANTS AS PESTICIDES

BACKGROUND

LD 2019 "An Act To Require the Registration of Adjuvants in the State and To Regulate the Distribution of Pesticides with Perfluoroalkyl and Polyfluoroalkyl Substances" (PL 2022 c.673) was approved by the 130th Maine Legislature in 2022. Under this law, adjuvants were added to the definition of pesticides and must now be registered within the State of Maine. The Board has discussed several policies related to spray adjuvants, which have been consolidated below. The purpose of this policy is to clarify the Board's decisions regarding the treatment of "spray adjuvants" in the state of Maine.

> Inclusion of Colorants: At the February 24, 2023 Board meeting, the Board discussed a staff memo regarding colorants and if they are considered pesticides under the new state definition. An informal vote was taken, and the majority of Board members stated that colorants did not fit into the definition of adjuvants given that they do not increase the efficacy of the applied product. The Board also agreed that water was not considered a spray adjuvant when added to pesticides.

POLICY

Colorants and Water

The following are not considered spray adjuvants in Maine:

- Adjuvants that are labeled as colorants for pesticides
- Water added to pesticides

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SETH H. BRADSTREET III
COMMISSIONER

HENRY JENNINGS
DIRECTOR

MAINE BOARD OF PESTICIDES CONTROL POLICY RELATING TO THE PLANT INCORPORATED PROTECTANT TECHNICAL COMMITTEE

Adopted March 27, 2009

Background

The Maine Board of Pesticides Control recognizes that some plant incorporated protectant (PIP) products have the potential to out cross with non-genetically modified organisms, as well as the potential for the development of insect resistance. In order to evaluate these issues, the Board needs expert advisors, knowledgeable in the fields of agronomy and agricultural entomology. Consequently, the Board establishes the PIP Technical Committee (PIP TC) to advise the Board on related technical issues.

Membership

The PIP TC will be composed of five standing members and *ad hoc* members as needed. One standing member will be the Board member appointed with entomology or agronomy expertise. This member will also chair the committee. The other four standing members will be an agricultural entomologist, a certified crop advisor, an organic crop specialist and the director of the Pest Management Office at the University of Maine Cooperative Extension. In addition, up to three other individuals with crop specific expertise may be chosen *ad hoc.* The Board will solicit and review resumes for positions on the PIP TC.

The Board should appoint members whose disciplines are suitable for identifying and evaluating potential pollen drift and insect resistance.

Term

Ad hoc PIP TC members will be appointed by the Board for the duration of specific reviews.

Meetings

The Committee will meet on an as needed basis at the invitation of the PIP TC chairman.

Compensation

The PIP TC is voluntary and no compensation for services is available. However, all reasonable travel expenses will be reimbursed, subject to approval by the Board's director, in a manner consistent with State Travel Policy.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

May 22, 2023

Ashley Young
U.S. Seeds Regulatory Specialist
Corteva Agriscience LLC
7100 NW 62 Avenue
PO Box 1000
Johnston, IA 50131-1000

Subject: Non-PRIA (Pesticide Registration Improvement Act) Labeling Amendment –Revision to the Name of the Company
Product Name: PowerCore™ Ultra Enlist™
EPA Registration Number: 62719-704
EPA Receipt Date: March 3, 2023
Action Case Number: 00439368

Dear Ms. Young:

The amended labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is acceptable.

The primary company name of this product has been changed from Dow Agrosciences LLC to Corteva Agriscience LLC, and our records have been updated accordingly. This approval does not affect any terms or conditions that were previously imposed on this registration. You continue to be subject to existing terms or conditions on your registration and any deadlines connected with them.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one (1) copy of the final printed labeling before you release this product for shipment with the new labeling. In accordance with 40 CFR § 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. “To distribute or sell” is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR § 152.3.

Should you wish to add/retain a reference to your company’s website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the U.S. Environmental Protection Agency (EPA). If the website is false or misleading, the product will be considered to be misbranded and sale or distribution of the product is unlawful under FIFRA section 12(a)(1)(E). 40 CFR § 156.10(a)(5) lists examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product’s label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should EPA find or if it is brought to our attention that a website contains statements or claims substantially differing from statements or claims made in connection with obtaining a FIFRA

section 3 registration, the website will be referred to EPA's Office of Enforcement and Compliance Assurance.

Your release for shipment of this product constitutes acceptance of these terms. If these terms are not complied with, this registration will be subject to cancellation in accordance with FIFRA section 6. If you have any questions, please contact Leslie Paul via email at paul.leslie@epa.gov.

Sincerely,

Digitally signed by ALAN REYNOLDS
Date: 2023.05.22 16:33:49 -04'00'

Alan Reynolds, Team Leader
Emerging Technologies Branch
Biopesticides and Pollution
Prevention Division (7511M)
Office of Pesticide Programs

Enclosure: Final Stamped Label

Plant-Incorporated Protectant Label

PowerCore™ Ultra Enlist™

(Alternate Brand Name: PowerCore™ Ultra)
(Alternate Brand Name: MON 89034 x TC1507 x MIR162 Insect-Protected Herbicide-Tolerant Corn)

(OECD Unique Identifier: MON-89Ø34-3 × DAS-Ø15Ø7-1 × SYN-IR162-4)

Active Ingredients:

Bacillus thuringiensis Cry1A.105 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3) ≤ 0.0129%*

Bacillus thuringiensis Cry2Ab2 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3) ≤ 0.00489%*

Bacillus thuringiensis Cry1F protein and the genetic material (vector PHP8999) necessary for its production in corn event TC1507 (OECD Unique Identifier: DAS- Ø15Ø7-1) ≤ 0.00099%*

Bacillus thuringiensis Vip3Aa20 insecticidal protein and the genetic material necessary for its production (vector pNOV1300) in corn event MIR162 (OECD Unique Identifier: SYN-IR162-4) ≤ 0.0098%*

Other Ingredients:

The marker protein, PAT (phosphinothricin acetyl transferase), and the genetic material (vector PHP8999) necessary for its production in corn event TC1507 ≤ 0.00003*

The marker protein PMI (phosphomannose isomerase), and the genetic material (vector pNOV1300) necessary for its production in corn event MIR162 (OECD Unique Identifier: SYN-IR162-4) ≤0.00046%*

*Maximum percent dry weight of forage

KEEP OUT OF REACH OF CHILDREN NET CONTENTS_____

CAUTION

EPA Registration No. 62719-704

EPA Establishment No. 62719-IN-1

Corteva Agriscience LLC
9330 Zionsville Rd.
Indianapolis, IN 46268

DIRECTIONS FOR USE

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

This plant-incorporated protectant (PIP) may be combined through conventional breeding with other registered plant-incorporated protectants that are similarly approved for use in combination, through conventional breeding, with other registered plant-incorporated protectants to produce inbred corn lines and hybrid corn varieties with combined pesticidal traits.

PowerCore™ Ultra Enlist™ protects corn crops from leaf, stalk, and ear damage caused by lepidopteran corn pests listed on this label. In order to minimize the risk of these pests developing resistance to PowerCore™ Ultra Enlist™ corn an insect resistance management plan must be implemented which includes planting of a structured refuge. Growers who fail to comply with the IRM requirements risk losing access to Dow AgroSciences' corn PIP products that require a separate structured refuge.

These refuge requirements do not apply to seed propagation of inbred and hybrid seed corn up to a total of 20,000 acres per county and up to a combined US total of 250,000 acres per PIP active ingredient per year.

Grower agreements will specify that growers must adhere to the refuge requirements that will be described in the Product Use Guide for PowerCore™ Ultra Enlist™ corn or other applicable product use documents.

Sales of corn hybrids that contain Dow AgroSciences' Bt corn plant-incorporated pesticide(s) must be accompanied by a Product Use Guide which includes information on planting, production, and insect resistance management and notes that routine applications of insecticides to control these insects are usually unnecessary when corn containing the Bt proteins is planted.

INSECT RESISTANCE MANAGEMENT

Growers are instructed to read information on insect resistance management.

These refuge requirements do not apply to seed increase/propagation of inbred and hybrid seed corn up to a total of 20,000 acres per county and up to a combined United States (U.S.) total of 250,000 acres per plant-incorporated protectant (PIP) active ingredient per registrant per year.

The following information regarding commercial production must be included in grower guides and bag tags for PowerCore™ Ultra Enlist™ corn in cotton and non-cotton growing areas

1) *Refuge size,* **all regions other than the cotton growing region where corn earworm is a significant pest as defined below**. The use of PowerCore™ Ultra Enlist™ corn requires an accompanying 5% refuge consisting of non-*Bt* corn and/or non-lepidopteran resistant Bt corn

2) *Refuge size*, **the cotton growing region where corn earworm is a significant pest as defined below*.** The use of PowerCore™ Ultra Enlist™ corn requires an accompanying 20% refuge consisting of non-*Bt* corn and/or non-lepidopteran resistant Bt corn.

3) *Refuge location*

- Refuge planting options include: separate fields, blocks within fields (e.g., along the edges or headlands), and strips across the field.

- External refuges must be planted within ½ mile.

- When planting the refuge in strips across the field, refuges must be at least 4 rows wide.

4) *Refuge management*

- Insecticide treatments for control of European corn borer, corn earworm, southwestern corn borer and other lepidopteran target pests listed on the label, grower guides, or other educational material may be applied only if economic thresholds are reached for one or more of these target pests. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants). Instructions to growers will specify that microbial *Bt* insecticides must not be applied to non-*Bt* corn and/or non-lepidopteran resistant Bt corn refuges.

*The cotton-growing region where corn earworm is a significant pest, which requires 20% refuge consists of the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas(except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex) and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard).

Corn Insects Controlled or Suppressed

European corn borer (ECB)	*Ostrinia nubilalis*
Southwestern corn borer (SWCB)	*Diatraea grandiosella*
Southern cornstalk borer (SCSB)	*Diatraea crambidoides*
Corn earworm (CEW)	*Helicoverpa zea*
Fall armyworm (FAW)	*Spodoptera frugiperda*
Stalk borer	*Papaipema nebris*
Lesser corn stalk borer	*Elasmopalpus lignosellus*
Sugarcane borer (SCB)	*Diatraea saccharalis*
Western bean cutworm (WBC)	*Striacosta albicosta*
Black cutworm	*Agrotis ipsilon*

PowerCore™ Ultra Enlist™ is a product of Dow AgroSciences' research programs offering unique genetic characteristics for specific grower needs and may be protected by one or more of the following U.S. patents that can be found at http://www.traitstewardship.com.

EPA Accepted: _____

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

June 21, 2023

Ashley Young
U.S. Seeds Regulatory Specialist
Corteva Agriscience LLC
7100 NW 62 Avenue
PO Box 1000
Johnston, IA 50131-1000

Subject: Non-PRIA (Pesticide Registration Improvement Act) Labeling Amendment – Revision to the Name of the Company
Product Name: PowerCore™ Ultra Enlist™ Refuge Advanced
EPA Registration Number: 62719-716
EPA Receipt Date: 03/6/2023
Action Case Number: 00439419

Dear Ms. Young:

The amended labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is acceptable.

The primary company name of this product has been changed from Dow AgroSciences LLC to Corteva Agriscience LLC, and our records have been updated accordingly. This approval does not affect any terms or conditions that were previously imposed on this registration. You continue to be subject to existing terms or conditions on your registration and any deadlines connected with them.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one (1) copy of the final printed labeling before you release this product for shipment with the new labeling. In accordance with 40 CFR § 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. "To distribute or sell" is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR § 152.3.

Should you wish to add/retain a reference to your company's website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the U.S. Environmental Protection Agency (EPA). If the website is false or misleading, the product will be considered to be misbranded and sale or distribution of the product is unlawful under FIFRA section 12(a)(1)(E). 40 CFR § 156.10(a)(5) lists examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should EPA find or if it is brought to our attention that a website contains statements or claims substantially differing from statements or claims made in connection with obtaining a FIFRA

section 3 registration, the website will be referred to EPA's Office of Enforcement and Compliance Assurance.

Your release for shipment of this product constitutes acceptance of these terms. If these terms are not complied with, this registration will be subject to cancellation in accordance with FIFRA section 6.
If you have any questions, please contact Mary Beth Claude by phone at (202) 566-1460 or via email at Claude.MaryBeth@epa.gov.

Sincerely,

Digitally signed by
ALAN REYNOLDS
Date: 2023.06.21
16:50:41 -04'00'

Alan Reynolds, Team Leader
Emerging Technologies Branch
Biopesticides and Pollution
Prevention Division (7511M)
Office of Pesticide Programs

Enclosure: Final Stamped Label

Plant-Incorporated Protectant Label

PowerCore™ Ultra Enlist™ Refuge Advanced

(Alternate Brand Name: PowerCore™ Ultra Refuge Advanced)
(Alternate Brand Name: MON 89034 x TC1507 x MIR162 Insect-Protected Herbicide-Tolerant Corn with Interspersed Refuge)

(OECD Unique Identifier: MON-89Ø34-3 × DAS-Ø15Ø7-1 × SYN-IR162-4)

Active Ingredients:

Bacillus thuringiensis Cry1A.105 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3) ≤ 0.0129%*

Bacillus thuringiensis Cry2Ab2 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3) ≤ 0.00489%*

Bacillus thuringiensis Cry1F protein and the genetic material (vector PHP8999) necessary for its production in corn event TC1507 (OECD Unique Identifier: DAS- Ø15Ø7-1) ≤ 0.00099%*

Bacillus thuringiensis Vip3Aa20 insecticidal protein and the genetic material necessary for its production (vector pNOV1300) in corn event MIR162 (OECD Unique Identifier: SYN-IR162-4) ≤ 0.0098%*

Other Ingredients:

The marker protein, PAT (phosphinothricin acetyl transferase), and the genetic material (vector PHP8999) necessary for its production in corn event TC1507 ≤ 0.00003*

The marker protein PMI (phosphomannose isomerase), and the genetic material (vector pNOV1300) necessary for its production in corn event MIR162 (OECD Unique Identifier: SYN-IR162-4) ≤0.00046%*

*Maximum percent dry weight of forage

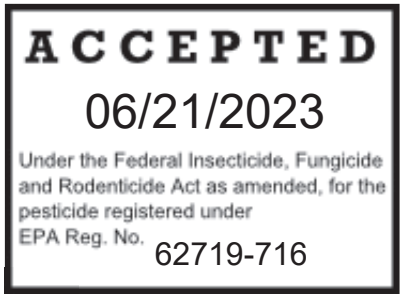
KEEP OUT OF REACH OF CHILDREN NET CONTENTS_____

CAUTION

EPA Registration No. 62719-716

EPA Establishment No. 62719-IN-1

Corteva Agriscience LLC
9330 Zionsville Rd.
Indianapolis, IN 46268



DIRECTIONS FOR USE

It is a violation of Federal law to use this product in any manner inconsistent with its labeling. The plant-incorporated protectant (PIP) product must be used as specified in the terms and conditions of the registration.

This plant-incorporated protectant (PIP) may be combined through conventional breeding with other registered plant-incorporated protectants that are similarly approved for use in combination, through conventional breeding, with other registered plant-incorporated protectants to produce inbred corn lines and hybrid corn varieties with combined pesticidal traits.

PowerCore™ Ultra Enlist™ Refuge Advanced protects corn crops from leaf, stalk, and ear damage caused by lepidopteran corn pests listed on this label. In order to minimize the risk of these pests developing resistance to PowerCore™ Ultra Enlist™ Refuge Advanced, an insect resistance management plan must be implemented as defined in the registration terms and conditions.

Grower agreements will specify that growers must adhere to the refuge requirements that will be described in the Product Use Guide for PowerCore™ Ultra Enlist™ Refuge Advanced or other applicable product use documents.

Sales of corn hybrids that contain Bt corn plant-incorporated pesticide(s) must be accompanied by a Product Use Guide which includes information on planting, production, and insect resistance management and notes that routine applications of insecticides to control these insects are usually unnecessary when corn containing the Bt proteins is planted.

Corn seed bags or bag tags for products containing PowerCore™ Ultra Enlist™ Refuge Advanced must include the refuge size requirement in text and graphical format.

INSECT RESISTANCE MANAGEMENT

Growers are instructed to read information on insect resistance management.

These refuge requirements do not apply to seed increase/propagation of inbred and hybrid seed corn up to a total of 20,000 acres per county and up to a combined United States (U.S.) total of 250,000 acres per plant-incorporated protectant (PIP) active ingredient per registrant per year.

The following information regarding refuge placement for commercial production must be included in the Product Use Guide.

This product includes refuge that is interspersed within the field by planting a licensed seed-mixture containing MON 89034 × TC1507 and minimum of 5% non-PIP seed. **The seed mix refuge option for PowerCore™ Ultra Enlist™ Refuge Advanced satisfies the refuge requirements in all regions other than in the cotton growing region where corn earworm is a significant pest as defined below.** The seed producer must ensure a minimum of 5% non-PIP refuge seed is included with the MON 89034 x TC1507 x MIR162 in each lot of seed corn.

The interspersed refuge can only be used by planting seed corn specifically generated by qualified seed producers/conditioners licensed by the registrant.

Additional refuge requirements in the cotton growing region where corn earworm is a significant pest

In the cotton-growing region where corn earworm is a significant pest, as defined below, the seed-mixture containing MON 89034 × TC1507 x MIR162 and a minimum of 5% non-PIP seed requires the planting of an additional 20% structured refuge (i.e. 20 acres of non-Bt corn for every 80 acres of PowerCore™ Ultra Enlist™ Refuge Advanced).

The 20% refuge must be planted with corn hybrids that do not contain Bt technologies for the control of corn rootworms or corn borers. The refuge and the PowerCore™ Ultra Enlist™ Refuge Advanced should be sown on the same day, or with the shortest window possible between planting dates to ensure that corn root development is similar

among varieties. The structured refuge may be planted as an in-field or adjacent (e.g., across the road) refuge, or as a separate block that is within ½ mile of the PowerCore™ Ultra Enlist™ Refuge Advanced. In-field refuge options include blocks, perimeter strips (i.e., strips around the field), or in-field strips. If perimeter or in-field strips are implemented, the strips must be at least 4 consecutive rows wide. The refuge can be protected from lepidopteran damage by use of non-Bt insecticides if the population of one or more target lepidopteran pests of MON 89034 × TC1507 × MIR162 in the refuge exceeds economic thresholds. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants).

The cotton-growing region where corn earworm is a significant pest, which requires this additional 20% refuge, consists of the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas(except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex) and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard).

The following language will be included on the seed bag tags for PowerCore™ Ultra Enlist™ Refuge Advanced.

Management Guidelines

This product consists of a licensed seed-mixture/seed-blend containing 95% MON 89034 x TC1507 x MIR162 seed and a minimum of 5% seed that does not contain B.t. technologies for the control of corn borers or corn rootworms. When planted, the refuge will be interspersed within the field.

The interspersed refuge configuration in PowerCore™ Ultra Enlist™ Refuge Advanced fulfills the grower's refuge requirements for this product in non-cotton growing regions and in cotton growing regions where corn earworm is not a significant pest.

The interspersed refuge in PowerCore™ Ultra Enlist™ Refuge Advanced is not sufficient to meet IRM requirements in the cotton growing region where corn earworm is a significant pest. In these regions growers are required to plant a structured 20% corn refuge for corn earworm.

In the cotton-growing region where corn earworm is a significant pest, the structured refuge may be planted as an in-field or adjacent (e.g., across the road) refuge or as a separate block that is within ½ mile of the PowerCore™ Ultra Enlist™ Refuge Advanced field. In-field refuge options include blocks, perimeter strips (i.e., strips around the field) or in-field strips. If perimeter strips or in-field strips are implemented, the strips must be at least four consecutive rows of corn wide.

Cotton Growing Region

The cotton-growing region where corn earworm is a significant pest, which requires this additional 20% refuge, consists of the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex) and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard)

Corn Insects Controlled or Suppressed

European corn borer (ECB)	*Ostrinia nubilalis*
Southwestern corn borer (SWCB)	*Diatraea grandiosella*
Southern cornstalk borer (SCSB)	*Diatraea crambidoides*
Corn earworm (CEW)	*Helicoverpa zea*
Fall armyworm (FAW)	*Spodoptera frugiperda*
Stalk borer	*Papaipema nebris*
Lesser corn stalk borer	*Elasmopalpus lignosellus*
Sugarcane borer (SCB)	*Diatraea saccharalis*
Western bean cutworm (WBC)	*Richia albicosta*
Black cutworm	*Agrotis ipsilon*

EPA Accepted.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

April 27, 2023

Ashley Young
U.S. Seeds Regulatory Specialist
Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

Subject: Non-PRIA (Pesticide Registration Improvement Act) Labeling Amendment –Revision to the Name of the Company
Product Name: PowerCore Enlist Refuge Advanced
EPA Registration Number: 68467-21
EPA Receipt Date: March 3, 2023
Action Case Number: 00439370

Dear Ms. Young:

The amended labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is acceptable.

The primary company name of this product has been changed from Mycogen Seeds c/o Dow Agrosciences LLC to Corteva Agriscience LLC, and our records have been updated accordingly. This approval does not affect any terms or conditions that were previously imposed on this registration. You continue to be subject to existing terms or conditions on your registration and any deadlines connected with them.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one (1) copy of the final printed labeling before you release this product for shipment with the new labeling. In accordance with 40 CFR § 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. “To distribute or sell” is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR § 152.3.

Should you wish to add/retain a reference to your company’s website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the U.S. Environmental Protection Agency (EPA). If the website is false or misleading, the product will be considered to be misbranded and sale or distribution of the product is unlawful under FIFRA section 12(a)(1)(E). 40 CFR § 156.10(a)(5) lists examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product’s label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should EPA find or if it is brought to our attention that a website contains statements or claims substantially differing from statements or claims made in connection with obtaining a FIFRA

section 3 registration, the website will be referred to EPA's Office of Enforcement and Compliance Assurance.

Your release for shipment of this product constitutes acceptance of these terms. If these terms are not complied with, this registration will be subject to cancellation in accordance with FIFRA section 6. If you have any questions, please contact Leslie Paul via email at paul.leslie@epa.gov.

Sincerely,

Digitally signed by
ALAN REYNOLDS
Date: 2023.04.27
17:17:01 -04'00'

Alan Reynolds, Team Lead
Emerging Technologies Branch
Biopesticides and Pollution
Prevention Division (7511M)
Office of Pesticide Programs

Enclosure: Final Stamped Label

Plant-Incorporated Protectant Label

PowerCore™ Enlist™ Refuge Advanced

(Alternate Brand Name PowerCore™ Refuge Advanced)
(Alternate Brand Name Refuge Advanced Powered by PowerCore®)
(Alternate Brand Name MON 89034 x TC1507 Insect-Protected, Herbicide Tolerant Corn with an Interspersed Refuge)

(OECD Unique Identifier: MON-89Ø34-3 × DAS-Ø15Ø7-1)

Active Ingredients:

Bacillus thuringiensis Cry1A.105 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3)	≤ 0.0026%*
Bacillus thuringiensis Cry2Ab2 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3)	≤ 0.0053%*
Bacillus thuringiensis Cry1F protein and the genetic material (vector PHP8999) necessary for its production in corn event TC1507 (OECD Unique Identifier: DAS- Ø15Ø7-1)	≤ 0.00122%*

Other Ingredients:

The marker protein, PAT (phosphinothricin acetyl transferase), and the genetic material (vector PHP8999) necessary for its production in corn event TC1507	≤ 0.00045%*

*Maximum percent (wt/wt) of dry forage

‡ PowerCore® seed with this refuge configuration contains 95% MON 89034 × TC1507 mixed with at least 5% non-Bt corn within a single lot of seed.

KEEP OUT OF REACH OF CHILDREN NET CONTENTS_____

CAUTION

EPA Registration No. 68467-21

EPA Establishment No. 62719-IN-1

Corteva Agriscience LLC
9330 Zionsville Rd.
Indianapolis, IN 46268

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in any manner inconsistent with its labeling. The plant-incorporated protectant (PIP) product must be used as specified in the terms and conditions of the registration.

This plant-incorporated protectant (PIP) may be combined through conventional breeding with other registered plant-incorporated protectants that are similarly approved for use in combination, through conventional breeding, with other registered plant-incorporated protectants to produce inbred corn lines and hybrid corn varieties with combined pesticidal traits.

PowerCore™ Enlist™ Refuge Advanced protects corn crops from leaf, stalk, and ear damage caused by lepidopteran corn pests listed on this label. In order to minimize the risk of these pests developing resistance to PowerCore™ Enlist™ Refuge Advanced, an insect resistance management plan must be implemented as defined in the registration terms and conditions.

Grower agreements will specify that growers must adhere to the refuge requirements that will be described in the Product Use Guide for PowerCore™ Enlist™ Refuge Advanced or other applicable product use documents.

Sales of corn hybrids that contain Bt corn plant-incorporated pesticide(s) must be accompanied by a Product Use Guide which includes information on planting, production, and insect resistance management and notes that routine applications of insecticides to control these insects are usually unnecessary when corn containing the Bt proteins is planted.

Corn seed bags or bag tags for products containing PowerCore™ Enlist™ Refuge Advanced must include the refuge size requirement in text and graphical format.

INSECT RESISTANCE MANAGEMENT

Growers are instructed to read information on insect resistance management.

These refuge requirements do not apply to seed increase/propagation of inbred and hybrid seed corn up to a total of 20,000 acres per county and up to a combined United States (U.S.) total of 250,000 acres per plant-incorporated protectant (PIP) active ingredient per registrant per year.

The following information regarding refuge placement for commercial production must be included in the Product Use Guide.

This product includes refuge that is interspersed within the field by planting a licensed seed-mixture containing MON 89034 × TC1507 and minimum of 5% non-PIP seed. **The seed mix refuge option for PowerCore™ Enlist™ Refuge Advanced satisfies the refuge requirements in all regions other than in the cotton growing region where corn earworm is a significant pest as defined below.** The seed producer must ensure a minimum of 5% non-PIP refuge seed is included with the MON 89034 x TC1507 in each lot of seed corn.

The interspersed refuge can only be used by planting seed corn specifically generated by qualified seed producers/conditioners licensed by the registrant.

Additional refuge requirements in the cotton growing region where corn earworm is a significant pest

In the cotton-growing region where corn earworm is a significant pest, as defined below, the seed-mixture containing MON 89034 × TC1507 and a minimum of 5% non-PIP seed requires the planting of an additional 20% structured refuge (i.e. 20 acres of non-Bt corn for every 80 acres of PowerCore™ Enlist™ Refuge Advanced planted).

The 20% refuge must be planted with corn hybrids that do not contain Bt technologies for the control of corn rootworms or corn borers. The refuge and the PowerCore™ Enlist™ Refuge Advanced should be sown on the same

day, or with the shortest window possible between planting dates to ensure that corn root development is similar among varieties. The structured refuge may be planted as an in-field or adjacent (e.g., across the road) refuge, or as a separate block that is within ½ mile of the PowerCore™ Enlist™ Refuge Advanced. In-field refuge options include blocks, perimeter strips (i.e., strips around the field), or in-field strips. If perimeter or in-field strips are implemented, the strips must be at least 4 consecutive rows wide. The refuge can be protected from lepidopteran damage by use of non-Bt insecticides if the population of one or more target lepidopteran pests of MON 89034×TC1507 in the refuge exceeds economic thresholds. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants).

The cotton-growing region where corn earworm is a significant pest, which requires this additional 20% refuge, consists of the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas(except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex) and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard).

The following language will be included on the seed bag tags for PowerCore™ Enlist™ Refuge Advanced.

Management Guidelines

This product consists of a licensed seed-mixture/seed-blend containing 95% PowerCore® seed and a minimum of 5% seed that does not contain B.t. technologies for the control of corn borers or corn rootworms. When planted, the refuge will be interspersed within the field.

The interspersed refuge configuration in PowerCore™ Enlist™ Refuge Advanced fulfills the grower's refuge requirements for this product in non-cotton growing regions and in cotton growing regions where corn earworm is not a significant pest.

The interspersed refuge in PowerCore™ Enlist™ Refuge Advanced is not sufficient to meet IRM requirements in the cotton growing region where corn earworm is a significant pest. In these regions growers are required to plant a structured 20% corn refuge for corn earworm.

In the cotton-growing region where corn earworm is a significant pest, the structured refuge may be planted as an in-field or adjacent (e.g., across the road) refuge or as a separate block that is within ½ mile of the PowerCore™ Enlist™ Refuge Advanced field. In-field refuge options include blocks, perimeter strips (i.e., strips around the field) or in-field strips. If perimeter strips or in-field strips are implemented, the strips must be at least four consecutive rows of corn wide.

Cotton Growing Region

The cotton-growing region where corn earworm is a significant pest, which requires this additional 20% refuge, consists of the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex) and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard)

Corn Insects Controlled or Suppressed

European corn borer (ECB)	*Ostrinia nubilalis*
Southwestern corn borer (SWCB)	*Diatraea grandiosella*
Southern cornstalk borer (SCSB)	*Diatraea crambidoides*
Corn earworm (CEW)	*Helicoverpa zea*
Fall armyworm (FAW)	*Spodoptera frugiperda*
Stalk borer	*Papaipema nebris*
Lesser corn stalk borer	*Elasmopalpus lignosellus*
Sugarcane borer (SCB)	*Diatraea saccharalis*
Western bean cutworm (WBC)	*Richia albicosta*
Black cutworm	*Agrotis ipsilon*

EPA Accepted:_____.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Washington, D.C. 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

November 29, 2021

Jamie Staley
U.S. Seeds Regulatory Affairs Leader
Corteva Agriscience
PO Box 1000
Johnston, IA 50131-1000

Subject: Non-PRIA Amendment – Extension of the unconditional registration for PowerCore® Enlist® and make minor label changes to reflect the updated company name and product branding.
EPA Registration Number: 68467-12
Submission Date: August 31, 2021
OPP Case Number: 00319561

Dear Mr. Staley:

The amendment referenced above, submitted in connection with registration under Section 3(c)(5) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), is acceptable provided that you comply with the updated terms and conditions as described in this letter.

1. The subject registration will automatically expire at midnight on November 30, 2022.

2. The subject registration will be limited to *Bacillus thuringiensis* Cry1A.105 and the genetic material necessary for its production (vector PV-ZMIR245) in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3), *Bacillus thuringiensis* Cry2Ab2 and the genetic material necessary for its production (vector PV-ZMIR245) in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3), and *Bacillus thuringiensis* Cry1F and the genetic material necessary for its production (vector PHP8999) in corn event TC1507 (OECD Unique Identifier: DAS- Ø15Ø7-1) for use in field corn.

3. Submit and/or cite all data required for registration or registration review of your product when the EPA requires all registrants of similar products to submit such data.

4. This plant-incorporated protectant (PIP) may be combined through conventional breeding with other registered plant-incorporated protectants that are similarly approved for use in combination, through conventional breeding, with other registered plant-incorporated protectants to produce inbred corn lines and hybrid corn varieties with combined pesticidal traits.

5. Corteva Agriscience must commit to do the following Insect Resistance Management (IRM) Program, consisting of the following elements:

    - Requirements relating to creation of a lepidopteran refuge (consisting of corn that does not contain any *Bt* trait for lepidopteran control) in conjunction with the planting of any acreage of PowerCore® Enlist® corn.

- Requirements for Corteva Agriscience to prepare and require PowerCore® Enlist® corn users to sign grower agreements that impose binding contractual obligations on growers to comply with the refuge requirements.

- Requirements for Corteva Agriscience to develop, implement, and report to EPA on programs to educate growers about IRM requirements.

- Requirements for Corteva Agriscience to develop, implement, and report to EPA on programs to evaluate and promote growers' compliance with IRM requirements.

- Requirements for Corteva Agriscience to develop, implement, and report to EPA on monitoring programs to evaluate whether there are statistically significant and biologically relevant changes in susceptibility to the Cry1A.105, Cry2Ab2, and Cry1F protein in the target insects.

- Requirements for Corteva Agriscience to develop, and if triggered, to implement a remedial action plan that would contain measures Corteva Agriscience would take in the event that any field-relevant insect resistance to Cry1A.105, Cry2Ab2, and Cry1F was detected, as well as to report on activity under the plan to EPA.

- Requirements for Corteva Agriscience to maintain, and provide the Agency upon request, the number of units sold by state and county, IRM grower agreement results, and substantive changes to educational programs. Corteva Agriscience is required to submit reports within three months of the Agency's request.

- Bag Tag Requirements for PowerCore® Enlist® corn. Seed bags and/or bag tags for corn hybrids that contain plant- incorporated protectants produced in PowerCore® Enlist® corn must display the registration number and active ingredients, and stipulate that growers read the Corteva Agriscience Stewardship Guide (or equivalent guidance) prior to planting these hybrids. The refuge size requirement must be displayed on the bag or bag tag in both text and graphic format.

- Requirements for Corteva Agriscience, on or before August 31st of each year, to submit reports on Cry1A.105, Cry2Ab2, and Cry1F resistance monitoring.

a. Refuge Requirements for PowerCore® Enlist® corn

The following information must be included on the product bag or bag-tag as sold per respective region and in the Grower Guide:

These refuge requirements do not apply to seed increase/propagation of inbred hybrid seed corn up to a total of 20,000 acres per county and up to a combined United States (U.S.) total of 250,000 acres per PIP active ingredient per registrant per year.

Grower agreements (also known as stewardship agreements) will specify that growers must adhere to the refuge requirements as described in the grower guide/product use guide and/or in supplements to the grower guide/product use guide.

Lepidopteran Refuge for PowerCore® Enlist® corn

1. *Refuge size, Corn-growing areas (Corn Belt and other non-corn/cotton-growing areas)*. The use of PowerCore™ Enlist™ corn requires an accompanying 5% refuge consisting of non-*Bt* corn or corn that is not a lepidopteran-protected Bt hybrid.

2. *Refuge size, Corn/Cotton-growing areas*.* The use of PowerCore® Enlist® corn requires an accompanying 20% refuge consisting of non-*Bt* corn or corn that is not a lepidopteran-protected *Bt* hybrid.

3. *Refuge Location*

   - The lepidopteran refuge can be planted in a separate field not more than ½ miles from the PowerCore® Enlist® corn field.

   - The lepidopteran refuge can be planted within the PowerCore® Enlist® corn field as blocks (e.g., along the edges or headlands)

   - The lepidopteran refuge can be planted within the PowerCore® Enlist® corn field as strips across the field at least four (4) consecutive rows wide.

4. *Refuge Management*

Insecticide treatments for control of European corn borer, corn earworm, southwestern corn borer, fall armyworm, black cutworm, western bean cutworm, lesser corn stalk borer, southern corn stalk borer, stalk borer and sugarcane borer may be applied only if economic thresholds are reached for one or more of these target pests. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants). Microbial *Bt* insecticides must not be applied to non-*Bt* corn refuge plants.

*Cotton-growing areas include the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, Sussex) and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, Stoddard).

When on-farm assessments identify non-compliance with refuge requirements for one or more *Bt* corn products, additional educational material and assistance are provided by the registrant to help these growers meet the refuge requirements across their farming operations.

b. Grower Agreements for PowerCore® Enlist® Corn

1. Persons purchasing PowerCore® Enlist® Corn must sign a grower agreement. The term grower agreement refers to any grower purchase contract, license agreement, or similar legal document.

2. The grower agreement and/or specific stewardship documents referenced in the grower agreement must clearly set forth the terms of the current IRM program. By signing the grower agreement, a grower must be contractually bound to comply with the requirements of the IRM program.

3. Corteva Agriscience must continue to integrate this registration into the current system used for its other *Bt* corn plant- incorporated protectants, which is reasonably likely to assure that persons purchasing PowerCore® Enlist® Corn will affirm annually that they are contractually bound to comply with the requirements of the IRM program.

4. Corteva Agriscience must continue to use its current grower agreement for PowerCore® Enlist® Corn. If Corteva Agriscience wishes to change any part of the grower agreement or any specific stewardship documents referenced in the grower agreement that would affect either the content of the IRM program or the legal enforceability of the provisions of the agreement relating to the IRM program, then thirty (30) days prior to implementing a proposed change, Corteva Agriscience must submit to EPA the text of such changes to ensure that it is consistent with the terms and conditions of this amended registration.

5. Corteva Agriscience shall maintain records of all PowerCore® Enlist® Corn grower agreements for a period of three (3) years from December 31st of the year in which the agreement was signed.

6. Corteva Agriscience shall make available to the Agency upon request records of the number of units of PowerCore® Enlist® Corn seed sold or shipped and not returned, and the number of such units that were sold to persons who have signed grower agreements for the previous growing season. Corteva Agriscience is required to submit reports within three months of the Agency's request.

7. Corteva Agriscience must allow a review of the grower agreements and grower agreement records by EPA or by a State pesticide regulatory agency if the State agency can demonstrate that confidential business information, including names, personal information, and grower license numbers of the growers, will be protected.

c. IRM Education and IRM Compliance Monitoring Program for PowerCore® Enlist® Corn

1. Corteva Agriscience must implement and enhance (as set forth in paragraph 17 of this section) a comprehensive, ongoing IRM education program designed to convey to PowerCore® Enlist® Corn users the importance of complying with the IRM program. The program shall include information encouraging PowerCore® Enlist® Corn users to pursue optional elements of the IRM program relating to refuge configuration and proximity to PowerCore® Enlist® Corn fields. The education program shall involve the use of multiple media, e.g. face-to-face meetings, mailing written materials, EPA-reviewed language on IRM requirements on the bag or bag tag, and electronic communications such as by internet, radio, or television commercials. The program shall involve at least one written communication annually to each PowerCore® Enlist® Corn user separate from the grower technical guide. The communication shall inform the user of the current IRM requirements. Corteva Agriscience shall coordinate its education program with the educational efforts of other registrants and other organizations, such as the National Corn Growers Association and state extension programs.

2. Corteva Agriscience shall revise, and expand as necessary, its education program to take into account the information collected through the compliance survey, required under paragraphs 6–9 of

this section, and from other sources. The changes shall address aspects of grower compliance that are not sufficiently high.

3. Upon EPA request, Corteva Agriscience shall provide copies of grower education materials and information on grower education activities including any substantive changes to these materials and activities conducted either individually or as part of the industry working group Agricultural Biotechnology Stewardship Technical Committee (ABSTC). Corteva Agriscience is required to submit reports within three months of the Agency's request. The required features of the compliance assurance program are described in paragraphs 4–22 of this section.

4. Corteva Agriscience must implement and improve an ongoing IRM compliance assurance program designed to evaluate the extent to which growers purchasing PowerCore® Enlist® Corn are compliant with the IRM program, and that takes such actions as are reasonably needed to assure that growers who have not complied with the program either do so in the future or lose their access to Corteva Agriscience' *Bt* corn products. Corteva Agriscience shall coordinate with other *Bt* corn registrants in improving its compliance assurance program and integrate this registration into the current compliance assurance program used for its other *Bt* corn plant-incorporated protectants. Other required features of the program are described in paragraphs 5–22 of this section.

5. Corteva Agriscience must maintain and publicize a phased compliance approach (i.e., a guidance document that indicates how it will address instances of non-compliance with the terms of the IRM program and general criteria for choosing among options for responding to any non-compliant growers after the first year of non-compliance). While recognizing that for reasons of difference in business practices there are needs for flexibility between different companies, Corteva Agriscience must use a consistent set of standards for responding to non-compliance. An individual grower found to be significantly out of compliance two (2) years in a row would be denied access the next year to Corteva Agriscience' *Bt* corn products for which the grower is required to plant a separate structured refuge. Similarly, seed dealers who are not fulfilling their obligations to inform/educate growers of their IRM obligations will lose their opportunity to sell *Bt* corn.

6. The IRM compliance assurance program shall include an annual survey, conducted by an independent third party, of a statistically representative sample of growers PowerCore® Enlist® Corn. The survey shall be conducted in odd-numbered years beginning in 2021 and shall include growers who plant 100 or more acres of corn in the Southern U.S. corn-cotton areas. Corteva Agriscience may collaborate with other registrants of *Bt* corn [for example, through the industry working group the Agricultural Biotechnology Stewardship Technical Committee (ABSTC)] to conduct the survey.

   In the U.S. Corn Belt, no anonymous grower survey is required for PowerCore® Enlist® Corn if Corteva Agriscience can demonstrate that the industry-wide adoption of integrated refuge products (i.e., refuge seed blends) is equal to or greater than 70% of *Bt* corn acres in the Corn Belt. If industry- wide adoption of integrated refuge products (i.e., refuge seed blends) falls below 70% of *Bt* corn acres in the Corn Belt, an anonymous grower survey shall also be conducted in this region during the next growing season using a statistically representative sample of growers who plant 200 or more acres of corn, and grower surveys shall be continued every odd-numbered year until the industry-wide adoption of integrated refuge products (i.e., refuge seed blends) is again equal to or greater than 70% of *Bt* corn acres in this region. Corteva Agriscience may collaborate with other registrants of *Bt* corn (for example, through the industry working group the ABSTC) to compile the integrated refuge adoption data and to conduct the surveys.

Alternatively, if Corteva Agriscience is not a participant of an industry working group (e.g., the ABSTC) and Corteva Agriscience' sales of integrated refuge products are equal to or greater than 70% of Corteva Agriscience' total *Bt* corn sales in the prior year, then no anonymous grower survey is required in the U.S. Corn Belt. If Corteva Agriscience' sales of integrated refuge products fall below 70% of Corteva Agriscience' total *Bt* corn sales, an anonymous grower survey shall also be conducted in this region during the next growing season using a statistically representative sample of growers who plant 200 or more acres of corn, and grower surveys shall be continued every odd-numbered year until sales of integrated refuge products (i.e., refuge seed blends) are again equal to or greater than 70% of Corteva Agriscience' total *Bt* corn sales in this region.

- A third party is classified as a party other than the registrant, the grower, or anyone else with a direct interest in IRM compliance for *Bt* corn.

7. The survey shall be designed to provide an understanding of any difficulties growers encounter in implementing IRM requirements. An analysis of survey results must include the reasons, extent, and potential biological significance of any implementation deviations.

8. The survey shall be designed to obtain grower feedback on the usefulness of specific educational tools and initiatives.

9. In years in which the survey is conducted, Corteva Agriscience shall provide a final written summary of the results of the survey (together with a description of the regions, the methodology used, and the supporting data) to EPA on or before January 31st of the following year. Corteva Agriscience shall confer with other registrants and EPA on the design and content of the survey prior to its implementation.

10. Corteva Agriscience shall revise, and expand as necessary, its compliance assurance program to take into account the information collected through the compliance survey, required under paragraphs 6–9 of this section, and from other sources. The changes shall address aspects of grower compliance that are not sufficiently high. Corteva Agriscience must confer with EPA prior to adopting any changes.

11. Corteva Agriscience shall conduct and enhance an annual on-farm assessment program. Corteva Agriscience shall train its representatives who make on-farm visits with PowerCore® Enlist® Corn growers to perform assessments of compliance with IRM requirements. There is no minimum corn acreage size for this program. Therefore, growers will be selected for this program from across all farm sizes. In the event that any of these visits result in the identification of a grower who is not in compliance with the IRM program, Corteva Agriscience shall take appropriate action, consistent with its phased compliance approach, to promote compliance.

12. Corteva Agriscience shall implement a program for investigating legitimate tips and complaints that PowerCore® Enlist® Corn growers are not in compliance with the IRM program. Whenever an investigation results in the identification of a grower who is not in compliance with the IRM program, Corteva Agriscience shall take appropriate action, consistent with its phased compliance approach.

13. If a grower, who purchases PowerCore® Enlist® Corn for planting, was specifically identified as not being in compliance during the previous year, Corteva Agriscience shall visit with the grower

and evaluate whether the grower is in compliance with the IRM program for the current year.

14. Annually, by January 31st each year, Corteva Agriscience must provide a report to EPA summarizing the PowerCore® Enlist® Corn compliance assurance program activities and results for the prior year and plans for the PowerCore® Enlist® Corn compliance assurance program for the current year. Within one month of submitting this report to EPA, the registrant shall meet with EPA to discuss its findings. The report must inform EPA of the number of growers deemed ineligible to purchase *Bt* corn seed on the basis of continued non-compliance with the insect resistance management refuge requirements. Corteva Agriscience may elect to coordinate information with other registrants and report collectively the results of compliance assurance programs.

15. Corteva Agriscience and the seed corn dealers for Corteva Agriscience must allow a review of the compliance records by EPA or by a State pesticide regulatory agency if the State agency can demonstrate that confidential business information, including the names, personal information, and grower license numbers of the growers, will be protected.

16. Corteva Agriscience shall revise and expand its existing Compliance Assurance Program to include the following elements. The registrant may coordinate with other registrants in designing and implementing its Compliance Assurance Program.

17. Corteva Agriscience will enhance the refuge education program throughout the seed delivery channel:

    - Ensure sales representatives, licensees, seed dealers, and growers recognize the importance of correct refuge implementation and potential consequences of failure to plant the required refuge.

    - Implement a “bag tag” that will be attached to all bags of PowerCore® Enlist® Corn seed sold and delivered. The purpose of this bag tag is to remind growers that PowerCore® Enlist® Corn products require 20% lepidopteran refuge in cotton growing areas. The PIP product label accepted by EPA must include how this information will be conveyed to growers via text and graphics.

18. Corteva Agriscience will focus the majority of on-farm assessments on regions with the greatest risks for resistance:

    - Use *Bt* corn adoption, pest pressure information, and other available information to identify regions where the risk of resistance is greatest;

    - Focus approximately two-thirds of on-farm assessments on these regions, with the remaining assessments conducted across other regions where PowerCore® Enlist® Corn is used.

19. Corteva Agriscience will use its available PowerCore® Enlist® Corn sales records and other information to refine grower lists for on-farm assessments of their compliance with refuge requirements:

- Identify for potential on-farm assessment growers whose sales information indicates they have purchased PowerCore® Enlist® Corn product but may have purchased little or no refuge seed from the registrant, licensee, or affiliated company.

20. Corteva Agriscience will contract with third parties to perform on-farm assessments of compliance with refuge requirements:

    - The third-party assessors will conduct all first-time on-farm assessments as well as second-year on-farm assessments of those growers found out of compliance in a first- time assessment.

21. Corteva Agriscience will annually refine the on-farm assessment program for the PowerCore® Enlist® Corn product to reflect the adoption rate and level of refuge compliance for the product.

22. Corteva Agriscience will follow up with growers who have been found significantly out of compliance under the on-farm assessment program and are found to be back in compliance the following year:

    - All growers found to be significantly out of compliance in a prior year will annually be sent additional refuge assistance information for a minimum of two years by Corteva Agriscience, seed supplier, or third party assessor, after completing the assessment process;

    - Corteva Agriscience will conduct follow-up checks on growers found to be significantly out of compliance within three years after they are found to be back in compliance;

    - A grower found with a second incident of significant non-compliance with refuge requirements for the *Bt* corn product within a five-year period will be denied access to Corteva Agriscience' *Bt* corn products the next year. Similarly, seed dealers who are not fulfilling their obligations to inform/educate growers of their IRM obligations will lose their opportunity to sell *Bt* corn.

d. Insect Resistance Monitoring and Mitigation Plan for PowerCore® Enlist® Corn

EPA is imposing the following conditions for the Cry1A.105, Cry2Ab2, and Cry1F toxins expressed in PowerCore® Enlist® Corn

Corteva Agriscience will monitor for resistance to Cry1A.105, Cry2Ab2, and Cry1F expressed in PowerCore® Enlist® Corn. The monitoring program shall consist of two approaches: (1) focused population sampling and laboratory testing; and (2) investigation of reports of less-than expected control of labeled insects. Should field-relevant resistance be confirmed, an appropriate resistance management action plan will be implemented.

Focused Population Sampling

Corteva Agriscience shall annually sample and bioassay populations of the key target pests: *Ostrinia nubilalis* (European corn borer; ECB), *Diatraea grandiosella* (southwestern corn borer; SWCB), and *Helicoverpa zea* (corn earworm; CEW). Sampling for the target pests will be focused in areas identified as those with the highest risk of resistance development (e.g., where lepidopteran active *Bt* hybrids are planted on a high proportion of the corn acres, and where the insect species are regarded as key pests of

corn). Bioassay methods must be appropriate for the goal of detecting field-relevant shifts in population response to PowerCore® Enlist® Corn and/or changes in resistance allele frequency in response to the use of PowerCore® Enlist® Corn and, as far as possible, should be consistent across sampling years to enable comparisons with historical data.

The number of populations to be collected shall reflect the regional importance of the insect species as a pest, and specific collection regions will be identified for each pest. For ECB, a minimum of twelve (12) populations across the sampling region will be targeted for collection at each annual sampling. For SWCB, the target will be a minimum of six (6) populations. For CEW, the target will be a minimum of ten (10) populations. Pest populations should be collected from multiple corn-growing states reflective of different geographies and agronomic conditions. To obtain sufficient sensitivity to detect resistance alleles before they become common enough to cause measurable field damage, each population collection shall attempt to target 400 insect genomes (egg masses, larvae, mated females, and/or mixed-sex adults), but a successful population collection will contain a minimum of 100 genomes. It is recognized that it may not be possible to collect the target number of insect populations or genomes due to factors such as natural fluctuations in pest density, environmental conditions, and area-wide pest suppression.

The sampling program and geographic range of collections may be modified as appropriate based on changes in pest importance and for the adoption levels of PowerCore® Enlist® Corn. EPA shall be consulted prior to the implementation of such modifications.

Corteva Agriscience will report to EPA, on or before August 31st of each year, the results of the population sampling and bioassay monitoring program.

Any incidence of unusually low sensitivity to the Cry1A.105, Cry2Ab2, or Cry1F proteins in bioassays shall be investigated as soon as possible to understand any field relevance of such a finding. Such investigations shall proceed in a stepwise manner until the field relevance can be either confirmed or refuted, and results of these shall be reported to EPA annually on or before August 31st. The investigative steps will include the following:

i. Re-test progeny of the collected population to determine whether the unusual bioassay response is reproducible and heritable. If it is not reproducible and heritable, no further action is required.

ii. If the unusual response is reproducible and heritable, progeny of insects that survive the diagnostic concentration will be tested using methods that are representative of exposure to PowerCore® Enlist® Corn under field conditions. If progeny do not survive to adulthood, any suspected resistance is not field relevant and no further action is required.

iii. If insects survive steps 1 and 2, resistance is confirmed, and further steps will be taken to evaluate the resistance. These steps may include the following:

    a. Determining the nature of the resistance (i.e., recessive or dominant, and the level of functional dominance);
    b. Estimating the resistance allele frequency in the original population;
    c. Determining whether the resistance allele frequency is increasing by analyzing field collections in subsequent years sampled from the same site where the resistance allele(s)

was originally collected;

d. Determining the geographic distribution of the resistance allele by analyzing field collections in subsequent years from sites surrounding the site where the resistance allele(s) was originally collected.

Should field-relevant resistance be confirmed, and the resistance appears to be increasing or spreading, Corteva Agriscience will consult with EPA to develop and implement a case-specific resistance management action plan.

Investigation of Reports of Unexpected Levels of Damage by the Target Pests

Corteva Agriscience will follow up on grower, extension specialist, or consultant reports of unexpected levels of damage by the lepidopteran pests listed on the pesticide label. Corteva Agriscience will instruct its customers to contact them if such incidents occur. Corteva Agriscience will investigate all legitimate reports submitted to the company or the company's representatives.

If reports of unexpected levels of damage lead to the suspicion of resistance in any of the key target pests (ECB, SWCB, and CEW), Corteva Agriscience will implement the actions described below, based on the following definitions of ***suspected resistance*** and ***confirmed resistance***.

Suspected Resistance

EPA defines ***suspected resistance*** to mean field reports of unexpected levels of insect-feeding damage for which:

- The corn in question has been confirmed to be lepidopteran-active *Bt* corn;
- The relevant plant tissues are expressing the expected level of *Bt* protein; and
- It has been ruled out that species not susceptible to the protein could be responsible for the damage, that no climatic or cultural reasons could be responsible for the damage, and
- That there could be no other reasonable causes for the damage.

EPA does not interpret ***suspected resistance*** to mean grower reports of possible control failures or suspicious results from annual insect monitoring assays, nor does EPA intend that extensive field studies and testing be undertaken to confirm scientifically the presence of insects resistant to PowerCore® Enlist® Corn in commercial production fields before responsive measures are undertaken.

If resistance is ***suspected***, Corteva Agriscience will instruct growers to do the following:

- Use alternative control measures in PowerCore® Enlist® Corn fields in the affected region to control the target pest during the immediate growing season.
- Destroy PowerCore® Enlist® Corn crop residues in the affected region within one (1) month after harvest with a technique appropriate for local production practices to minimize

the possibility of resistant insects over- wintering and contributing to the next season's target pest population.

Additionally, if possible, and prior to the application of alternative control measures or destruction of crop residues, Corteva Agriscience will collect samples of the insect population in the affected fields for laboratory rearing and testing. Such rearing and testing shall be conducted as expeditiously as practical.

Confirmed Resistance

EPA defines ***confirmed resistance*** to mean, in the case of field reports of unexpected levels of damage from the key target pests, that all the following criteria are met:

- There is >30% insect survival and commensurate insect feeding in a bioassay, initiated with neonate larvae, that uses methods that are representative of exposure to *Bt* corn hybrids under field conditions (ECB and SWCB only).

- In standardized laboratory bioassays using diagnostic concentrations of the *Bt* protein suited to the target pest in question, the pest exhibits resistance that has a genetic basis and the level of survivorship indicates that there may be a resistance allele frequency of ≥ 0.1 in the sampled population.

- In standardized laboratory bioassays, the LC_{50} exceeds the upper limit of the 95% confidence interval of the LC_{50} for susceptible populations surveyed both in the original baselines developed for this pest species and in previous years of field monitoring.

Response to Confirmed Resistance in a Key Target Pest as the Cause of Unexpected Levels of Damage in the Field

When field resistance is ***confirmed*** (as defined above), the following steps will be taken by Corteva Agriscience:

- EPA will receive notification within 30 days of resistance confirmation;

- Affected customers and extension agents will be notified about confirmed resistance within 30 days;

- Monitoring will be increased in the affected area and local target pest populations will be sampled annually to determine the extent and impact of resistance;

- If appropriate (depending on the resistant pest species, the extent of resistance, the timing of resistance, and the nature of resistance, and the availability of suitable alternative control measures), alternative control measures will be employed to reduce or control target pest populations in the affected area. Alternative control measures may include advising customers and extension agents in the affected area to incorporate crop residues into the soil following harvest to minimize the possibility of over-wintering insects, and/or applications of chemical insecticides;

- Unless otherwise agreed with EPA, stop sale and distribution of the relevant lepidopteran-

active *Bt* corn hybrids in the affected area immediately until an effective local mitigation plan, approved by EPA, has been implemented;

- Corteva Agriscience will develop a case-specific resistance management action plan within 90 days according to the characteristics of the resistance event and local agronomic needs. Corteva Agriscience will consult with appropriate stakeholders in the development of the action plan, and the details of such a plan shall be approved by EPA prior to implementation;

- Corteva Agriscience will notify affected parties (e.g., growers, consultants, extension agents, seed distributors, university cooperators, and state/federal authorities as appropriate) in the region of the resistance situation and approved action plan; and

- In subsequent growing seasons, maintain sales suspension and alternative resistance management strategies in the affected region(s) for the *Bt* corn hybrids that are affected by the resistant population until an EPA-approved local resistance management plan is in place to mitigate the resistance.

A report on results of resistance monitoring and investigations of damage reports must be submitted to EPA, on or before August 31st of each year, for the duration of the registration.

e. Annual Reporting Requirements for PowerCore® Enlist® Corn

The following annual reports must be submitted:

1. Compliance Assurance Plan: Compliance Assurance Program activities, including IRM Grower Survey results and on-farm assessment results for the prior year and plans for the compliance assurance program for the current year, on or before January 31st each year.

2. Insect Resistance Monitoring Results (Cry1A.105, Cry2Ab2, and Cry1F): results of monitoring and investigations of damage reports, August 31st of each year.

Should you wish to add/retain a reference to your company's website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the EPA. If the website is false or misleading, the product will be considered to be misbranded and sale or distribution of the product is unlawful under FIFRA section 12(a)(1)(E). 40 CFR § 156.10(a)(5) lists examples of statements the EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the EPA find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA-approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance Assurance.

Your release for shipment of this product constitutes acceptance of these conditions. If you fail to satisfy these terms and conditions, the EPA will consider appropriate regulatory action including, among other things, cancellation under FIFRA section 6(e).

A stamped copy of the current approved label is enclosed. A previously approved Confidential Statement of Formula dated October 31, 2013 is on file for this product.

If you have any questions, please contact Matt Weiner of my team via email at weiner.matthew@epa.gov or by phone at (202) 566-1509.

Sincerely,

Alan Reynolds, Team Leader
Emerging Technologies Branch
Biopesticides and Pollution
Prevention Division (7511P)
Office of Pesticide Programs

Enclosure

Plant-Incorporated Protectant Label

PowerCore® Enlist®

Insect-Protected, Herbicide-Tolerant Corn
(Alternate Brand Name MON89034 x TC1507
(Alternate Brand Name PowerCore®)

(OECD Unique Identifier: MON-89Ø34-3 × DAS-Ø15Ø7-1)

Active Ingredients:

Bacillus thuringiensis Cry1A.105 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3)	≤ 0.0026%*
Bacillus thuringiensis Cry2Ab2 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3)	≤ 0.0053%*
Bacillus thuringiensis Cry1F protein and the genetic material (vector PHP8999) necessary for its production in corn event TC1507 (OECD Unique Identifier: DAS- Ø15Ø7-1)	≤ 0.00122%*

Other Ingredients:

The marker protein, PAT (phosphinothricin acetyl transferase), and the genetic material (vector PHP8999) necessary for its production in corn event TC1507	≤ 0.00045%*

*Maximum percent (wt/wt) of dry forage

KEEP OUT OF REACH OF CHILDREN NET CONTENTS_____

CAUTION

EPA Registration No. 68467-12

EPA Establishment No. 62719-IN-1

Corteva Agriscience LLC
9330 Zionsville Rd.
Indianapolis, IN 46268

DIRECTIONS FOR USE

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

This plant-incorporated protectant (PIP) may be combined through conventional breeding with other registered plant-incorporated protectants that are similarly approved for use in combination, through conventional breeding, with other registered plant-incorporated protectants to produce inbred corn lines and hybrid corn varieties with combined pesticidal traits.

PowerCore® Enlist® protects corn crops from leaf, stalk, and ear damage caused by lepidopteran corn pests listed on this label. In order to minimize the risk of these pests developing resistance PowerCore® Enlist® corn an insect resistance management plan must be implemented which includes planting of a structured refuge. Growers who fail to comply with the IRM requirements risk losing access to Corteva's corn PIP products that require a separate structured refuge.

These refuge requirements do not apply to seed propagation of inbred and hybrid seed corn up to a total of 20,000 acres per county and up to a combined US total of 250,000 acres per PIP active ingredient per year.

Grower agreements will specify that growers must adhere to the refuge requirements that will be described in the Product Use Guide for PowerCore® Enlist® corn or other applicable product use documents.

Sales of corn hybrids that contain Bt corn plant-incorporated pesticide(s) must be accompanied by a Product Use Guide which includes information on planting, production, and insect resistance management and notes that routine applications of insecticides to control these insects are usually unnecessary when corn containing the Bt proteins is planted.

INSECT RESISTANCE MANAGEMENT

Growers are instructed to read information on insect resistance management.

These refuge requirements do not apply to seed increase/propagation of inbred and hybrid seed corn up to a total of 20,000 acres per county and up to a combined United States (U.S.) total of 250,000 acres per plant-incorporated protectant (PIP) active ingredient per registrant per year.

The following information regarding commercial production must be included in grower guides and bag tags for PowerCore® Enlist® corn in cotton and non-cotton growing areas

1) *Refuge size,* Corn-Growing Areas (Corn Belt and other non-corn/cotton-growing regions). The use of PowerCore® Enlist® corn requires an accompanying 5% refuge consisting of non-*Bt* corn and/or non-lepidopteran resistant Bt corn

2) *Refuge size*, Corn/Cotton-Growing Areas*. The use of PowerCore® Enlist® corn requires an accompanying 20% refuge consisting of non-*Bt* corn and/or non-lepidopteran resistant Bt corn.

3) *Refuge location*

- Refuge planting options include: separate fields, blocks within fields (e.g., along the edges or headlands), and strips across the field.
- External refuges must be planted within ½ mile.
- When planting the refuge in strips across the field, refuges must be at least 4 rows wide.

4) *Refuge management*

- Insecticide treatments for control of European corn borer, corn earworm, southwestern corn borer and other lepidopteran target pests listed on the label, grower guides, or other educational material may be applied only if economic thresholds are reached for one or more of these target pests. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants). Instructions to growers will specify that microbial *Bt* insecticides must not be applied to non-*Bt* corn and/or non-lepidopteran resistant Bt corn refuges.

*The cotton-growing region requiring 20% refuge consists of the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas(except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex) and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard).

Corn Insects Controlled or Suppressed

European corn borer (ECB)	*Ostrinia nubilalis*
Southwestern corn borer (SWCB)	*Diatraea grandiosella*
Southern cornstalk borer (SCSB)	*Diatraea crambidoides*
Corn earworm (CEW)	*Helicoverpa zea*
Fall armyworm (FAW)	*Spodoptera frugiperda*
Stalk borer	*Papaipema nebris*
Lesser corn stalk borer	*Elasmopalpus lignosellus*
Sugarcane borer (SCB)	*Diatraea saccharalis*
Western bean cutworm (WBC)	*Richia albicosta*
Black cutworm	*Agrotis ipsilon*

EPA Accepted: _____/_____/_____

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

May 22, 2023

Ashley Young
U.S. Seeds Regulatory Specialist
Corteva Agriscience LLC
7100 NW 62 Avenue
PO Box 1000
Johnston, IA 50131-1000

Subject: Non-PRIA (Pesticide Registration Improvement Act) Labeling Amendment –Revision to the Name of the Company
Product Name: DAS-81419-2 Soybean
EPA Registration Number: 62719-696
EPA Receipt Date: March 3, 2023
Action Case Number: 00439362

Dear Ms. Young:

The amended labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is acceptable.

The primary company name of this product has been changed from Dow Agrosciences LLC to Corteva Agriscience LLC, and our records have been updated accordingly. This approval does not affect any terms or conditions that were previously imposed on this registration. You continue to be subject to existing terms or conditions on your registration and any deadlines connected with them.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one (1) copy of the final printed labeling before you release this product for shipment with the new labeling. In accordance with 40 CFR § 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. “To distribute or sell” is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR § 152.3.

Should you wish to add/retain a reference to your company’s website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the U.S. Environmental Protection Agency (EPA). If the website is false or misleading, the product will be considered to be misbranded and sale or distribution of the product is unlawful under FIFRA section 12(a)(1)(E). 40 CFR § 156.10(a)(5) lists examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product’s label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should EPA find or if it is brought to our attention that a website contains statements or claims substantially differing from statements or claims made in connection with obtaining a FIFRA

section 3 registration, the website will be referred to EPA's Office of Enforcement and Compliance Assurance.

Your release for shipment of this product constitutes acceptance of these terms. If these terms are not complied with, this registration will be subject to cancellation in accordance with FIFRA section 6. If you have any questions, please contact Leslie Paul via email at paul.leslie@epa.gov.

Sincerely,

Digitally signed by ALAN REYNOLDS
Date: 2023.05.22 16:47:51 -04'00'

Alan Reynolds, Team Leader
Emerging Technologies Branch
Biopesticides and Pollution
Prevention Division (7511M)
Office of Pesticide Programs

Enclosure: Final Stamped Label

Plant-Incorporated Protectant Label

DAS-81419-2 Soybean

OECD Unique Identifier: DAS-81419-2

Active Ingredients:

Bacillus thuringiensis Cry1Ac protein and the genetic material (vector pDAB9582) necessary for its production in DAS-81419-2 soybean (OECD Unique Identifier DAS-81419-2)……..….≤ 0.00014%*

Bacillus thuringiensis Cry1F protein and the genetic material (vector pDAB9582) necessary for its production in DAS-81419-2 soybean (OECD Unique Identifier DAS-81419-2)……. ≤ 0.00169%*

Other Ingredient:
PAT protein (phosphinothricin acetyl transferase) and the genetic material (vector pDAB9582) necessary for its production in DAS-81419-2 soybean (OECD Unique Identifier: DAS-81419-2) …… ≤0.00011%*

*Maximum percent (wt/wt) of dry grain.

KEEP OUT OF REACH OF CHILDREN NET CONTENTS _____

CAUTION

EPA Registration No. 62719-696

EPA Establishment No. 62719-IN-1

Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

DIRECTIONS FOR USE

It is a violation of Federal law to use this plant-incorporated protectant in a manner inconsistent with its labeling.

DAS-81419-2 Soybean was transformed to express *Bacillus thuringiensis* Cry1Ac and Cry1F insecticidal proteins. The insect-protected DAS-81419-2 Soybean may be used only for seed increase, breeding, research, and seed production in breeding nurseries and research stations as specified in the terms of this registration and on this label.

The insect-protected soybean may be grown on up to a total of 250,000 acres per year with no more than 20,000 acres per county (in non-cotton growing regions); 10,000 acres per county (in cotton-growing counties with at least 25,000 acres of soybean); or 1,000 acres per county (in cotton-growing counties with less than 25,000 acres of soybean) per year in the United States and the Commonwealth of Puerto Rico. Cotton growing regions are defined as follows: Alabama, Arkansas, Florida, Georgia, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex), and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard).

Equipment used for planting, harvesting, and handling of this insect-protected soybean must be thoroughly cleaned before further use. All plant propagation materials produced by Dow AgroSciences LLC and its cooperators that contain the insect-protected soybean must be securely stored for export, future planting, research, or use for additional plant propagation materials pursuant to the terms of this registration. Harvested seeds are not allowed for sale as commercial seed in the U.S.

EPA Accepted: _____.

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Pesticide Programs
Biopesticides and Pollution Prevention Division (7511M)
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

NOTICE OF PESTICIDE:
☒Registration
☐Reregistration
(under FIFRA, as amended)

EPA Reg. Number:	Date of Issuance:
62719-706	6/28/2022

Term of Issuance:
Unconditional

Name of Pesticide Product:
SmartStax®PRO Enlist®

Name and Address of Registrant (include ZIP Code):

Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Biopesticides and Pollution Prevention Division prior to use of the label in commerce. In any correspondence on this product, always refer to the above EPA Registration Number.

On the basis of information furnished by the registrant, the above-named pesticide is hereby registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA or the Act).

Registration is in no way to be construed as an endorsement or recommendation of this product by the U.S. Environmental Protection Agency (EPA). In order to protect health and the environment, the Administrator, on his or her motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under the Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is unconditionally registered in accordance with FIFRA section 3(c)(5) provided that you comply with the following terms:

1. The subject registration will automatically expire at midnight on June 30, 2023.

Signature of Approving Official:

Alan Reynolds, Team Leader
Emerging Technologies Branch
Biopesticides and Pollution Prevention Division (7511P)

Date:
6/28/2022

2. The subject registration will be limited to *Bacillus thuringiensis* Cry1A.105 and Cry2Ab2 proteins and the genetic material necessary for their production (vector PV-ZMIR245) in MON 89034 corn (OECD Unique Identifier: MON-89Ø34-3), *Bacillus thuringiensis* Cry1F protein and the genetic material necessary for its production (vector PHP8999) in TC1507 corn (OECD Unique Identifier: DAS-Ø15Ø7-1), *Bacillus thuringiensis* Cry34Ab1/Cry35Ab1 proteins and the genetic material necessary for their production (vector PHP17662) in DAS-59122-7 corn (OECD Unique Identifier: DAS-59122-7), *DvSnf7* dsRNA [Double-stranded ribonucleic acid transcript comprising a *DvSnf7* inverted repeat sequence derived from western corn rootworm (*Diabrotica virgifera virgifera*)], and *Bacillus thuringiensis* Cry3Bb1 protein and the genetic material necessary for their production (vector PV-ZMIR10871) in MON 87411 corn (OECD Unique Identifier: MON-87411-9) corn for use in field corn.

3. Submit/cite all data required for registration of your product under FIFRA section 3(c)(5) when the Environmental Protection Agency (EPA) requires registrants of similar products to submit such data.

4. This plant-incorporated protectant (PIP) may be combined through conventional breeding with other registered plant-incorporated protectants that are similarly approved for use in combination, through conventional breeding, with other registered plant-incorporated protectants to produce inbred corn lines and hybrid corn varieties with combined pesticidal traits.

5. Corteva Agriscience LLC (Corteva) must commit to do the following Insect Resistance Management (IRM) Program, consisting of the following elements:

   - Requirements for Corteva to implement an IPM-based stewardship program designed to reduce selection pressure for corn rootworm (CRW) resistance.

   - Requirements relating to creation of a non-PIP refuge in conjunction with the planting of any acreage of SmartStax®PRO Enlist® corn;

   - Requirements for Corteva to prepare and require SmartStax®PRO Enlist® corn users to sign grower agreements that impose binding contractual obligations on growers to comply with the refuge requirements.

   - Requirements for Corteva to develop, implement, and report to EPA on programs to educate growers about IRM requirements.

   - Requirements for Corteva to develop, implement, and report to EPA on programs to evaluate and promote growers' compliance with IRM requirements.

   - Requirements for Corteva to develop, implement, and report to EPA on monitoring programs to evaluate whether there are statistically significant and biologically relevant changes in susceptibility to the Cry1A.105, Cry2Ab2, and Cry1F proteins in the target insects.

   - Requirements for Corteva to develop, and if triggered, to implement a remedial action plan that would contain measures Corteva would take in the event that any field-relevant insect resistance to Cry1A.105, Cry2Ab2, and Cry1F was detected, as well as to report on activity under the plan to EPA.

   - Requirements for Corteva to investigate reports of unexpected CRW damage to SmartStax®PRO Enlist® corn from growers ("performance inquiries") and sample CRW to

determine if the insects are resistant to Cry34/35Ab1, DvSnf7 dsRNA, or Cry3Bb1.

- Requirements for Corteva to recommend CRW management options to growers in response to cases of unexpected CRW damage to SmartStax®PRO Enlist® corn.

- Requirements regarding mitigation and notification actions that Corteva would take in the event that CRW resistance was detected.

- Requirements for Corteva to maintain, and provide the Agency upon request, the number of units sold by state and county, IRM grower agreement results, and substantive changes to educational programs. Corteva is required to submit reports within three months of the Agency's request.

- Bag Tag Requirements for SmartStax®PRO Enlist® corn. Seed bags and/or bag tags for corn hybrids that contain plant- incorporated protectants produced in SmartStax®PRO Enlist® corn must display the registration number and active ingredients, and stipulate that growers read the Corteva Stewardship Guide (or equivalent guidance) prior to planting these hybrids. The refuge size requirement must be displayed on the bag or bag tag in both text and graphic format.

- Requirements for Corteva, on or before January 31st of each year, to submit reports on Cry1A.105, Cry2Ab2, and Cry1F resistance monitoring.

a. Integrated Pest Management Stewardship Program

1. Corteva must implement an IPM-based stewardship program for SmartStax®PRO Enlist® corn. This program must be designed to reduce selection pressure for corn rootworm (CRW) resistance by encouraging growers to engage in a multi-year crop rotation strategy involving the use of one or more of the following: a non-CRW host crop (e.g., soybean), pyramided *Bt* corn Plant Incorporated Protectants (PIPs), other PIP corn products with different modes of action, and/or non-*Bt* or non-CRW protected PIP corn. As part of the stewardship program, Corteva must update the technology use guide/grower guide and other grower educational materials to indicate that application of an insecticide to the soil surface, in furrows, and/or incorporated into the soil (referred to as "soil applied insecticide", "soil insecticide" or "SAI") with SmartStax®PRO Enlist® corn is not recommended for control of CRW except under limited circumstances and in consultation with extension, crop consultants or other local experts. Grower education materials should also state that SAIs should not be necessary for CRW control with pyramided CRW trait *Bt* corn product(s). As part of the stewardship program, Corteva must promote the ABSTC/NCGA Best Management Practices (BMPs) for CRW control. Implementation of the IPM strategy can include:

   - Grower education initiatives or incentives;
   - Outreach to extension and consultant groups.

2. Corteva must submit an annual report to EPA documenting activities conducted under the IPM stewardship program. This report must include an anonymous survey of grower practices, including adoption levels of the various crop rotation options (if employed) and other elements of the stewardship program. Corteva may combine this product with other registered products to submit one annual report. The report must be submitted by January 31st each year.

b. Refuge Requirements for SmartStax®PRO Enlist®

The following information must be included on the product bag or bag-tag as sold per respective region and in the Grower Guide:

These refuge requirements do not apply to planting of inbred/hybrid corn seed productions, breeding, and small-scale research trials on up to a total of 20,000 acres per county and up to a combined United States (U.S.) total of 250,000 acres per plant-incorporated protectant (PIP) active ingredient per registrant per year. Grower agreements (also known as stewardship agreements) will specify that growers must adhere to the refuge requirements as described in the grower guide/product use guide and/or in supplements to the grower guide/product use guide.

Common Refuge

A common refuge must be planted for both corn borers and corn rootworm. The common refuge:

- Must be planted with corn hybrids that do not contain PIP technologies for the control of corn rootworm or corn borers.
- SmartStax®PRO Enlist® corn and the non-PIP refuge should be sown on the same day, or with the shortest window possible between planting dates to ensure that corn root development is similar among varieties.
- If the refuge is planted on rotated ground, then the SmartStax®PRO Enlist® corn must also be planted on rotated ground.
- If the combined refuge is planted on continuous corn, the SmartStax®PRO Enlist® field may also be planted on either continuous or rotated land (option encouraged where WCRW rotation resistant biotype may be present).
- Refuge options are based on the planting of SmartStax®PRO Enlist® corn in cotton or non-cotton growing regions and the insect pressure present in those locations. The refuge sizes for these regions are either 20% in cotton growing regions or 5% in non-cotton growing regions (refer to the table below).
- In regions where corn rootworm is a significant pest:

  i. The common refuge must be planted as an in-field or adjacent refuge using corn hybrids that do not contain PIP technologies for the control of corn borers or corn rootworms.

  ii. The common refuge can be planted as:

    a. A block within or adjacent (e.g., across the road) to the SmartStax®PRO Enlist® corn field;
    b. Perimeter strips (i.e., along the edges or headlands); or
    c. In-field strips.

  iii. If perimeter or in-field strips are implemented as refuge, the strips must be at least four (4) rows wide.

- In regions where corn rootworm is not a significant pest:

  i. The common refuge may be planted as an in-field or adjacent refuge or as a separate block. Corn hybrids that do not contain PIP technologies for the control of corn borers or corn rootworms must be used for the refuge.

  ii. Separate block refuges must be planted within ½ mile of the SmartStax®PRO Enlist® field.

  iii. If perimeter or in-field strips are implemented as refuge, the strips must be at least four (4) rows wide.

- The common refuge can be protected from lepidopteran damage by use of non-PIP insecticides if the population of one or more target lepidopteran pests of SmartStax®PRO Enlist® if economic thresholds are exceeded in the refuge. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants).

- The common refuge can be protected from CRW damage by an appropriate seed treatment or soil insecticide; however, insecticides labeled for adult CRW control must be avoided in the refuge during the period of CRW adult emergence. If insecticides are applied to the refuge for control of CRW adults, the same treatment must be applied in the same timeframe to SmartStax®PRO Enlist®.

Region	**Refuge Size**	**In-field or adjacent refuge is allowed**	**Refuge separated by up to ½ mile is allowed**
Cotton growing where CEW is a significant pest and WCRW, NCRW and MCRW are not significant: AR, NC, SC, GA, FL, TN (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), AL, MS, LA, VA (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex)	20% non-PIP corn	Yes	Yes
Cotton growing where CEW is a significant pest and WCRW, NCRW, and/or MCRW are significant: TX (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman), OK (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), MO (only the counties of Dunkin, New Madrid, Pemiscot, Scott, and Stoddard)	20% non-PIP corn	Yes	No
Cotton growing where CEW is not a significant pest and WCRW, NCRW, and MCRW are not significant: NM, AZ, CA, NV	5% non-PIP corn	Yes	Yes

Non-cotton growing where WCRW, NCRW and MCRW are not significant: OR, WA, ID, MT, WY, UT, VA (except the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex), WV, PA, MD, DE, CT, RI, NJ, NY, ME, MA, NH, VT, HI, AK, TN (except the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton)	5% non-PIP corn	Yes	Yes
Non-cotton growing where WCRW, NCRW and/or MCRW are significant: KS, NE, SD, ND, MN, IA, MO (except the counties of Dunkin, New Madrid, Pemiscot, Scott, and Stoddard), IL, WI, MI, IN, OH, KY, CO, OK (except the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), TX (only the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman)	5% non-PIP corn	Yes	No

c. Grower Agreements for SmartStax®PRO Enlist®

1. Persons purchasing SmartStax®PRO Enlist® corn must sign a grower agreement. The term grower agreement refers to any grower purchase contract, license agreement, or similar legal document.

2. The grower agreement and/or specific stewardship documents referenced in the grower agreement must clearly set forth the terms of the current IRM program. By signing the grower agreement, a grower must be contractually bound to comply with the requirements of the IRM program.

3. Corteva must continue to integrate this registration into the current system used for its other *Bt* corn plant- incorporated protectants, which is reasonably likely to assure that persons purchasing SmartStax®PRO Enlist® corn will affirm annually that they are contractually bound to comply with the requirements of the IRM program.

4. Corteva must continue to use its current grower agreement for SmartStax®PRO Enlist® corn. If Corteva wishes to change any part of the grower agreement or any specific stewardship documents referenced in the grower agreement that would affect either the content of the IRM program or the legal enforceability of the provisions of the agreement relating to the IRM program, then thirty (30) days prior to implementing a proposed change, Corteva must submit to EPA the text of such changes to ensure that it is consistent with the terms and conditions of this amended registration.

5. Corteva shall maintain records of all SmartStax®PRO Enlist® corn grower agreements for a period of three (3) years from December 31st of the year in which the agreement was signed.

6. Corteva shall make available to the Agency upon request records of the number of units of SmartStax®PRO Enlist® corn seed sold or shipped and not returned, and the number of such units that were sold to persons who have signed grower agreements for the previous growing season. Corteva is required to submit reports within three months of the Agency's request.

7. Corteva must allow a review of the grower agreements and grower agreement records by EPA or by a State pesticide regulatory agency if the State agency can demonstrate that confidential business information, including names, personal information, and grower license numbers of the growers, will be protected.

d. IRM Education and IRM Compliance Monitoring Program for SmartStax®PRO Enlist®

1. Corteva must implement and enhance (as set forth in paragraph 17 of this section) a comprehensive, ongoing IRM education program designed to convey to SmartStax®PRO Enlist® corn users the importance of complying with the IRM program, as well as product performance expectations and guidance to growers on actions to take when unexpected damage occurs. The program shall include information encouraging SmartStax®PRO Enlist® corn users to pursue optional elements of the IRM program relating to refuge configuration and proximity to SmartStax®PRO Enlist® corn fields. The education program shall involve the use of multiple media, e.g. face-to-face meetings, mailing written materials, EPA-reviewed language on IRM requirements on the bag or bag tag, and electronic communications such as by internet, radio, or television commercials. The program shall involve at least one written communication annually to each SmartStax®PRO Enlist® corn user separate from the grower technical guide. The communication shall inform the user of the current IRM requirements. Corteva shall coordinate its education program with the educational efforts of other registrants and other organizations, such as the National Corn Growers Association and state extension programs.

2. Corteva shall revise, and expand as necessary, its education program to take into account the information collected through the compliance survey, required under paragraphs 6–9 of this section, and from other sources. The changes shall address aspects of grower compliance that are not sufficiently high.

3. Upon EPA request, Corteva shall provide copies of grower education materials and information on grower education activities including any substantive changes to these materials and activities conducted either individually or as part of the industry working group Agricultural Biotechnology Stewardship Technical Committee (ABSTC). Corteva is required to submit reports within three months of the Agency's request. The required features of the compliance assurance program are described in paragraphs 4–22 of this section.

4. Corteva must implement and improve an ongoing IRM compliance assurance program designed to evaluate the extent to which growers purchasing SmartStax®PRO Enlist® corn are compliant with the IRM program and that takes such actions as are reasonably needed to assure that growers who have not complied with the program either do so in the future or lose their access to Corteva's *Bt* corn products. Corteva shall coordinate with other *Bt* corn registrants in improving its compliance assurance program and integrate this registration into the current compliance assurance program used for its other *Bt* corn plant-incorporated protectants. Other required features of the program are described in paragraphs 5–22 of this section.

5. Corteva must maintain and publicize a phased compliance approach (i.e., a guidance document that indicates how it will address instances of non-compliance with the terms of the IRM program and general criteria for choosing among options for responding to any non-compliant growers after the first year of non-compliance). While recognizing that for reasons of difference in business practices there are needs for flexibility between different companies, Corteva must use a consistent set of standards for responding to non-compliance. A grower found with a second incident of significant non-compliance with refuge requirements for the *Bt* corn product within a five-year period will be denied access the next year to Corteva's *Bt* corn products. Similarly, seed dealers who are not fulfilling their obligations to inform/educate growers of their IRM obligations will lose their opportunity to sell *Bt* corn.

6. The IRM compliance assurance program shall include an annual survey, conducted by an independent third-party, of a statistically representative sample of growers SmartStax®PRO Enlist® corn. The

survey shall be conducted in odd-numbered years beginning in 2023 and shall include growers who plant 100 or more acres of corn in the Southern U.S. corn-cotton areas. Corteva may collaborate with other registrants of *Bt* corn [for example, through the industry working group the Agricultural Biotechnology Stewardship Technical Committee (ABSTC)] to conduct the survey.

In the U.S. Corn Belt, no anonymous grower survey is required for SmartStax®PRO Enlist® corn if Corteva can demonstrate that the industry-wide adoption of integrated refuge products (i.e., refuge seed blends) is equal to or greater than 70% of *Bt* corn acres in the Corn Belt. If industry- wide adoption of integrated refuge products (i.e., refuge seed blends) falls below 70% of *Bt* corn acres in the Corn Belt, an anonymous grower survey shall also be conducted in this region during the next growing season using a statistically representative sample of growers who plant 200 or more acres of corn, and grower surveys shall be continued every odd-numbered year until the industry-wide adoption of integrated refuge products (i.e., refuge seed blends) is again equal to or greater than 70% of *Bt* corn acres in this region. Corteva may collaborate with other registrants of *Bt* corn (for example, through the industry working group the ABSTC) to compile the integrated refuge adoption data and to conduct the surveys.

Alternatively, if Corteva is not a participant of an industry working group (e.g., the ABSTC) and Corteva's sales of integrated refuge products are equal to or greater than 70% of Corteva's total *Bt* corn sales in the prior year, then no anonymous grower survey is required in the U.S. Corn Belt. If Corteva's sales of integrated refuge products fall below 70% of Corteva's total *Bt* corn sales, an anonymous grower survey shall also be conducted in this region during the next growing season using a statistically representative sample of growers who plant 200 or more acres of corn, and grower surveys shall be continued every odd-numbered year until sales of integrated refuge products (i.e., refuge seed blends) are again equal to or greater than 70% of Corteva's total *Bt* corn sales in this region.

- A third-party is classified as a party other than the registrant, the grower, or anyone else with a direct interest in IRM compliance for *Bt* corn.

7. The survey shall be designed to provide an understanding of any difficulties growers encounter in implementing IRM requirements. An analysis of survey results must include the reasons, extent, and potential biological significance of any implementation deviations.

8. The survey shall be designed to obtain grower feedback on the usefulness of specific educational tools and initiatives.

9. In years in which the survey is conducted, Corteva shall provide a final written summary of the results of the survey (together with a description of the regions, the methodology used, and the supporting data) to EPA on or before January 31st of the following year. Corteva shall confer with other registrants and EPA on the design and content of the survey prior to its implementation.

10. Corteva shall revise, and expand as necessary, its compliance assurance program to take into account the information collected through the compliance survey, required under paragraphs 6–9 of this section, and from other sources. The changes shall address aspects of grower compliance that are not sufficiently high. Corteva must confer with EPA prior to adopting any changes.

11. Corteva shall conduct and enhance an annual on-farm assessment program. Corteva shall train its representatives who make on-farm visits with SmartStax®PRO Enlist® corn growers to perform assessments of compliance with IRM requirements. There is no minimum corn acreage size for this program. Therefore, growers will be selected for this program from across all farm sizes. In the event that any of these visits result in the identification of a grower who is not in compliance with the IRM

program, Corteva shall take appropriate action, consistent with its phased compliance approach, to promote compliance.

12. Corteva shall implement a program for investigating legitimate tips and complaints that SmartStax®PRO Enlist® corn growers are not in compliance with the IRM program. Whenever an investigation results in the identification of a grower who is not in compliance with the IRM program, Corteva shall take appropriate action, consistent with its phased compliance approach.

13. If a grower, who purchases SmartStax®PRO Enlist® corn for planting, was specifically identified as not being in compliance during the previous year, Corteva shall visit with the grower and evaluate whether the grower is in compliance with the IRM program for the current year.

14. Annually, by January 31st each year, Corteva must provide a report to EPA summarizing the SmartStax®PRO Enlist® compliance assurance program activities and results for the prior year and plans for the SmartStax®PRO Enlist® compliance assurance program for the current year. Within one month of submitting this report to EPA, the registrant shall meet with EPA to discuss its findings. The report must inform EPA of the number of growers deemed ineligible to purchase *Bt* corn seed on the basis of continued non-compliance with the insect resistance management refuge requirements. Corteva may elect to coordinate information with other registrants and report collectively the results of compliance assurance programs.

15. Corteva and the seed corn dealers for Corteva must allow a review of the compliance records by EPA or by a State pesticide regulatory agency if the State agency can demonstrate that confidential business information, including the names, personal information, and grower license numbers of the growers, will be protected.

16. Corteva shall revise and expand its existing Compliance Assurance Program to include the following elements. The registrant may coordinate with other registrants in designing and implementing its Compliance Assurance Program.

17. Corteva will enhance the refuge education program throughout the seed delivery channel:

    - Ensure sales representatives, licensees, seed dealers, and growers recognize the importance of correct refuge implementation and potential consequences of failure to plant the required refuge.

    - Implement a “bag tag” that will be attached to all bags of SmartStax®PRO Enlist® seed sold and delivered. The refuge size requirement must be included on all PIP corn seed bags or bag tags. The PIP product label accepted by EPA must include how this information will be conveyed to growers via text and graphics.

18. Corteva will focus the majority of on-farm assessments on regions with the greatest risks for resistance:

    - Use *Bt* corn adoption, pest pressure information, and other available information to identify regions where the risk of resistance is greatest;

    - Focus approximately two-thirds of on-farm assessments on these regions, with the remaining assessments conducted across other regions where SmartStax®PRO Enlist® is used.

19. Corteva will use its available SmartStax®PRO Enlist® sales records and other information to refine grower lists for on-farm assessments of their compliance with refuge requirements:

    - Identify for potential on-farm assessment growers whose sales information indicates they have purchased SmartStax®PRO Enlist® corn product but may have purchased little or no refuge seed from the registrant, licensee, or affiliated company.

20. Corteva will contract with third parties to perform on-farm assessments of compliance with refuge requirements:

    - The third-party assessors will conduct all first-time on-farm assessments as well as second-year on-farm assessments of those growers found out of compliance in a first- time assessment.

21. Corteva will annually refine the on-farm assessment program for the SmartStax®PRO Enlist® corn product to reflect the adoption rate and level of refuge compliance for the product.

22. Corteva will follow up with growers who have been found significantly out of compliance under the on-farm assessment program and are found to be back in compliance the following year:

    - All growers found to be significantly out of compliance in a prior year will annually be sent additional refuge assistance information for a minimum of two years by Corteva, seed supplier, or third-party assessor, after completing the assessment process;

    - Corteva will conduct follow-up checks on growers found to be significantly out of compliance within three years after they are found to be back in compliance;

    - A grower found with a second incident of significant non-compliance with refuge requirements for the *Bt* corn product within a five-year period will be denied access to Corteva's *Bt* corn products the next year. Similarly, seed dealers who are not fulfilling their obligations to inform/educate growers of their IRM obligations will lose their opportunity to sell *Bt* corn.

e. Insect Resistance Monitoring and Mitigation Plan for SmartStax®PRO Enlist®

1. <u>EPA is imposing the following conditions for the Cry1A.105, Cry2Ab2, and Cry1F toxins expressed in SmartStax®PRO Enlist®</u>

Corteva will monitor for resistance to Cry1A.105, Cry2Ab2, and Cry1F expressed in SmartStax®PRO Enlist® corn. The monitoring program shall consist of two approaches: (1) focused population sampling and laboratory testing; and (2) investigation of reports of less-than expected control of labeled insects. Should field-relevant resistance be confirmed, an appropriate resistance management action plan will be implemented.

<u>Focused Population Sampling</u>

Corteva shall annually sample and bioassay populations of the key target pests: Ostrinia nubilalis (European corn borer; ECB), Diatraea grandiosella (southwestern corn borer; SWCB), and Helicoverpa zea (corn earworm; CEW). Sampling for the target pests will be focused in areas identified as those with the highest risk of resistance development (e.g., where lepidopteran active *Bt* hybrids are planted on a high proportion of the corn acres, and where the insect species are regarded

as key pests of corn). Bioassay methods must be appropriate for the goal of detecting field-relevant shifts in population response to SmartStax®PRO Enlist® corn and/or changes in resistance allele frequency in response to the use of SmartStax®PRO Enlist® corn and, as far as possible, should be consistent across sampling years to enable comparisons with historical data.

The number of populations to be collected shall reflect the regional importance of the insect species as a pest, and specific collection regions will be identified for each pest. For ECB, a minimum of twelve (12) populations across the sampling region will be targeted for collection at each annual sampling. For SWCB, the target will be a minimum of six (6) populations. For CEW, the target will be a minimum of ten (10) populations. Pest populations should be collected from multiple corn-growing states reflective of different geographies and agronomic conditions. To obtain sufficient sensitivity to detect resistance alleles before they become common enough to cause measurable field damage, each population collection shall attempt to target 400 insect genomes (egg masses, larvae, mated females, and/or mixed-sex adults), but a successful population collection will contain a minimum of 100 genomes. It is recognized that it may not be possible to collect the target number of insect populations or genomes due to factors such as natural fluctuations in pest density, environmental conditions, and area-wide pest suppression.

The sampling program and geographic range of collections may be modified as appropriate based on changes in pest importance and for the adoption levels of SmartStax®PRO Enlist® corn. EPA shall be consulted prior to the implementation of such modifications.

Corteva will report to EPA, on or before January 31st of each year, the results of the population sampling and bioassay monitoring program.

Any incidence of unusually low sensitivity to the Cry1A.105, Cry2Ab2, and Cry1F proteins in bioassays shall be investigated as soon as possible to understand any field relevance of such a finding. Such investigations shall proceed in a stepwise manner until the field relevance can be either confirmed or refuted, and results of these shall be reported to EPA annually on or before January 31st. The investigative steps will include the following:

i. Re-test progeny of the collected population to determine whether the unusual bioassay response is reproducible and heritable. If it is not reproducible and heritable, no further action is required.

ii. If the unusual response is reproducible and heritable, progeny of insects that survive the diagnostic concentration will be tested using methods that are representative of exposure to SmartStax®PRO Enlist® corn under field conditions. If progeny do not survive to adulthood, any suspected resistance is not field relevant and no further action is required.

iii. If insects survive steps 1 and 2, resistance is confirmed, and further steps will be taken to evaluate the resistance. These steps may include the following:

    a. Determining the nature of the resistance (i.e., recessive or dominant, and the level of functional dominance);

    b. Estimating the resistance allele frequency in the original population;

    c. Determining whether the resistance allele frequency is increasing by analyzing field

collections in subsequent years sampled from the same site where the resistance allele(s) was originally collected;

d. Determining the geographic distribution of the resistance allele by analyzing field collections in subsequent years from sites surrounding the site where the resistance allele(s) was originally collected.

Should field-relevant resistance be confirmed, and the resistance appears to be increasing or spreading, Corteva will consult with EPA to develop and implement a case-specific resistance management action plan.

Investigation of Reports of Unexpected Levels of Damage by the Target Pests

Corteva will follow up on grower, extension specialist, or consultant reports of unexpected levels of damage by the lepidopteran pests listed on the pesticide label. Corteva will instruct its customers to contact them if such incidents occur. Corteva will investigate all legitimate reports submitted to the company or the company's representatives.

If reports of unexpected levels of damage lead to the suspicion of resistance in any of the key target pests (ECB, SWCB, and CEW), Corteva will implement the actions described below, based on the following definitions of ***suspected resistance*** and ***confirmed resistance***.

Suspected Resistance

EPA defines ***suspected resistance*** to mean field reports of unexpected levels of insect-feeding damage for which:

- The corn in question has been confirmed to be lepidopteran-active PIP corn;
- The relevant plant tissues are expressing the expected level of *Bt* protein; and
- It has been ruled out that species not susceptible to the protein could be responsible for the damage, that no climatic or cultural reasons could be responsible for the damage; and
- That there could be no other reasonable causes for the damage.

EPA does not interpret ***suspected resistance*** to mean grower reports of possible control failures or suspicious results from annual insect monitoring assays, nor does EPA intend that extensive field studies and testing be undertaken to confirm scientifically the presence of insects resistant to SmartStax®PRO Enlist® corn in commercial production fields before responsive measures are undertaken.

If resistance is ***suspected***, Corteva will instruct growers to do the following:

- Use alternative control measures in SmartStax®PRO Enlist® corn fields in the affected region to control the target pest during the immediate growing season.
- Destroy SmartStax®PRO Enlist® corn crop residues in the affected region within one (1)

month after harvest with a technique appropriate for local production practices to minimize the possibility of resistant insects over- wintering and contributing to the next season's target pest population.

Additionally, if possible, and prior to the application of alternative control measures or destruction of crop residues, Corteva will collect samples of the insect population in the affected fields for laboratory rearing and testing. Such rearing and testing shall be conducted as expeditiously as practical.

Confirmed Resistance

EPA defines ***confirmed resistance*** to mean, in the case of field reports of unexpected levels of damage from the key target pests, that all the following criteria are met:

- There is >30% insect survival and commensurate insect feeding in a bioassay, initiated with neonate larvae, that uses methods that are representative of exposure to *Bt* corn hybrids under field conditions (ECB and SWCB only).

- In standardized laboratory bioassays using diagnostic concentrations of the *Bt* protein suited to the target pest in question, the pest exhibits resistance that has a genetic basis and the level of survivorship indicates that there may be a resistance allele frequency of ≥ 0.1 in the sampled population.

- In standardized laboratory bioassays, the LC_{50} exceeds the upper limit of the 95% confidence interval of the LC_{50} for susceptible populations surveyed both in the original baselines developed for this pest species and in previous years of field monitoring.

Response to Confirmed Resistance in a Key Target Pest as the Cause of Unexpected Levels of Damage in the Field

When field resistance is ***confirmed*** (as defined above), the following steps will be taken by Corteva:

- EPA will receive notification within 30 days of resistance confirmation;

- Affected customers and extension agents will be notified about confirmed resistance within 30 days;

- Monitoring will be increased in the affected area and local target pest populations will be sampled annually to determine the extent and impact of resistance;

- If appropriate (depending on the resistant pest species, the extent of resistance, the timing of resistance, and the nature of resistance, and the availability of suitable alternative control measures), alternative control measures will be employed to reduce or control target pest populations in the affected area. Alternative control measures may include advising customers and extension agents in the affected area to incorporate crop residues into the soil following harvest to minimize the possibility of over-wintering insects, and/or applications of chemical insecticides;

- Unless otherwise agreed with EPA, stop sale and distribution of the relevant lepidopteran-

active *Bt* corn hybrids in the affected area immediately until an effective local mitigation plan, approved by EPA, has been implemented;

- Corteva will develop a case-specific resistance management action plan within 90 days according to the characteristics of the resistance event and local agronomic needs. Corteva will consult with appropriate stakeholders in the development of the action plan, and the details of such a plan shall be approved by EPA prior to implementation;

- Corteva will notify affected parties (e.g., growers, consultants, extension agents, seed distributors, university cooperators, and state/federal authorities as appropriate) in the region of the resistance situation and approved action plan; and

- In subsequent growing seasons, maintain sales suspension and alternative resistance management strategies in the affected region(s) for the *Bt* corn hybrids that are affected by the resistant population until an EPA-approved local resistance management plan is in place to mitigate the resistance.

A report on results of resistance monitoring and investigations of damage reports must be submitted to EPA, on or before January 31st of each year, for the duration of the registration.

2. <u>EPA is imposing the following conditions for the Cry34/35Ab1, DvSnf7 dsRNA, and Cry3Bb1 toxins expressed in SmartStax®PRO Enlist® corn:</u>

a) <u>Investigation of Reports of Unexpected Levels of Damage (UXD) by Corn Rootworm (CRW): Performance Inquiries</u>

1) Corteva is required to investigate "performance inquiries" (i.e., reports of unexpected CRW damage to SmartStax®PRO Enlist® corn) from growers. Fields (defined as a tract separated by permanent boundaries such as fences, permanent waterways, woodlands, croplines not subject to change because of farming practices, or other similar features) with unexpected damage that meet both of the criteria below must be subjected to the follow-up actions in part 2) below:

a. The affected plants are confirmed to be SmartStax®PRO Enlist® corn plants (take leaf samples to determine the presence of the CRW-active *Bt* protein); and

b. Corn rootworm feeding caused root damage with a Node Injury Score (NIS) > 0.5 on at least 50% of plants surveyed in a transect sampling of the damaged site(s) within the field.

2) Follow-up actions (performance inquiries). For SmartStax®PRO Enlist® corn fields meeting the criteria in part 1) above, Corteva must take the following actions:

a. Collect at least 250 (ideally 500 or more) CRW adult individuals from the damaged site within the field in question. Collections may be extended to the whole field, if necessary to obtain sufficient CRW adult individuals. Collected populations must be subjected to the steps described for "investigation of populations of concern" in section e(2)(b) below.

- If collections are unsuccessful, visit affected farm or field the following year (assuming the grower continues to be a customer and repurchases seed and does not rotate the field to a non-host crop) and attempt to collect CRW adults. If beetles are not

present the subsequent year, see section e(2)(b)(3)(c) below.

b. Review with the grower their CRW management practices and provide CRW management recommendations including an assessment of corn fields with similar trait(s) adjacent to the affected corn field that are managed by the same grower.

c. Use of single trait products containing the CRW traits in SmartStax®PRO Enlist® in fields with unexpected damage in previous years should be discouraged. Recommended management options include, but are not limited to, the following:

- Primary option:
  - Rotation to non-host crop (e.g., soybean)
- Secondary options:
  - Use of pyramided *Bt* corn products one or more different CRW PIP trait(s)
  - Use of different CRW PIP traits (i.e., an alternative CRW-active PIP)
  - Use of non-PIP or non-CRW protected corn
- Tertiary options:
  - If additional pest management need is determined beyond the secondary options listed above, use of the same pyramided *Bt* corn product is acceptable if it is very unlikely that both of the traits are affected (e.g., the affected field experienced UXD to one of the traits in the product in the previous year, the NIS is less than 1.0, there has been no continuous use of the second trait in the product in the affected field, and Corteva has not been informed of resistance to the second trait in the county)
  - Additional corn rootworm control tools (e.g., soil applied insecticides, chemigation) should be considered

d. If field(s) with UXD is/are planted to a non-host crop (e.g., soybean) the following year, then the area will be considered "mitigated" (as discussed in section e(2)(b)(3)(d) below) even if subsequent bioassay results show that the population was resistant. No further action will be required by Corteva for the UXD case.

3) Corteva must submit an annual report to EPA detailing activities related to investigations of unexpected damage (UXD). This report will include the information from the most recent and previous corn growing seasons:

a. Information from the most recent season:

- The number of UXD reports investigated;
- Location (by county and state);

- CRW sampling (number and location of populations collected).

b. Information from the previous season:

- The final disposition of UXD fields from the previous season (i.e., the management practices employed in response to UXD if the grower continues to be a customer;

- Results from bioassays conducted on CRW populations from UXD fields where the primary management option, rotation to non-host crop, was not used.

c. Grower information, such as farm addresses or other personally identifiable information, or other sensitive business/customer information must not be included in this report. This report must be submitted by November 30th each year.

b) Investigation of Population of Concern

1) Corteva must conduct investigations of all CRW populations collected as part of the performance inquiry process in section e(2)(a) above. These investigations must include the use of an EPA-approved bioassay to determine if sampled CRW populations are resistant to any of the CRW PIP toxins in SmartStax®PRO Enlist®. Acceptable assays must be able to function as diagnostic tools capable of distinguishing resistant populations from susceptible ones. Unless previously approved, Corteva must consult with EPA on their bioassay prior to its use.

2) A CRW population will be considered by EPA to be resistant to a CRW PIP toxin if the following criteria are met and additional collections and testing are not deemed to be necessary (based on part 3) below):

a. An initial performance inquiry investigation results in a finding of Unexpected Damage; and

b. Where green tissues are available and if plants are unusually stressed due to agronomic and/or environmental factors, *Bt* protein levels in affected plants are found to be within the documented range for that hybrid (if data are available); and

c. Either (A): On-plant bioassays of insect collections from the UXD fields result in the following two statistically relevant comparisons:

i. A statistically significant difference in measures of either mortality or sublethal effects (growth/development) between the field population and a relevant susceptible control population (i.e., one that responds as a typical susceptible field population) on *Bt* corn containing the single PIP and/or lack of a statistically significant difference in measures of mortality or sublethal effect between the field population and a resistant positive control population[1]; and

ii. A lack of a statistically significant difference in the same measures of the field population raised on *Bt* corn containing the single PIP and non-PIP corn plants.

[1] If a resistant positive control population is not available or accessible, Corteva must consult with EPA prior to initiating bioassays and work to develop an appropriate resistant positive control population.

Or (B): Sublethal seedling bioassay of insect collections from the UXD fields result in two statistically relevant comparisons:

i. A statistically significant difference in measures of sublethal effects (growth/development) for populations on *Bt* corn containing the single PIP (normalized using non-PIP) seedlings between the field population and a relevant susceptible control population where available or historical field populations and/or lack of a statistically significant difference in measures between the field population and a resistant positive control population[1]; and

ii. A lack of a statistically significant difference in the same measures of the field population raised on *Bt* corn seedlings containing the single PIP and non-PIP corn seedlings

Or (C): Diet-based bioassays of insect collections from the UXD fields result in two statistically relevant comparisons:

i. A statistically significant difference in measures of lethal or sublethal effects (growth/development) on diet containing the *Bt* protein (diagnostic concentration or concentration-response measures) between the field population and a relevant susceptible control population where available or historical field populations and/or lack of a statistically significant difference in measures between field population and a resistant positive control population[1]; and

ii. Either a lack of a statistically significant difference in the same measures of the field population exposed to diet containing the *Bt* protein (diagnostic concentration) and diet not containing the *Bt* protein and/or lack of a statistically significant difference in measures between the field population and a resistant positive control population, or lack of a statistically significant concentration and/or lack of a statistically significant difference in concentration response between the field and a resistant positive control population[1].

3) Mitigation, as detailed in section e(2)(c) below, is required for any CRW population that meets EPA's resistance criteria above for any of the CRW traits in SmartStax®PRO Enlist®, unless the circumstances described below are applicable.

a. To minimize the potential for incorrectly reaching a conclusion of resistance, another year of CRW adult collections and additional testing is needed to determine resistance if:

i. The results of the bioassays are inconclusive (e.g., the results of the statistical analysis are unclear because of low sample sizes) or

ii. Another reasonable explanation for the unexpected damage exists (e.g., high pest pressure and/or high plant stress).

b. In these cases, Corteva and EPA will discuss and align on next steps before reaching any resistance conclusion.

c. If CRW collections are not possible in the current year or subsequent year due to successful management practices, then no further investigation is needed. The population would be

considered "mitigated" meaning, in this case, that the population is suppressed or extirpated for the UXD field. However, EPA recommends that Corteva continue to be vigilant in areas where CRW populations were successfully mitigated.

d. If a UXD field receives non-host crop (e.g., soybean) rotation the following year as described in Section e(2)(a)(2) above, no additional mitigation is subsequently required.

c) Mitigation of CRW Populations Meeting EPA's Resistance Criteria

1) For any CRW population found to be resistant to one or more of the CRW traits in SmartStax®PRO Enlist® under EPA's criteria described in section e(2)(b) above, Corteva must take the following steps:

a. Corteva must inform EPA of all the results of the bioassays as soon as possible, but at least within 30 days if measures are triggered.

b. The mitigation action area (MAA) is defined as the growers' farming operation up to a ½ mile radius from the damaged site that produced the resistant population.

c. Within 30 days of informing EPA of the results of the bioassays, Corteva must notify state extension agents and crop consultants who operate within the county in which resistance was identified. Information shared must include identification of the county in which resistance was detected and trait(s) affected.

d. Within the MAA, Corteva must do the following:

i. Prior to finalizing the grower's seed order for the following season, inform the affected grower and other registrants that hold registrations containing the compromised trait(s). Corteva must also inform neighboring growers if those growers are customers of Corteva. Information shared must include identification of the county in which resistance was detected and trait(s) affected;

ii. Discontinue sales/planting of products containing the compromised trait(s) without additional/alternative (i.e. non-compromised) CRW traits until resistance has been demonstrated to have been mitigated. Other *Bt* registrants selling such products in the MAA are encouraged, but cannot be required, to follow suit;

iii. Corteva must monitor the resistant population in the MAA, as long as grower remains a customer of the company, until mitigation has been demonstrated as described in part e below unless otherwise agreed with EPA.

iv. Require any pyramids sold by Corteva containing the compromised trait(s) be planted with a 20% refuge until resistance has been demonstrated to have been mitigated. Other *Bt* corn registrants selling such pyramided products in the MAA are encouraged, but cannot be required by this term of registration, to follow suit;

v. For Corteva's affected customer's field(s), the mitigation goal is to control the resistant CRW population. Within the MAA Corteva shall encourage the use of "Mitigation Practices" including:

1. Primary option: Rotation to a non-host crop (e.g., soybean);

2. Secondary options:

   a. Use of pyramided *Bt* corn products with different CRW PIP traits;

   b. Only in the case that the resistance definition for one of the CRW traits in the SmartStax®PRO Enlist® is not met, continued use of the product with a 20% refuge;

   c. Use of different CRW PIP traits (i.e., an alternative CRW-active PIP);

   d. Use of non-PIP corn or non-CRW protected corn (with/without soil-applied insecticide);

3. Tertiary options:

   a. If additional pest management need is determined beyond the secondary options listed above, additional CRW control tools (e.g., soil insecticides, seed-applied insecticides, chemigation) should be used.

   b. Use of foliar applications to control adults (when appropriate economic thresholds have been met) may be used in conjunction with one or more of the above;

e. A resistant CRW population in the MAA will be considered mitigated if one of the following criteria is met:

   i. Corn fields within the MAA are rotated to a non-host crop (e.g. soybean) for one growing season.

   ii. After implementation of mitigation practices (part d.v above), resistance monitoring (sampling) is conducted but few CRW are found (i.e., <0.1 adults per plant) and environmental conditions (e.g., weather) are unlikely to be responsible for the lack of adult CRW presence. If environmental conditions are a factor, then monitoring should continue for another season.

   iii. After implementation practices (part d.v above), resistance monitoring (sampling) is conducted, CRW are found and collected, and bioassays (section e(2)(b)(2) above) show that the population susceptibility to the compromised trait(s) has returned to baseline levels.

f. The mitigation actions in part d above can be lifted, and growers can resume the use of SmartStax®PRO Enlist® corn as a primary tool for CRW management in the MAA, only when Corteva demonstrates that successful mitigation as described in part e above has been achieved.

2) Based on further research to understand CRW resistance to *Bt* PIPs, EPA will consider refinements to the resistance mitigation program. Such research may include characterizing the genetics of resistance (e.g., number of genes, functional dominance, mechanism of resistance,

and cross-resistance) and the biology of resistant insects (e.g., fitness in the presence and absence of the product), and other control tactics.

f. Annual Reporting Requirements for SmartStax®PRO Enlist®

The following annual reports must be submitted:

1. Compliance Assurance Plan: Compliance Assurance Program activities, including IRM Grower Survey results and on-farm assessment results for the prior year and plans for the compliance assurance program for the current year, on or before January 31st each year.

2. Insect Resistance Monitoring Results (Cry1A.105, Cry2Ab2, and Cry1F only): results of monitoring and investigations of damage reports, January 31st of each year.

3. IPM Stewardship Program (Cry34/35Ab1, DvSnf7 dsRNA, and Cry3Bb1 only): Activities conducted under the IPM stewardship program, including an anonymous survey of grower practices, adoption levels of the various crop rotation options (if employed) and other elements of the stewardship program, on or before January 31st of each year.

4. Unexpected Damage Investigations (Cry34/35Ab1, DvSnf7 dsRNA, and Cry3Bb1only): Activities related to investigations of unexpected damage (UXD), including number and location of UXD cases, insect sampling, bioassays, and final disposition of UXD fields from the most recent and previous corn growing seasons, on or before November 30th of each year.

Should you wish to add/retain a reference to your company's website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the EPA. If the website is false or misleading, the product will be considered to be misbranded and sale or distribution of the product is unlawful under FIFRA section 12(a)(1)(E). 40 CFR § 156.10(a)(5) lists examples of statements the EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the EPA find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA-approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance Assurance.

Your release for shipment of this product constitutes acceptance of these terms and conditions. If you fail to satisfy these terms and conditions, the EPA will consider appropriate regulatory action including, among other things, cancellation under FIFRA section 6(e).

A stamped copy of the labeling is enclosed for your records. Please also note that the record for this product currently contains the following acceptable Confidential Statement of Formula (CSF):

- Basic CSF dated 3/11/2016

If you have any questions, please contact Matt Weiner by phone at (202) 564-1509 or via email at weiner.matthew@epa.gov.

Sincerely,

Alan Reynolds, Team Leader
Emerging Technologies Branch
Biopesticides and Pollution
Prevention Division (7511M)
Office of Pesticide Programs

Enclosure

Plant-Incorporated Protectant Label

SmartStax®PRO Enlist®

(Alternate Brand Name: SmartStax®PRO)
(Alternate Brand Name: MON 89034 × TC1507 × MON 87411 × DAS-59122-7 Insect-Protected, Herbicide-Tolerant Corn)
(OECD Unique Identifier: MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS-59122-7)

(Alternate Brand Name: MON 87427 × MON 89034 × TC1507 × MON 87411 × DAS-59122-7 Insect-Protected, Herbicide-Tolerant Corn)
(OECD Unique Identifier : MON-87427-7 × MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS-59122-7)

(Alternate Brand Name: MON 87427 × MON 89034 × TC1507 × MON 87411 × DAS-59122-7 × DAS-40278-9 Insect-Protected, Herbicide-Tolerant Corn)
(OECD Unique Identifier: MON-87427-7 × MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS-59122-7 × DAS-4Ø278-9)

Active Ingredients:

dsRNA transcript comprising a DvSnf7 inverted repeat sequence derived from *Diabrotica virgifera virgifera*, and the genetic material necessary for its production (vector PV-ZMIR10871) in MON 87411 corn (OECD Unique Identifier MON-87411-9)……..≤ 0.00000044%*

Bacillus thuringiensis Cry1A.105 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3)
……...……≤ 0.0088%*

Bacillus thuringiensis Cry2Ab2 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3)
……≤ 0.0048%*

Bacillus thuringiensis Cry1F protein and the genetic material (vector PHP8999) necessary for its production in corn event TC1507 (OECD Unique Identifier: DAS- Ø15Ø7-1)……..≤ 0.00096%*

Bacillus thuringiensis Cry3Bb1 protein and the genetic material (vector PV-ZMIR10871) necessary for its production in corn event MON 87411 (OECD Unique Identifier: MON-87411-9) .....
……...≤ 0.0041%*

Bacillus thuringiensis Cry34Ab1 protein and the genetic material (vector PHP17662) necessary for its production in corn event DAS-59122-7 (OECD Unique Identifier: DAS-59122-7) ..... ….....≤ 0.012%*

Bacillus thuringiensis Cry35Ab1 protein and the genetic material (vector PHP17662) necessary for its production in corn event DAS-59122-7 (OECD Unique Identifier: DAS-59122-7) ..... …..≤ 0.0026%*

Other Ingredients:

CP4 EPSPS protein (5-enolpyruvylshikimate-3-phosphate synthase) and the genetic material (vector PV-ZMIR10871) necessary for its production in corn event MON 87411…...≤ 0.036%*

PAT protein (phosphinothricin acetyl transferase) and the genetic material (vectors PHP17662 and PHP8999) necessary for its production in corn events TC1507 and DAS-59122-7
……≤ 0.0001%*

*Maximum percent (%) dry weight basis for whole plant (forage)

SmartStax® multi-event technology developed by Corteva Agriscience and Monsanto
SmartStax® is a registered trademark of Bayer Group
®Enlist is a trademark of Corteva Agriscience and its affiliated companies.

KEEP OUT OF REACH OF CHILDREN NET CONTENTS _____

CAUTION

EPA Registration No. 62719-706

EPA Establishment No. 62719-IN-1

Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in any manner inconsistent with its labeling. Information regarding commercial production reflected here and in the terms and conditions of this registration must be included in the Technology Use Guide.

SmartStax®PRO Enlist® protects corn crops from leaf, stalk, and ear damage caused by corn borers and root damage caused by corn rootworm larvae. In order to minimize the risk of these pests developing resistance to SmartStax®PRO Enlist® corn, an insect resistance management plan must be implemented which includes planting of a structured refuge. Growers who fail to comply with the IRM requirements risk losing access to Corteva's corn PIP products.

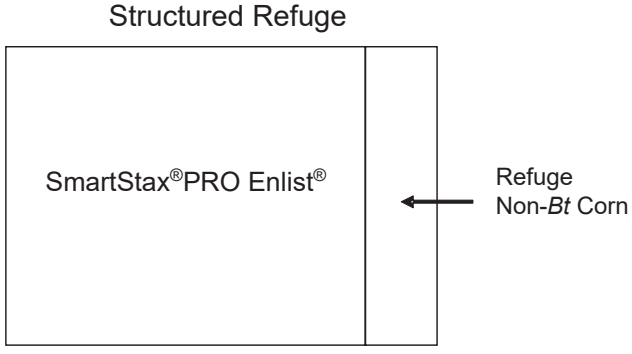
These refuge requirements do not apply to seed increase/propagation of inbred and hybrid seed corn and small scale research trials for observation.

Several options for deployment of the refuge for SmartStax®PRO Enlist® are available to growers. These options are based on the planting of SmartStax®PRO Enlist® in cotton or non-cotton growing regions and the insect pressure present in those locations. The refuge sizes for these regions are either 5% (i.e. 5 acres of non-*Bt* corn for every 95 acres SmartStax®PRO Enlist® planted) or 20% (20 acres of non-*Bt* corn for every 80 acres of SmartStax®PRO Enlist® planted), and are presented in the table below:

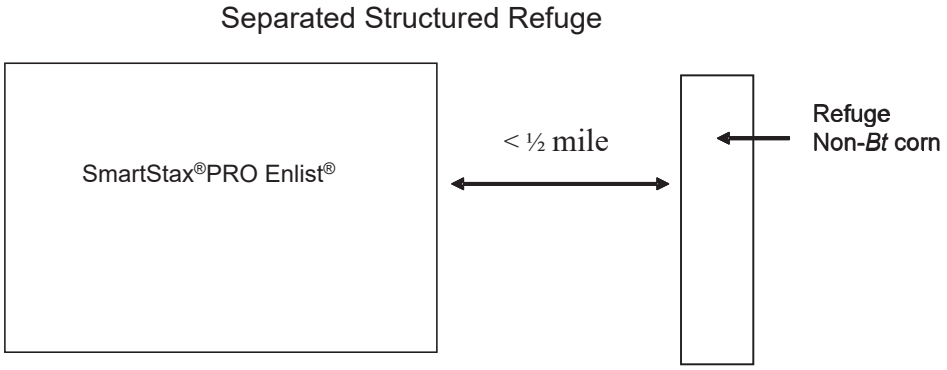
Region	Refuge size	In-field or adjacent refuge	Refuge separated by up to ½ mile
Cotton belt where CEW is a significant pest and WCRW, NCRW and MCRW are not significant: NC, SC, GA, FL, TN, AL, MS, LA, AR, northern TX	20% non-*Bt* corn	Yes	Yes

Cotton belt where CEW is a significant pest and MCRW is significant: southern TX	20% non-*Bt* corn	Yes	No
Cotton belt where CEW is not a significant pest and WCRW, NCRW and MCRW are not significant: NM, AZ, CA, NV Non-cotton states where WCRW, NCRW and MCRW are not significant: OR, WA, ID, MT, WY, UT, CO, OK, VA, WV, PA, MD, DE, CT, RI, NJ, NY, ME, MA, NH, VT, HI, AK	5% non-*Bt* corn	Yes	Yes
Non-cotton-growing where WCRW, NCRW and/or MCRW are significant: KS, NE, SD, ND, MN, IA, MO, IL, WI, MI, IN, OH, KY	5% non-*Bt* corn	Yes	No

If corn rootworms are significant within a region, the structured refuge must be planted as an in-field or adjacent refuge using corn hybrids that do not contain *Bt* technologies for the control of corn borers or corn rootworms. It can be planted as a block within or adjacent (e.g., across the road) to the SmartStax®PRO Enlist®, perimeter strips (i.e., strips around the field), or in-field strips. If perimeter or in-field strips are implemented, the strips must be at least 4 consecutive rows wide. The refuge can be protected from lepidopteran damage by use of non-*Bt* insecticides if the population of one or more target lepidopteran pests of SmartStax®PRO Enlist® in the refuge exceeds economic threshold. In addition, the refuge can be protected from CRW damage by an appropriate seed treatment or soil insecticide; however, insecticides labeled for adult CRW control should be avoided in the refuge during the period of CRW adult emergence. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants). A schematic of one common refuge deployment option is shown below:



If corn rootworms are not significant within a region, the structured refuge may be planted as an in-field or adjacent refuge, or as a separate block that is within ½ mile of the SmartStax®PRO Enlist® field. The structured refuge must be planted with corn hybrids that do not contain *Bt* technologies for the control of corn borers or corn rootworms. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants). A schematic of one refuge option with the refuge planted within a ½ mile of the SmartStax®PRO Enlist® field is shown below:



Corn Insects Controlled or Suppressed

European corn borer (ECB)	*Ostrinia nubilalis*
Southwestern corn borer (SWCB)	*Diatraea grandiosella*
Southern cornstalk borer (SCSB)	*Diatraea crambidoides*
Corn earworm (CEW)	*Helicoverpa zea*
Fall armyworm (FAW)	*Spodoptera frugiperda*
Stalk borer	*Papaipema nebris*
Lesser corn stalk borer	*Elasmopalpus lignosellus*
Sugarcane borer (SCB)	*Diatraea saccharalis*
Western bean cutworm (WBC)	*Richia albicosta*
Black cutworm	*Agrotis ipsilon*
Western corn rootworm (WCRW)	*Diabrotica virgifera virgifera*
Northern corn rootworm (NCRW)	*Diabrotica barberi*
Mexican corn rootworm (MCRW)	*Diabrotica virgifera zeae*

EPA Accepted: _____

SmartStax® multi-event technology developed by Corteva Agriscience and Monsanto
SmartStax® is a registered trademark of Bayer Group
®Enlist is a trademark of Corteva Agriscience and its affiliated companies.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

April 27, 2023

Ashley Young
U.S. Seeds Regulatory Specialist
Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

Subject: Non-PRIA (Pesticide Registration Improvement Act) Labeling Amendment –Revision to the Name of the Company
Product Name: SmartStax Enlist Refuge Advanced
EPA Registration Number: 68467-16
EPA Receipt Date: March 3, 2023
Action Case Number: 00439366

Dear Ms. Young:

The amended labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is acceptable.

The primary company name of this product has been changed from Mycogen Seeds c/o Dow Agrosciences LLC to Corteva Agriscience LLC, and our records have been updated accordingly. This approval does not affect any terms or conditions that were previously imposed on this registration. You continue to be subject to existing terms or conditions on your registration and any deadlines connected with them.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one (1) copy of the final printed labeling before you release this product for shipment with the new labeling. In accordance with 40 CFR § 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. “To distribute or sell” is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR § 152.3.

Should you wish to add/retain a reference to your company’s website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the U.S. Environmental Protection Agency (EPA). If the website is false or misleading, the product will be considered to be misbranded and sale or distribution of the product is unlawful under FIFRA section 12(a)(1)(E). 40 CFR § 156.10(a)(5) lists examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product’s label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should EPA find or if it is brought to our attention that a website contains statements or claims substantially differing from statements or claims made in connection with obtaining a FIFRA

section 3 registration, the website will be referred to EPA's Office of Enforcement and Compliance Assurance.

Your release for shipment of this product constitutes acceptance of these terms. If these terms are not complied with, this registration will be subject to cancellation in accordance with FIFRA section 6. If you have any questions, please contact Leslie Paul via email at paul.leslie@epa.gov.

Sincerely,

Digitally signed by
ALAN REYNOLDS
Date: 2023.04.27
10:13:41 -04'00'

Alan Reynolds, Team Leader
Emerging Technologies Branch
Biopesticides and Pollution
Prevention Division (7511M)
Office of Pesticide Programs

Enclosure: Final Stamped Label

Plant-Incorporated Protectant Label

SmartStax® Enlist™ Refuge Advanced

(Alternate Brand Name MON 89034 x TC1507 x MON 88017 x DAS-59122-7 Insect Protected Herbicide-Tolerant Corn With An Interspersed Refuge)
(Alternate Brand Name Refuge Advanced Powered by SmartStax®)
(Alternate Brand Name SmartStax® Refuge Advanced)

(OECD Unique Identifier: MON-89Ø34-3 × DAS- Ø15Ø7-1 × MON-88Ø17-3 × DAS-59122-7)

Active Ingredients:

Bacillus thuringiensis Cry1A.105 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3) ..... ≤ 0.0026%*

Bacillus thuringiensis Cry2Ab2 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3) ..... ≤ 0.0053%*

Bacillus thuringiensis Cry1F protein and the genetic material (vector PHP8999) necessary for its production in corn event TC1507 (OECD Unique Identifier: DAS- Ø15Ø7-1) ..... ≤ 0.0012%*

Bacillus thuringiensis Cry3Bb1 protein and the genetic material (vector PV-ZMIR39) necessary for its production in corn event MON 88017 (OECD Unique Identifier: MON-88Ø17-3) ..... ≤ 0.0079%*

Bacillus thuringiensis Cry34Ab1 protein and the genetic material (vector PHP17662) necessary for its production in corn event DAS-59122-7 (OECD Unique Identifier: DAS-59122-7) ..... ≤ 0.0194%*

Bacillus thuringiensis Cry35Ab1 protein and the genetic material (vector PHP17662) necessary for its production in corn event DAS-59122-7 (OECD Unique Identifier: DAS-59122-7) ..... ≤ 0.0042%*

Other Ingredients:

CP4 EPSPS protein (5-enolpyruvylshikimate-3-phosphate synthase) and the genetic material (vector PV-ZMIR39) necessary for its production in corn event MON 88017 ..... ≤ 0.0052%*

PAT protein (phosphinothricin acetyl transferase) and the genetic material (vectors PHP17662 and PHP8999) necessary for its production in corn events TC1507 and DAS-59122-7..... ≤ 0.00045%*
*Maximum percent (wt/wt) of dry forage

‡ SmartStax® seed with this refuge configuration contains 95% MON 89034 × TC1507 × MON 88017 × DAS-59122-7 mixed with at least 5% non-Bt corn within a single lot of seed.

KEEP OUT OF REACH OF CHILDREN

CAUTION

NET CONTENTS_____

EPA Registration No. 68467-16
EPA Establishment No. 62719-IN-001

Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

SmartStax® multi-event technology developed by Corteva Agriscience and Monsanto.
®SmartStax is a registered trademark of Bayer Group
Enlist™ is a trademark of Corteva Agriscience and its affiliated companies

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in any manner inconsistent with its labeling. The plant-incorporated protectant (PIP) product must be used as specified in the terms and conditions of the registration.

This plant-incorporated protectant may be combined or produced through conventional breeding with other registered plant-incorporated protectants that are similarly approved for use in combination, through conventional breeding, with other registered plant-incorporated protectants to produce inbred corn lines and hybrid corn varieties with combined pesticidal traits.

SmartStax® Enlist™ Refuge Advanced protects corn crops from leaf, stalk, and ear damage caused by lepidopteran corn pests listed on this label and root damage caused by corn rootworm larvae listed on this label. In order to minimize the risk of these pests developing resistance to SmartStax® Enlist™ Refuge Advanced, an insect resistance management plan must be implemented as defined in the registration terms and conditions.

Grower agreements will specify that growers must adhere to the refuge requirements that will be described in the Product Use Guide for SmartStax® Enlist™ Refuge Advanced or other applicable product use documents.

Sales of corn hybrids that contain Bt corn plant-incorporated pesticide(s) must be accompanied by a Product Use Guide which includes information on planting, production, and insect resistance management and notes that routine applications of insecticides to control these insects are usually unnecessary when corn containing the Bt proteins is planted.

Corn seed bags or bag tags for products containing SmartStax® Enlist™ Refuge Advanced must include the refuge size requirement in text and graphical format.

INSECT RESISTANCE MANAGEMENT

Growers are instructed to read information on insect resistance management.

These refuge requirements do not apply to seed increase/propagation of inbred and hybrid seed corn up to a total of 20,000 acres per county and up to a combined United States (U.S.) total of 250,000 acres per plant-incorporated protectant (PIP) active ingredient per registrant per year.

The following information regarding refuge placement for commercial production must be included in the Product Use Guide.

This product includes refuge that is interspersed within the field by planting a licensed seed-mixture containing MON 89034 × TC1507 × MON 88017 × DAS-59122-7 and a minimum of 5% non-PIP seed. **The seed mix refuge option for SmartStax® Enlist™ Refuge Advanced satisfies the refuge requirements in all regions other than in cotton growing regions where corn earworm is a significant pest as defined below**.

The seed producer must ensure a minimum of 5% non-PIP refuge seed is included with the MON 89034 × TC1507 × MON 88017 × DAS-59122-7 in each lot of seed corn.

The interspersed refuge can only be used by planting seed corn specifically generated by qualified seed producers/conditioners licensed by the registrant. The refuge seed in the seed mixture may not be treated with seed-applied insecticides for corn rootworm (CRW) control unless the MON 89034 × TC1507 × MON 88017 × DAS-59122-7 seed in the seed mixture receives the same treatment. Insecticidal treatments labeled for adult CRW control are discouraged during the time of adult CRW emergence.

Additional refuge requirements in cotton-growing regions where corn earworm is a significant pest

In cotton-growing regions where corn earworm is a significant pest, as defined below, the seed-mixture containing MON 89034 × TC1507 × MON 88017 × DAS-59122-7 and a minimum of 5% non-PIP seed requires the planting of an additional 20% structured refuge (i.e. 20 acres of non-Bt corn for every 80 acres of SmartStax® Enlist™ Refuge Advanced planted).

The 20% refuge must be planted with corn hybrids that do not contain Bt technologies for the control of corn rootworms or corn borers. The refuge and the SmartStax® Enlist™ Refuge Advanced should be sown on the same day, or with the shortest window possible between planting dates to ensure that corn root development is similar among varieties. The structured refuge may be planted as an in-field or adjacent (e.g., across the road) refuge, or as a separate block that is within ½ mile of the SmartStax® Enlist™ Refuge Advanced. In-field refuge options include blocks, perimeter strips (i.e., strips around the field), or in-field strips. If perimeter or in-field strips are implemented, the strips must be at least 4 consecutive rows wide. The refuge can be protected from lepidopteran damage by use of non-Bt insecticides if the population of one or more target lepidopteran pests of SmartStax® (MON 89034 × TC1507 × MON 88017 × DAS-59122-7) in the refuge exceeds economic thresholds. In addition, the refuge can be protected from CRW damage by an appropriate seed treatment or soil insecticide; however, insecticides labeled for adult CRW control must be avoided in the refuge during the period of CRW adult emergence. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants).

The cotton-growing region requiring this additional 20% refuge consists of the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex) and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard).

The following language will be included on the seed bag tags for SmartStax® Enlist™ Refuge Advanced:

Management Guidelines

This product consists of a licensed seed-mixture/seed-blend containing 95% SmartStax® seed and a minimum of 5% seed that does not contain B.t. technologies for the control of corn borers or corn rootworms. When planted, the refuge will be interspersed within the field.

The interspersed refuge configuration in SmartStax® Enlist™ Refuge Advanced fulfills the grower's refuge requirements for this product in non-cotton growing regions and in cotton growing regions where corn earworm is not a significant pest (i.e. the same regions where the minimum refuge size is 5% under SmartStax® registration 68467-7).

The interspersed refuge in SmartStax® Enlist™ Refuge Advanced corn is not sufficient to meet IRM requirements in regions that currently require a 20% structured refuge for SmartStax® (cotton growing regions and non-cotton growing regions where corn earworm is a significant pest). In these regions growers are required to plant a structured 20% corn refuge for corn earworm.

In the SmartStax 20% structured refuge areas, the structured refuge may be planted as an in-field or adjacent (e.g., across the road) refuge or as a separate block that is within ½ mile of the Refuge Advanced field. In-field refuge options include blocks, perimeter strips (i.e., strips around the field) or in-field strips. If perimeter strips or in-field strips are implemented, the strips must be at least four consecutive rows of corn wide.

Cotton Growing Region

The cotton-growing region requiring this additional 20% refuge consists of the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex) and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard)

Corn Insects Controlled or Suppressed

European corn borer (ECB)	*Ostrinia nubilalis*
Southwestern corn borer (SWCB)	*Diatraea grandiosella*
Southern cornstalk borer (SCSB)	*Diatraea crambidoides*
Corn earworm (CEW)	*Helicoverpa zea*
Fall armyworm (FAW)	*Spodoptera frugiperda*
Stalk borer	*Papaipema nebris*
Lesser corn stalk borer	*Elasmopalpus lignosellus*
Sugarcane borer (SCB)	*Diatraea saccharalis*
Western bean cutworm (WBC)	*Richia albicosta*
Black cutworm	*Agrotis ipsilon*
Western corn rootworm (WCRW)	*Diabrotica virgifera virgifera*
Northern corn rootworm (NCRW)	*Diabrotica barberi*
Mexican corn rootworm (MCRW)	*Diabrotica virgifera zeae*

EPA Accepted:_____.

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Pesticide Programs
Biopesticides and Pollution Prevention Division (7511M)
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

NOTICE OF PESTICIDE:
☒Registration
☐Reregistration
(under FIFRA, as amended)

EPA Reg. Number:	Date of Issuance:
62719-707	6/28/2022

Term of Issuance:
Unconditional

Name of Pesticide Product:
SmartStax®PRO Enlist® Refuge Advanced®

Name and Address of Registrant (include ZIP Code):

Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Biopesticides and Pollution Prevention Division prior to use of the label in commerce. In any correspondence on this product, always refer to the above EPA Registration Number.

On the basis of information furnished by the registrant, the above-named pesticide is hereby registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA or the Act).

Registration is in no way to be construed as an endorsement or recommendation of this product by the U.S. Environmental Protection Agency (EPA). In order to protect health and the environment, the Administrator, on his or her motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under the Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is unconditionally registered in accordance with FIFRA section 3(c)(5) provided that you comply with the following terms:

1. The subject registration will automatically expire at midnight on June 30, 2023.

Signature of Approving Official:

Alan Reynolds, Team Leader
Emerging Technologies Branch
Biopesticides and Pollution Prevention Division (7511P)

Date:
6/28/2022

2. The subject registration will be limited to *Bacillus thuringiensis* Cry1A.105 and Cry2Ab2 proteins and the genetic material necessary for their production (vector PV-ZMIR245) in MON 89034 corn (OECD Unique Identifier: MON-89Ø34-3), *Bacillus thuringiensis* Cry1F protein and the genetic material necessary for its production (vector PHP8999) in TC1507 corn (OECD Unique Identifier: DAS-Ø15Ø7-1), *Bacillus thuringiensis* Cry34Ab1/Cry35Ab1 proteins and the genetic material necessary for their production (vector PHP17662) in DAS-59122-7 corn (OECD Unique Identifier: DAS-59122-7), *DvSnf7* dsRNA [Double-stranded ribonucleic acid transcript comprising a *DvSnf7* inverted repeat sequence derived from western corn rootworm (*Diabrotica virgifera virgifera*)], *Bacillus thuringiensis* Cry3Bb1 protein and the genetic material necessary for their production (vector PV-ZMIR10871) in MON 87411 corn (OECD Unique Identifier: MON-87411-9), and a minimum of 5% non-PIP corn seed for use in field corn.

3. Submit/cite all data required for registration of your product under FIFRA section 3(c)(5) when the Environmental Protection Agency (EPA) requires registrants of similar products to submit such data.

4. This plant-incorporated protectant (PIP) may be combined through conventional breeding with other registered plant-incorporated protectants that are similarly approved for use in combination, through conventional breeding, with other registered plant-incorporated protectants to produce inbred corn lines and hybrid corn varieties with combined pesticidal traits.

5. Corteva Agriscience LLC (Corteva) must commit to do the following Insect Resistance Management (IRM) Program, consisting of the following elements:

   - Requirements for Corteva to implement an IPM-based stewardship program designed to reduce selection pressure for corn rootworm (CRW) resistance.

   - Requirements relating to a refuge assurance program for ensuring the correct refuge blend percentage.

   - Requirements relating to creation of a lepidopteran refuge (consisting of corn that does not contain any *Bt* trait for lepidopteran control) in cotton growing regions in conjunction with the planting of SmartStax®PRO Enlist® Refuge Advanced® corn;

   - Requirements for Corteva to prepare and require SmartStax®PRO Enlist® Refuge Advanced® corn users to sign grower agreements that impose binding contractual obligations on growers to comply with the refuge requirements.

   - Requirements for Corteva to develop, implement, and report to EPA on programs to educate growers about IRM requirements.

   - Requirements for Corteva to develop, implement, and report to EPA on programs to evaluate and promote growers' compliance with IRM requirements.

   - Requirements for Corteva to develop, implement, and report to EPA on monitoring programs to evaluate whether there are statistically significant and biologically relevant changes in susceptibility to the Cry1A.105, Cry2Ab2, and Cry1F proteins in the target insects.

   - Requirements for Corteva to develop, and if triggered, to implement a remedial action plan that would contain measures Corteva would take in the event that any field-relevant insect resistance

to Cry1A.105, Cry2Ab2, and Cry1F was detected, as well as to report on activity under the plan to EPA.

- Requirements for Corteva to investigate reports of unexpected CRW damage to SmartStax®PRO Enlist® Refuge Advanced® corn from growers ("performance inquiries") and sample CRW to determine if the insects are resistant to Cry34/35Ab1, DvSnf7 dsRNA, or Cry3Bb1.

- Requirements for Corteva to recommend CRW management options to growers in response to cases of unexpected CRW damage to SmartStax®PRO Enlist® Refuge Advanced® corn.

- Requirements regarding mitigation and notification actions that Corteva would take in the event that CRW resistance was detected.

- Requirements for Corteva to maintain, and provide the Agency upon request, the number of units sold by state and county, IRM grower agreement results, and substantive changes to educational programs. Corteva is required to submit reports within three months of the Agency's request.

- Bag Tag Requirements for SmartStax®PRO Enlist® Refuge Advanced® corn. Seed bags and/or bag tags for corn hybrids that contain plant- incorporated protectants produced in SmartStax®PRO Enlist® Refuge Advanced® corn must display the registration number and active ingredients, and stipulate that growers read the Corteva Stewardship Guide (or equivalent guidance) prior to planting these hybrids. The refuge size requirement must be displayed on the bag or bag tag in both text and graphic format.

- Requirements for Corteva to submit reports on CRW IPM Stewardship and resistance monitoring within the time frames specified in this letter.

a. Integrated Pest Management Stewardship Program

1. Corteva must implement an IPM-based stewardship program for SmartStax®PRO Enlist® Refuge Advanced® corn. This program must be designed to reduce selection pressure for corn rootworm (CRW) resistance by encouraging growers to engage in a multi-year crop rotation strategy involving the use of one or more of the following: a non-CRW host crop (e.g., soybean), pyramided *Bt* corn Plant Incorporated Protectants (PIPs), other PIP corn products with different modes of action, and/or non-PIP or non-CRW protected *Bt* corn. As part of the stewardship program, Corteva must update the technology use guide/grower guide and other grower educational materials to indicate that application of an insecticide to the soil surface, in furrows, and/or incorporated into the soil (referred to as "soil applied insecticide", "soil insecticide" or "SAI") with SmartStax®PRO Enlist® Refuge Advanced® corn is not recommended for control of CRW except under limited circumstances and in consultation with extension, crop consultants or other local experts. Grower education materials should also state that SAIs should not be necessary for CRW control with pyramided CRW trait *Bt* corn product(s). As part of the stewardship program, Corteva must promote the ABSTC/NCGA Best Management Practices (BMPs) for CRW control. Implementation of the IPM strategy can include:

   - Grower education initiatives or incentives;
   - Outreach to extension and consultant groups.

2. Corteva must submit an annual report to EPA documenting activities conducted under the IPM stewardship program. This report must include an anonymous survey of grower practices, including adoption levels of the various crop rotation options (if employed) and other elements of the stewardship program. Corteva may combine this product with other registered products to submit one annual report. The report must be submitted by January 31st each year.

b. Refuge Requirements for SmartStax®PRO Enlist® Refuge Advanced®

The following information must be included on the product bag or bag-tag as sold per respective region and in the Grower Guide:

Corn-Belt/Non-Cotton Growing Areas

SmartStax®PRO Enlist® Refuge Advanced® corn contains a Lepidopteran and corn rootworm refuge that is "in the bag" and is automatically implemented when the grower plants the product. No additional refuge is required when planting this product.

Foliar insecticide treatments for control of European corn borer, corn earworm, southwestern corn borer, fall armyworm, black cutworm, western bean cutworm, lesser corn stalk borer, southern corn stalk borer, stalk borer, and sugarcane borer may be applied only if economic thresholds are reached for one or more of these target pests. Foliar insecticide treatments are also permitted for control of corn rootworm adults if economic thresholds are reached. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service Agents, crop consultants).

Cotton-Growing Region Refuge Requirements

These refuge requirements do not apply to planting of inbred/hybrid corn seed productions, breeding, and small-scale research trials on up to a total of 20,000 acres per county and up to a combined United States (U.S.) total of 250,000 acres per plant-incorporated protectant (PIP) active ingredient per registrant per year. Grower agreements (also known as stewardship agreements) will specify that growers must adhere to the refuge requirements as described in the grower guide/product use guide and/or in supplements to the grower guide/product use guide.

In cotton-growing regions where corn earworm is a significant pest:

- The 20% refuge must be planted with non-PIP hybrids.
- SmartStax®PRO Enlist® Refuge Advanced® and the 20% non-PIP refuge should be sown on the same day, or with the shortest window possible between planting dates.
- External refuges may be planted as an in-field or adjacent (e.g., across the road) refuge or as a separate block within 1/2 mile of the SmartStax®PRO Enlist® Refuge Advanced® corn field.
- In field refuge options include blocks, perimeter strips (i.e., along the edges or headlands), or infield strips.
- When planting the refuge in strips across the field, refuges must be at least four (4) rows wide.
- Foliar insecticide treatments for control of European corn borer, corn earworm, southwestern corn borer,

fall armyworm, black cutworm, western bean cutworm, lesser corn stalk borer, southern corn stalk borer, stalk borer and sugarcane borer may be applied only if economic thresholds are reached for one or more of these target pests. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants). Microbial *Bt* insecticides must not be applied to non-PIP corn refuge plants.

- Cotton-growing areas include the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex) and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard).

c. Grower Agreements for SmartStax®PRO Enlist® Refuge Advanced®

1. Persons purchasing SmartStax®PRO Enlist® Refuge Advanced® corn must sign a grower agreement. The term grower agreement refers to any grower purchase contract, license agreement, or similar legal document.

2. The grower agreement and/or specific stewardship documents referenced in the grower agreement must clearly set forth the terms of the current IRM program. By signing the grower agreement, a grower must be contractually bound to comply with the requirements of the IRM program.

3. Corteva must continue to integrate this registration into the current system used for its other *Bt* corn plant- incorporated protectants, which is reasonably likely to assure that persons purchasing SmartStax®PRO Enlist® Refuge Advanced® corn will affirm annually that they are contractually bound to comply with the requirements of the IRM program.

4. Corteva must continue to use its current grower agreement for SmartStax®PRO Enlist® Refuge Advanced® corn. If Corteva wishes to change any part of the grower agreement or any specific stewardship documents referenced in the grower agreement that would affect either the content of the IRM program or the legal enforceability of the provisions of the agreement relating to the IRM program, then thirty (30) days prior to implementing a proposed change, Corteva must submit to EPA the text of such changes to ensure that it is consistent with the terms and conditions of this amended registration.

5. Corteva shall maintain records of all SmartStax®PRO Enlist® Refuge Advanced® corn grower agreements for a period of three (3) years from December 31st of the year in which the agreement was signed.

6. Corteva shall make available to the Agency upon request records of the number of units of SmartStax®PRO Enlist® Refuge Advanced® corn seed sold or shipped and not returned, and the number of such units that were sold to persons who have signed grower agreements for the previous growing season. Corteva is required to submit reports within three months of the Agency's request.

7. Corteva must allow a review of the grower agreements and grower agreement records by EPA or by a State pesticide regulatory agency if the State agency can demonstrate that confidential business

information, including names, personal information, and grower license numbers of the growers, will be protected.

d. IRM Education and IRM Compliance Monitoring Program for SmartStax®PRO Enlist® Refuge Advanced® in EPA-designated Cotton Counties

1. Corteva must implement and enhance (as set forth in paragraph 17 of this section) a comprehensive, ongoing IRM education program designed to convey to SmartStax®PRO Enlist® Refuge Advanced® corn users the importance of complying with the IRM program, as well as seed blend product performance expectations and guidance to growers on actions to take when unexpected damage occurs. The program shall include information encouraging SmartStax®PRO Enlist® Refuge Advanced® corn users to pursue optional elements of the IRM program relating to refuge configuration and proximity to SmartStax®PRO Enlist® Refuge Advanced® corn fields. The education program shall involve the use of multiple media, e.g. face-to-face meetings, mailing written materials, EPA-reviewed language on IRM requirements on the bag or bag tag, and electronic communications such as by internet, radio, or television commercials. The program shall involve at least one written communication annually to each SmartStax®PRO Enlist® Refuge Advanced® corn user separate from the grower technical guide. The communication shall inform the user of the current IRM requirements and specifically the need to plant a lepidopteran refuge in cotton growing regions. Corteva shall coordinate its education program with the educational efforts of other registrants and other organizations, such as the National Corn Growers Association and state extension programs.

2. Corteva shall revise, and expand as necessary, its education program to take into account the information collected through the compliance survey, required under paragraphs 6–9 of this section, and from other sources. The changes shall address aspects of grower compliance that are not sufficiently high.

3. Upon EPA request, Corteva shall provide copies of grower education materials and information on grower education activities including any substantive changes to these materials and activities conducted either individually or as part of the industry working group Agricultural Biotechnology Stewardship Technical Committee (ABSTC). Corteva is required to submit reports within three months of the Agency's request. The required features of the compliance assurance program are described in paragraphs 4–22 of this section.

4. Corteva must implement and improve an ongoing IRM compliance assurance program designed to evaluate the extent to which growers purchasing SmartStax®PRO Enlist® Refuge Advanced® corn are compliant with the requirement of a 20% refuge for lepidopteran pests in cotton growing areas, and that takes such actions as are reasonably needed to assure that growers who have not complied with the program either do so in the future or lose their access to Corteva's *Bt* corn products. Corteva shall coordinate with other *Bt* corn registrants in improving its compliance assurance program and integrate this registration into the current compliance assurance program used for its other *Bt* corn plant-incorporated protectants. Other required features of the program are described in paragraphs 5–22 of this section.

5. Corteva must maintain and publicize a phased compliance approach (i.e., a guidance document that indicates how it will address instances of non-compliance with the terms of the IRM program and general criteria for choosing among options for responding to any non-compliant growers after the first year of non-compliance). While recognizing that for reasons of difference in business practices there are needs for flexibility between different companies, Corteva must use a consistent set of standards for responding to non-compliance. A grower found with a second incident of significant non-compliance

with refuge requirements for the *Bt* corn product within a five-year period will be denied access the next year to Corteva's *Bt* corn products. Similarly, seed dealers who are not fulfilling their obligations to inform/educate growers of their IRM obligations will lose their opportunity to sell *Bt* corn.

6. The IRM compliance assurance program shall include an annual survey, conducted by an independent third-party, of a statistically representative sample of growers SmartStax®PRO Enlist® Refuge Advanced® corn. The survey shall be conducted in odd-numbered years beginning in 2023 and shall include growers who plant 100 or more acres of corn in the Southern U.S. corn-cotton areas. Corteva may collaborate with other registrants of *Bt* corn [for example, through the industry working group the Agricultural Biotechnology Stewardship Technical Committee (ABSTC)] to conduct the survey.

   In the U.S. Corn Belt, no anonymous grower survey is required for SmartStax®PRO Enlist® Refuge Advanced® corn if Corteva can demonstrate that the industry-wide adoption of integrated refuge products (i.e., refuge seed blends) is equal to or greater than 70% of *Bt* corn acres in the Corn Belt. If industry- wide adoption of integrated refuge products (i.e., refuge seed blends) falls below 70% of *Bt* corn acres in the Corn Belt, an anonymous grower survey shall also be conducted in this region during the next growing season using a statistically representative sample of growers who plant 200 or more acres of corn, and grower surveys shall be continued every odd-numbered year until the industry-wide adoption of integrated refuge products (i.e., refuge seed blends) is again equal to or greater than 70% of *Bt* corn acres in this region. Corteva may collaborate with other registrants of *Bt* corn (for example, through the industry working group the ABSTC) to compile the integrated refuge adoption data and to conduct the surveys.

   Alternatively, if Corteva is not a participant of an industry working group (e.g., the ABSTC) and Corteva's sales of integrated refuge products are equal to or greater than 70% of Corteva's total *Bt* corn sales in the prior year, then no anonymous grower survey is required in the U.S. Corn Belt. If Corteva's sales of integrated refuge products fall below 70% of Corteva's total *Bt* corn sales, an anonymous grower survey shall also be conducted in this region during the next growing season using a statistically representative sample of growers who plant 200 or more acres of corn, and grower surveys shall be continued every odd-numbered year until sales of integrated refuge products (i.e., refuge seed blends) are again equal to or greater than 70% of Corteva's total *Bt* corn sales in this region.

   - A third-party is classified as a party other than the registrant, the grower, or anyone else with a direct interest in IRM compliance for *Bt* corn.

7. The survey shall be designed to provide an understanding of any difficulties growers encounter in implementing IRM requirements. An analysis of survey results must include the reasons, extent, and potential biological significance of any implementation deviations.

8. The survey shall be designed to obtain grower feedback on the usefulness of specific educational tools and initiatives.

9. In years in which the survey is conducted, Corteva shall provide a final written summary of the results of the survey (together with a description of the regions, the methodology used, and the supporting data) to EPA on or before January 31st of the following year. Corteva shall confer with other registrants and EPA on the design and content of the survey prior to its implementation.

10. Corteva shall revise, and expand as necessary, its compliance assurance program to take into account the information collected through the compliance survey, required under paragraphs 6–9 of this section, and from other sources. The changes shall address aspects of grower compliance that are not

sufficiently high. Corteva must confer with EPA prior to adopting any changes.

11. Corteva shall conduct and enhance an annual on-farm assessment program. Corteva shall train its representatives who make on-farm visits with SmartStax®PRO Enlist® Refuge Advanced® corn growers to perform assessments of compliance with IRM requirements. There is no minimum corn acreage size for this program. Therefore, growers will be selected for this program from across all farm sizes. In the event that any of these visits result in the identification of a grower who is not in compliance with the IRM program, Corteva shall take appropriate action, consistent with its phased compliance approach, to promote compliance.

12. Corteva shall implement a program for investigating legitimate tips and complaints that SmartStax®PRO Enlist® Refuge Advanced® corn growers are not in compliance with the IRM program. Whenever an investigation results in the identification of a grower who is not in compliance with the IRM program, Corteva shall take appropriate action, consistent with its phased compliance approach.

13. If a grower, who purchases SmartStax®PRO Enlist® Refuge Advanced® corn for planting, was specifically identified as not being in compliance during the previous year, Corteva shall visit with the grower and evaluate whether the grower is in compliance with the IRM program for the current year.

14. Annually, by January 31st each year, Corteva must provide a report to EPA summarizing the SmartStax®PRO Enlist® Refuge Advanced® compliance assurance program activities and results for the prior year and plans for the SmartStax®PRO Enlist® Refuge Advanced® compliance assurance program for the current year. Within one month of submitting this report to EPA, the registrant shall meet with EPA to discuss its findings. The report must inform EPA of the number of growers deemed ineligible to purchase *Bt* corn seed on the basis of continued non-compliance with the insect resistance management refuge requirements. Corteva may elect to coordinate information with other registrants and report collectively the results of compliance assurance programs.

15. Corteva and the seed corn dealers for Corteva must allow a review of the compliance records by EPA or by a State pesticide regulatory agency if the State agency can demonstrate that confidential business information, including the names, personal information, and grower license numbers of the growers, will be protected.

16. Corteva shall revise and expand its existing Compliance Assurance Program to include the following elements. The registrant may coordinate with other registrants in designing and implementing its Compliance Assurance Program.

17. Corteva will enhance the refuge education program throughout the seed delivery channel:

    - Ensure sales representatives, licensees, seed dealers, and growers recognize the importance of correct refuge implementation and potential consequences of failure to plant the required refuge.

    - Implement a “bag tag” that will be attached to all bags of SmartStax®PRO Enlist® Refuge Advanced® seed sold and delivered. The purpose of this bag tag is to remind growers that SmartStax® PRO Enlist® Refuge Advanced® products require a separate 20% lepidopteran refuge in cotton growing areas. The PIP product label accepted by EPA must include how this information will be conveyed to growers via text and graphics.

18. Corteva will focus the majority of on-farm assessments on regions with the greatest risks for resistance:

- Use *Bt* corn adoption, pest pressure information, and other available information to identify regions where the risk of resistance is greatest;

- Focus approximately two-thirds of on-farm assessments on these regions, with the remaining assessments conducted across other regions where SmartStax®PRO Enlist® Refuge Advanced® is used.

19. Corteva will use its available SmartStax®PRO Enlist® Refuge Advanced® sales records and other information to refine grower lists for on-farm assessments of their compliance with refuge requirements:

    - Identify for potential on-farm assessment growers whose sales information indicates they have purchased SmartStax®PRO Enlist® Refuge Advanced® corn product but may have purchased little or no refuge seed from the registrant, licensee, or affiliated company.

20. Corteva will contract with third parties to perform on-farm assessments of compliance with refuge requirements:

    - The third-party assessors will conduct all first-time on-farm assessments as well as second-year on-farm assessments of those growers found out of compliance in a first- time assessment.

21. Corteva will annually refine the on-farm assessment program for the SmartStax®PRO Enlist® Refuge Advanced® corn product to reflect the adoption rate and level of refuge compliance for the product.

22. Corteva will follow up with growers who have been found significantly out of compliance under the on-farm assessment program and are found to be back in compliance the following year:

    - All growers found to be significantly out of compliance in a prior year will annually be sent additional refuge assistance information for a minimum of two years by Corteva, seed supplier, or third-party assessor, after completing the assessment process;

    - Corteva will conduct follow-up checks on growers found to be significantly out of compliance within three years after they are found to be back in compliance;

    - A grower found with a second incident of significant non-compliance with refuge requirements for the *Bt* corn product within a five-year period will be denied access to Corteva's *Bt* corn products the next year. Similarly, seed dealers who are not fulfilling their obligations to inform/educate growers of their IRM obligations will lose their opportunity to sell *Bt* corn.

e. Insect Resistance Monitoring and Mitigation Plan for SmartStax®PRO Enlist® Refuge Advanced®

1. <u>EPA is imposing the following conditions for the Cry1A.105, Cry2Ab2, and Cry1F toxins expressed in SmartStax®PRO Enlist® Refuge Advanced®</u>

Corteva will monitor for resistance to Cry1A.105, Cry2Ab2, and Cry1F expressed in SmartStax®PRO Enlist® Refuge Advanced® corn. The monitoring program shall consist of two approaches: (1) focused population sampling and laboratory testing; and (2) investigation of reports

of less-than expected control of labeled insects. Should field-relevant resistance be confirmed, an appropriate resistance management action plan will be implemented.

Focused Population Sampling

Corteva shall annually sample and bioassay populations of the key target pests: Ostrinia nubilalis (European corn borer; ECB), Diatraea grandiosella (southwestern corn borer; SWCB), and Helicoverpa zea (corn earworm; CEW). Sampling for the target pests will be focused in areas identified as those with the highest risk of resistance development (e.g., where lepidopteran active *Bt* hybrids are planted on a high proportion of the corn acres, and where the insect species are regarded as key pests of corn). Bioassay methods must be appropriate for the goal of detecting field-relevant shifts in population response to SmartStax®PRO Enlist® Refuge Advanced® corn and/or changes in resistance allele frequency in response to the use of SmartStax®PRO Enlist® Refuge Advanced® corn and, as far as possible, should be consistent across sampling years to enable comparisons with historical data.

The number of populations to be collected shall reflect the regional importance of the insect species as a pest, and specific collection regions will be identified for each pest. For ECB, a minimum of twelve (12) populations across the sampling region will be targeted for collection at each annual sampling. For SWCB, the target will be a minimum of six (6) populations. For CEW, the target will be a minimum of ten (10) populations. Pest populations should be collected from multiple corn-growing states reflective of different geographies and agronomic conditions. To obtain sufficient sensitivity to detect resistance alleles before they become common enough to cause measurable field damage, each population collection shall attempt to target 400 insect genomes (egg masses, larvae, mated females, and/or mixed-sex adults), but a successful population collection will contain a minimum of 100 genomes. It is recognized that it may not be possible to collect the target number of insect populations or genomes due to factors such as natural fluctuations in pest density, environmental conditions, and area-wide pest suppression.

The sampling program and geographic range of collections may be modified as appropriate based on changes in pest importance and for the adoption levels of SmartStax®PRO Enlist® Refuge Advanced® corn. EPA shall be consulted prior to the implementation of such modifications.

Corteva will report to EPA, on or before January 31st of each year, the results of the population sampling and bioassay monitoring program.

Any incidence of unusually low sensitivity to the Cry1A.105, Cry2Ab2, and Cry1F proteins in bioassays shall be investigated as soon as possible to understand any field relevance of such a finding. Such investigations shall proceed in a stepwise manner until the field relevance can be either confirmed or refuted, and results of these shall be reported to EPA annually on or before January 31st. The investigative steps will include the following:

i. Re-test progeny of the collected population to determine whether the unusual bioassay response is reproducible and heritable. If it is not reproducible and heritable, no further action is required.

ii. If the unusual response is reproducible and heritable, progeny of insects that survive the diagnostic concentration will be tested using methods that are representative of exposure to

SmartStax®PRO Enlist® Refuge Advanced® corn under field conditions. If progeny do not survive to adulthood, any suspected resistance is not field relevant and no further action is required.

iii. If insects survive steps 1 and 2, resistance is confirmed, and further steps will be taken to evaluate the resistance. These steps may include the following:

a. Determining the nature of the resistance (i.e., recessive or dominant, and the level of functional dominance);

b. Estimating the resistance allele frequency in the original population;

c. Determining whether the resistance allele frequency is increasing by analyzing field collections in subsequent years sampled from the same site where the resistance allele(s) was originally collected;

d. Determining the geographic distribution of the resistance allele by analyzing field collections in subsequent years from sites surrounding the site where the resistance allele(s) was originally collected.

Should field-relevant resistance be confirmed, and the resistance appears to be increasing or spreading, Corteva will consult with EPA to develop and implement a case-specific resistance management action plan.

Investigation of Reports of Unexpected Levels of Damage by the Target Pests

Corteva will follow up on grower, extension specialist, or consultant reports of unexpected levels of damage by the lepidopteran pests listed on the pesticide label. Corteva will instruct its customers to contact them if such incidents occur. Corteva will investigate all legitimate reports submitted to the company or the company's representatives.

If reports of unexpected levels of damage lead to the suspicion of resistance in any of the key target pests (ECB, SWCB, and CEW), Corteva will implement the actions described below, based on the following definitions of ***suspected resistance*** and ***confirmed resistance***.

Suspected Resistance

EPA defines ***suspected resistance*** to mean field reports of unexpected levels of insect-feeding damage for which:

- The corn in question has been confirmed to be lepidopteran-active *Bt* corn;
- The seed used had the proper percentage of corn expressing *Bt* protein;
- The relevant plant tissues are expressing the expected level of *Bt* protein; and
- It has been ruled out that species not susceptible to the protein could be responsible for the damage, that no climatic or cultural reasons could be responsible for the damage, and

- That there could be no other reasonable causes for the damage.

EPA does not interpret ***suspected resistance*** to mean grower reports of possible control failures or suspicious results from annual insect monitoring assays, nor does EPA intend that extensive field studies and testing be undertaken to confirm scientifically the presence of insects resistant to SmartStax®PRO Enlist® Refuge Advanced® corn in commercial production fields before responsive measures are undertaken.

If resistance is ***suspected***, Corteva will instruct growers to do the following:

- Use alternative control measures in SmartStax®PRO Enlist® Refuge Advanced® corn fields in the affected region to control the target pest during the immediate growing season.

- Destroy SmartStax®PRO Enlist® Refuge Advanced® corn crop residues in the affected region within one (1) month after harvest with a technique appropriate for local production practices to minimize the possibility of resistant insects over- wintering and contributing to the next season's target pest population.

Additionally, if possible, and prior to the application of alternative control measures or destruction of crop residues, Corteva will collect samples of the insect population in the affected fields for laboratory rearing and testing. Such rearing and testing shall be conducted as expeditiously as practical.

Confirmed Resistance

EPA defines ***confirmed resistance*** to mean, in the case of field reports of unexpected levels of damage from the key target pests, that all the following criteria are met:

- There is >30% insect survival and commensurate insect feeding in a bioassay, initiated with neonate larvae, that uses methods that are representative of exposure to *Bt* corn hybrids under field conditions (ECB and SWCB only).

- In standardized laboratory bioassays using diagnostic concentrations of the *Bt* protein suited to the target pest in question, the pest exhibits resistance that has a genetic basis and the level of survivorship indicates that there may be a resistance allele frequency of ≥ 0.1 in the sampled population.

- In standardized laboratory bioassays, the LC_{50} exceeds the upper limit of the 95% confidence interval of the LC_{50} for susceptible populations surveyed both in the original baselines developed for this pest species and in previous years of field monitoring.

Response to Confirmed Resistance in a Key Target Pest as the Cause of Unexpected Levels of Damage in the Field

When field resistance is ***confirmed*** (as defined above), the following steps will be taken by Corteva:

- EPA will receive notification within 30 days of resistance confirmation;

- Affected customers and extension agents will be notified about confirmed resistance within 30 days;

- Monitoring will be increased in the affected area and local target pest populations will be sampled annually to determine the extent and impact of resistance;

- If appropriate (depending on the resistant pest species, the extent of resistance, the timing of resistance, and the nature of resistance, and the availability of suitable alternative control measures), alternative control measures will be employed to reduce or control target pest populations in the affected area. Alternative control measures may include advising customers and extension agents in the affected area to incorporate crop residues into the soil following harvest to minimize the possibility of over-wintering insects, and/or applications of chemical insecticides;

- Unless otherwise agreed with EPA, stop sale and distribution of the relevant lepidopteran-active *Bt* corn hybrids in the affected area immediately until an effective local mitigation plan, approved by EPA, has been implemented;

- Corteva will develop a case-specific resistance management action plan within 90 days according to the characteristics of the resistance event and local agronomic needs. Corteva will consult with appropriate stakeholders in the development of the action plan, and the details of such a plan shall be approved by EPA prior to implementation;

- Corteva will notify affected parties (e.g., growers, consultants, extension agents, seed distributors, university cooperators, and state/federal authorities as appropriate) in the region of the resistance situation and approved action plan; and

- In subsequent growing seasons, maintain sales suspension and alternative resistance management strategies in the affected region(s) for the *Bt* corn hybrids that are affected by the resistant population until an EPA-approved local resistance management plan is in place to mitigate the resistance.

A report on results of resistance monitoring and investigations of damage reports must be submitted to EPA, on or before January 31st of each year, for the duration of the registration.

2. <u>EPA is imposing the following conditions for the Cry34/35Ab1, DvSnf7 dsRNA, and Cry3Bb1 toxins expressed in SmartStax®PRO Enlist® Refuge Advanced®:</u>

a) <u>Investigation of Reports of Unexpected Levels of Damage (UXD) by Corn Rootworm (CRW): Performance Inquiries</u>

1) Corteva is required to investigate "performance inquiries" (i.e., reports of unexpected CRW damage to SmartStax®PRO Enlist® Refuge Advanced® corn) from growers. Fields (defined as a tract separated by permanent boundaries such as fences, permanent waterways, woodlands, croplines not subject to change because of farming practices, or other similar features) with unexpected damage that meet both of the criteria below must be subjected to the follow-up actions in part 2) below:

a. The affected plants are confirmed to be SmartStax®PRO Enlist® Refuge Advanced® corn plants (take leaf samples to determine the presence of the CRW-active *Bt* protein); and

b. Corn rootworm feeding caused root damage with a Node Injury Score (NIS) > 0.5 on at least 50% of plants surveyed in a transect sampling of the damaged site(s) within the field.

2) Follow-up actions (performance inquiries). For SmartStax®PRO Enlist® Refuge Advanced® corn fields meeting the criteria in part 1) above, Corteva must take the following actions:

a. Collect at least 250 (ideally 500 or more) CRW adult individuals from the damaged site within the field in question. Collections may be extended to the whole field, if necessary to obtain sufficient CRW adult individuals. Collected populations must be subjected to the steps described for "investigation of populations of concern" in section e(2)(b) below.

- If collections are unsuccessful, visit affected farm or field the following year (assuming the grower continues to be a customer and repurchases seed and does not rotate the field to a non-host crop) and attempt to collect CRW adults. If beetles are not present the subsequent year, see section e(2)(b)(3)(c) below.

b. Review with the grower their CRW management practices and provide CRW management recommendations including an assessment of corn fields with similar trait(s) adjacent to the affected corn field that are managed by the same grower.

c. Use of single trait products containing the CRW traits in SmartStax®PRO Enlist® Refuge Advanced® in fields with unexpected damage in previous years should be discouraged. Recommended management options include, but are not limited to, the following:

- Primary option:
  - Rotation to non-host crop (e.g., soybean)
- Secondary options:
  - Use of pyramided *Bt* corn products one or more different CRW PIP trait(s);
  - Use of different CRW PIP traits (i.e., an alternative CRW-active PIP);
  - Use of non-PIP or non-CRW protected corn.
- Tertiary options:
  - If additional pest management need is determined beyond the secondary options listed above, use of the same pyramided *Bt* corn product is acceptable if it is very unlikely that both of the traits are affected (e.g., the affected field experienced UXD to one of the traits in the product in the previous year, the NIS is less than 1.0, there has been no continuous use of the second trait in the product in the affected field, and Corteva has not been informed of resistance to the second trait in the county)
  - Additional corn rootworm control tools (e.g., soil applied insecticides, chemigation) should be considered

d. If field(s) with UXD is/are planted to a non-host crop (e.g., soybean) the following year, then the area will be considered "mitigated" (as discussed in section e(2)(b)(3)(d) below) even if subsequent bioassay results show that the population was resistant. No further action will be required by Corteva for the UXD case.

3) Corteva must submit an annual report to EPA detailing activities related to investigations of unexpected damage (UXD). This report will include the information from the most recent and previous corn growing seasons:

a. Information from the most recent season:

- The number of UXD reports investigated;
- Location (by county and state);
- CRW sampling (number and location of populations collected).

b. Information from the previous season:

- The final disposition of UXD fields from the previous season (i.e., the management practices employed in response to UXD if the grower continues to be a customer.
- Results from bioassays conducted on CRW populations from UXD fields where the primary management option, rotation to non-host crop, was not used.

c. Grower information, such as farm addresses or other personally identifiable information, or other sensitive business/customer information must not be included in this report. This report must be submitted by November 30th each year.

b) <u>Investigation of Populations of Concern</u>

1) Corteva must conduct investigations of all CRW populations collected as part of the performance inquiry process in section e(2)(a) above. These investigations must include the use of an EPA-approved bioassay to determine if sampled CRW populations are resistant to any of the CRW PIP toxins in SmartStax®PRO Enlist® Refuge Advanced®. Acceptable assays must be able to function as diagnostic tools capable of distinguishing resistant populations from susceptible ones. Unless previously approved, Corteva must consult with EPA on their bioassay prior to its use.

2) A CRW population will be considered by EPA to be resistant to a CRW PIP toxin if the following criteria are met and additional collections and testing are not deemed to be necessary (based on part 3) below):

a. An initial performance inquiry investigation results in a finding of Unexpected Damage; and

b. Where green tissues are available and if plants are unusually stressed due to agronomic and/or environmental factors, *Bt* protein levels in affected plants are found to be within the documented range for that hybrid (if data are available); and

c. Either (A): On-plant bioassays of insect collections from the UXD fields result in the following two statistically relevant comparisons:

i. A statistically significant difference in measures of either mortality or sublethal effects (growth/development) between the field population and a relevant susceptible control population (i.e., one that responds as a typical susceptible field population) on *Bt* corn containing the single PIP and/or lack of a statistically significant difference in measures of mortality or sublethal effect between the field population and a resistant positive control population[1]; and

ii. A lack of a statistically significant difference in the same measures of the field population raised on *Bt* corn containing the single PIP and non-PIP corn plants.

Or (B): Sublethal seedling bioassay of insect collections from the UXD fields result in two statistically relevant comparisons:

i. A statistically significant difference in measures of sublethal effects (growth/development) for populations on *Bt* corn containing the single PIP (normalized using non-PIP) seedlings between the field population and a relevant susceptible control population where available or historical field populations and/or lack of a statistically significant difference in measures between the field population and a resistant positive control population[1]; and

ii. A lack of a statistically significant difference in the same measures of the field population raised on *Bt* corn seedlings containing the single PIP and non-PIP corn seedlings

Or (C): Diet-based bioassays of insect collections from the UXD fields result in two statistically relevant comparisons:

i. A statistically significant difference in measures of lethal or sublethal effects (growth/development) on diet containing the *Bt* protein (diagnostic concentration or concentration-response measures) between the field population and a relevant susceptible control population where available or historical field populations and/or lack of a statistically significant difference in measures between field population and a resistant positive control population[1]; and

ii. Either a lack of a statistically significant difference in the same measures of the field population exposed to diet containing the *Bt* protein (diagnostic concentration) and diet not containing the *Bt* protein and/or lack of a statistically significant difference in measures between the field population and a resistant positive control population, or lack of a statistically significant concentration and/or lack of a statistically significant difference in concentration response between the field and a resistant positive control population[1].

3) Mitigation, as detailed in section e(2)(c) below, is required for any CRW population that meets EPA's resistance criteria above for any of the CRW traits in SmartStax®PRO Enlist® Refuge Advanced®, unless the circumstances described below are applicable.

[1] If a resistant positive control population is not available or accessible, Corteva must consult with EPA prior to initiating bioassays and work to develop an appropriate resistant positive control population.

a. To minimize the potential for incorrectly reaching a conclusion of resistance, another year of CRW adult collections and additional testing is needed to determine resistance if:

i. The results of the bioassays are inconclusive (e.g., the results of the statistical analysis are unclear because of low sample sizes); or

ii. Another reasonable explanation for the unexpected damage exists (e.g., high pest pressure and/or high plant stress).

b. In these cases, Corteva and EPA will discuss and align on next steps before reaching any resistance conclusion.

c. If CRW collections are not possible in the current year or subsequent year due to successful management practices, then no further investigation is needed. The population would be considered "mitigated" meaning, in this case, that the population is suppressed or extirpated for the UXD field. However, EPA recommends that Corteva continue to be vigilant in areas where CRW populations were successfully mitigated.

d. If a UXD field receives non-host crop (e.g., soybean) rotation the following year as described in Section e(2)(a)(2) above, no additional mitigation is subsequently required.

c) Mitigation of CRW Populations Meeting EPA's Resistance Criteria

1) For any CRW population found to be resistant to one or more of the CRW traits in SmartStax®PRO Enlist® Refuge Advanced® under EPA's criteria described in section e(2)(b) above, Corteva must take the following steps:

a) Corteva must inform EPA of all the results of the bioassays as soon as possible, but at least within 30 days if measures are triggered.

b) The mitigation action area (MAA) is defined as the growers' farming operation up to a ½ mile radius from the damaged site that produced the resistant population.

c) Within 30 days of informing EPA of the results of the bioassays, Corteva must notify state extension agents and crop consultants who operate within the county in which resistance was identified. Information shared must include identification of the county in which resistance was detected and trait(s) affected.

d) Within the MAA, Corteva must do the following:

i. Prior to finalizing the grower's seed order for the following season, inform the affected grower and other registrants that hold registrations containing the compromised trait(s). Corteva must also inform neighboring growers if those growers are customers of Corteva. Information shared must include identification of the county in which resistance was detected and trait(s) affected;

ii. Discontinue sales/planting of products containing the compromised trait(s) without additional/alternative (i.e. non-compromised) CRW traits until resistance has been demonstrated to have been mitigated. Other *Bt* registrants selling such products in the MAA are encouraged, but cannot be required, to follow suit;

iii. Corteva must monitor the resistant population in the MAA, as long as grower remains a customer of the company, until mitigation has been demonstrated as described in part e below unless otherwise agreed with EPA.

iv. Require any pyramids sold by Corteva containing the compromised trait(s) be planted with a 20% refuge until resistance has been demonstrated to have been mitigated. Other *Bt* corn registrants selling such pyramided products in the MAA are encouraged, but cannot be required by this term of registration, to follow suit;

v. For Corteva's affected customer's field(s), the mitigation goal is to control the resistant CRW population. Within the MAA Corteva shall encourage the use of "Mitigation Practices" including:

1. Primary option: Rotation to a non-host crop (e.g., soybean);

2. Secondary options:

a. Use of pyramided *Bt* corn products with different CRW PIP traits;

b. Only in the case that the resistance definition for one of the CRW traits in the SmartStax®PRO Enlist® Refuge Advanced® is not met, continued use of the product with a 20% refuge;

c. Use of different CRW PIP traits (i.e., an alternative CRW-active PIP);

d. Use of non-PIP corn or non-CRW protected corn (with/without soil-applied insecticide);

3. Tertiary options:

a. If additional pest management need is determined beyond the secondary options listed above, additional CRW control tools (e.g., soil insecticides, seed-applied insecticides, chemigation) should be used.

b. Use of foliar applications to control adults (when appropriate economic thresholds have been met) may be used in conjunction with one or more of the above.

e) A resistant CRW population in the MAA will be considered mitigated if one of the following criteria is met:

i. Corn fields within the MAA are rotated to a non-host crop (e.g. soybean) for one growing season.

ii. After implementation of mitigation practices (part d.v above), resistance monitoring (sampling) is conducted but few CRW are found (i.e., <0.1 adults per plant) and environmental conditions (e.g., weather) are unlikely to be responsible for the lack of adult CRW presence. If environmental conditions are a factor, then monitoring should continue for another season.

iii. After implementation practices (part d.v above), resistance monitoring (sampling) is conducted, CRW are found and collected, and bioassays (section e(2)(b)(2) above) show that the population susceptibility to the compromised trait(s) has returned to baseline levels.

f) The mitigation actions in part d above can be lifted, and growers can resume the use of SmartStax®PRO Enlist® Refuge Advanced® corn as a primary tool for CRW management in the MAA, only when Corteva demonstrates that successful mitigation as described in part e above has been achieved.

2) Based on further research to understand CRW resistance to *Bt* PIPs, EPA will consider refinements to the resistance mitigation program. Such research may include characterizing the genetics of resistance (e.g., number of genes, functional dominance, mechanism of resistance, and cross-resistance) and the biology of resistant insects (e.g., fitness in the presence and absence of the product), and other control tactics.

f. Refuge Assurance Program for SmartStax®PRO Enlist® Refuge Advanced®

Corteva must implement a Blended Seed Refuge Assurance Program designed to ensure SmartStax®PRO Enlist® Refuge Advanced® corn products are formulated with the appropriate rate of refuge seeds. The program must include the following four elements:

1. Trait purity check on seed lots prior to blending;

2. ISO 9000 Standard Operating Procedures for the blending process;

3. Calibration of blending equipment; and

4. Records and data retention records for seed blend products.

- Calibration records - Corteva will retain documentation for a specified period of time on the equipment calibration including the procedure, when it was conducted and the results.

- Blend proportion records (weight and kernel based) - Corteva will retain documentation for a specified period of time on the kernel per pound data of the components, the calculations to determine the proportions based on weight and the actual weights that are blended together to make up an SmartStax®PRO Enlist® Refuge Advanced® corn product by seed lot.

All records must be maintained at the Corteva blending facility and must be available for the EPA review upon request.

Should Corteva Agriscience LLC or its Licensees be notified by USDA/AMS or State Seed Control Officials that their seed blend products have been found to have a lower percentage of the refuge component than is represented on the label, they must notify EPA within 30 days. This would constitute information reportable under FIFRA 6(a)(2).

g. Annual Reporting Requirements for SmartStax®PRO Enlist® Refuge Advanced®

The following annual reports must be submitted:

1. Compliance Assurance Plan: Compliance Assurance Program activities, including IRM Grower Survey results and on-farm assessment results for the prior year and plans for the compliance assurance program for the current year, on or before January 31st each year.

2. Insect Resistance Monitoring Results (Cry1A.105, Cry2Ab2, and Cry1F only): results of monitoring and investigations of damage reports, January 31st of each year.

3. IPM Stewardship Program (Cry34/35Ab1, DvSnf7 dsRNA, and Cry3Bb1 only): Activities conducted under the IPM stewardship program, including an anonymous survey of grower practices, adoption levels of the various crop rotation options (if employed) and other elements of the stewardship program, on or before January 31st of each year.

4. Unexpected Damage Investigations (Cry34/35Ab1, DvSnf7 dsRNA, and Cry3Bb1only): Activities related to investigations of unexpected damage (UXD), including number and location of UXD cases, insect sampling, bioassays, and final disposition of UXD fields from the most recent and previous corn growing seasons, on or before November 30th of each year.

Should you wish to add/retain a reference to your company's website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the EPA. If the website is false or misleading, the product will be considered to be misbranded and sale or distribution of the product is unlawful under FIFRA section 12(a)(1)(E). 40 CFR § 156.10(a)(5) lists examples of statements the EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the EPA find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA-approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance Assurance.

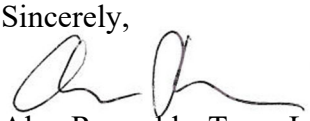
Your release for shipment of this product constitutes acceptance of these terms and conditions. If you fail to satisfy these terms and conditions, the EPA will consider appropriate regulatory action including, among other things, cancellation under FIFRA section 6(e).

A stamped copy of the labeling is enclosed for your records. Please also note that the record for this product currently contains the following acceptable Confidential Statement of Formula (CSF):

- Basic CSF dated 3/11/2016

If you have any questions, please contact Matt Weiner by phone at (202) 564-1509 or via email at weiner.matthew@epa.gov.

Sincerely,



Alan Reynolds, Team Leader
Emerging Technologies Branch
Biopesticides and Pollution
Prevention Division (7511P)
Office of Pesticide Programs

Enclosure

Plant-Incorporated Protectant Label

SmartStax®PRO Enlist® Refuge Advanced®‡

(Alternate Brand Name: SmartStax®PRO Refuge Advanced®)‡
(Alternate Brand Name: MON 89034 × TC1507 × MON 87411 × DAS-59122-7
Insect-Protected, Herbicide-Tolerant Corn with interspersed refuge)
(OECD Unique Identifier: MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS-59122-7)

(Alternate Brand Name: MON 87427 × MON 89034 × TC1507 × MON 87411 × DAS-59122-7
Insect-Protected, Herbicide-Tolerant Corn with interspersed refuge)
(OECD Unique Identifier : MON-87427-7 × MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS-59122-7)

(Alternate Brand Name: MON 87427 × MON 89034 × TC1507 × MON 87411 × DAS-59122-7 × DAS-40278-9
Insect-Protected, Herbicide-Tolerant Corn with interspersed refuge)
(OECD Unique Identifier: MON-87427-7 × MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS-59122-7 × DAS-4Ø278-9)

Active Ingredients:

dsRNA transcript comprising a DvSnf7 inverted repeat sequence derived from *Diabrotica virgifera virgifera*, and the genetic material necessary (vector PV-ZMIR10871) for its production in corn event MON 87411 (OECD Unique Identifier MON-87411-9)…….……....≤ 0.00000044%*

Bacillus thuringiensis Cry1A.105 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3) ……...……≤ 0.0088%*

Bacillus thuringiensis Cry2Ab2 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3) ..……≤ 0.0048%*

Bacillus thuringiensis Cry1F protein and the genetic material (vector PHP8999) necessary for its production in corn event TC1507 (OECD Unique Identifier: DAS- Ø15Ø7-1)……..≤ 0.00096%*

Bacillus thuringiensis Cry3Bb1 protein and the genetic material (vector PV-ZMIR10871) necessary for its production in corn event MON 87411 (OECD Unique Identifier: MON-87411-9) ……...≤ 0.0041%*

Bacillus thuringiensis Cry34Ab1 protein and the genetic material (vector PHP17662) necessary for its production in corn event DAS-59122-7 (OECD Unique Identifier: DAS-59122-7) ……....≤ 0.012%*

Bacillus thuringiensis Cry35Ab1 protein and the genetic material (vector PHP17662) necessary for its production in corn event DAS-59122-7 (OECD Unique Identifier: DAS-59122-7) ……...≤ 0.0026%*

Other Ingredients:
CP4 EPSPS protein (5-enolpyruvylshikimate-3-phosphate synthase) and the genetic material (vector PV-ZMIR10871) necessary for its production in corn event MON 87411……...≤ 0.036%*

The marker protein, PAT (phosphinothricin acetyl transferase) and the genetic material (vectors PHP17662 and PHP8999) necessary for its production in corn events TC1507 and DAS-59122-7 ……≤ 0.0001%*

*Maximum percent (%) dry weight basis for whole plant (forage)

‡ SmartStax®PRO Enlist® Refuge Advanced® and SmartStax®PRO Refuge Advanced® seed with this refuge configuration contains 95% MON 89034 × TC1507 × MON 88017 × DAS-59122-7 mixed with at least 5% non-*Bt* corn within a single lot of seed.

KEEP OUT OF REACH OF CHILDREN NET CONTENTS _____

CAUTION

EPA Registration No. 62719-707

EPA Establishment No. 62719-IN-1

Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in any manner inconsistent with its labeling. This product must be used as specified in the terms and conditions of the registration.

This Plant-Incorporated Protectant (PIP) may be combined or produced through conventional breeding with other registered plant-incorporated protectants that are similarly approved for use in combination, through conventional breeding, with other registered plant-incorporated protectants to produce inbred corn lines and hybrid corn varieties with combined pesticidal traits.

SmartStax®PRO Enlist® Refuge Advanced® corn blend protects corn crops from leaf, stalk, and ear damage caused by lepidopteran corn pests listed on this label and root damage caused by corn rootworm larvae listed on this label. In order to minimize the risk of these pests developing resistance to SmartStax®PRO Enlist® Refuge Advanced® corn blend, an insect resistance management plan must be implemented as defined in the registration terms and conditions.

Grower agreements will specify that growers must adhere to the refuge requirements that will be described on the bag or bag/tag for SmartStax®PRO Enlist® Refuge Advanced® corn blend or other applicable product use documents.

Sales of corn hybrids that contain Corteva's *Bt* corn plant-incorporated pesticide(s) must be accompanied by either an IRM/Grower Guide or information on the bag or bag-tag, on planting, production, and insect resistance management, and notes that routine applications of insecticides to control these insects are usually unnecessary when corn containing the *Bt* proteins is planted.

Corn seed bags or bag tags for products containing SmartStax®PRO Enlist® Refuge Advanced® corn blend must include the refuge size requirement in text and graphical format.

INSECT RESISTANCE MANAGEMENT

Growers are instructed to read information on insect resistance management in the bag and/or bag-tag.

These refuge requirements do not apply to seed increase/propagation of inbred and hybrid seed corn up to a total of 20,000 acres per county and up to a combined United States (U.S.) total of 250,000 acres per plant-incorporated protectant (PIP) active ingredient per registrant per year.

The seed producer must ensure a minimum of 5% non-PIP refuge seed is included with SmartStax®PRO Enlist® in each lot of seed corn. The refuge seed in the seed mixture may not be treated with seed-applied insecticides for corn rootworm (CRW) control unless the SmartStax®PRO Enlist® seed in the seed mixture receives the same treatment.

The IRM/Grower Guide for SmartStax®PRO Enlist® Refuge Advanced® corn blend or comparable information presented on the product bag or bag-tag, must contain the following information:

This product is a seed mixture containing SmartStax®PRO Enlist®and a minimum of 5% non-Bt seed that when planted creates an interspersed refuge within the field. There are no requirements for a separate structured refuge for SmartStax®PRO Enlist®Refuge Advanced® corn blend when planted in the U.S. corn-growing region, including Alaska and Hawaii, because the refuge seed is contained within the bag/container.

The interspersed refuge can only be used by planting seed corn specifically generated by qualified seed producers/conditioners licensed by the registrant. Insecticidal treatments labeled for adult CRW control are discouraged during the time of adult CRW emergence.

The seed mix refuge option for SmartStax®PRO Enlist® Refuge Advanced® corn blend satisfies the refuge requirements in all regions other than in the cotton-growing region where corn earworm is a significant pest as defined below.

Additional refuge requirements in the cotton-growing region where corn earworm is a significant pest
In the cotton-growing region where corn earworm is a significant pest, as defined below, SmartStax®PRO Enlist® Refuge Advanced® corn blend requires the planting of an additional 20% structured refuge (i.e. 20 acres of non-Bt corn for every 80 acres of SmartStax®PRO Enlist® Refuge Advanced® corn blend planted).

The 20% refuge must be planted with corn hybrids that do not contain *Bt* technologies for the control of corn rootworms or corn borers. The refuge and the SmartStax®PRO Enlist® Refuge Advanced® corn blend should be sown on the same day, or with the shortest window possible between planting dates to ensure that corn root development is similar among varieties. The structured refuge may be planted as an in-field or adjacent (e.g., across the road) refuge or planted as a separate block that is within ½ mile of the SmartStax®PRO Enlist® Refuge Advanced® corn blend field. In-field refuge options include blocks, perimeter strips (i.e., strips around the field), or in-field strips. If perimeter or in-field strips are implemented, the strips must be at least 4 consecutive rows wide. The refuge can be protected from lepidopteran damage by use of non-Bt insecticides if the population of one or more target lepidopteran pests of SmartStax®PRO Enlist® Refuge Advanced® corn blend in the refuge exceeds economic thresholds. In addition, the refuge can be protected from CRW damage by an appropriate seed treatment or soil insecticide; however, insecticides labeled for adult CRW control must be avoided in the refuge during the period of CRW adult emergence. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants).

The cotton-growing region requiring the additional 20% refuge consists of the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex) and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard).

Corn Insects Controlled or Suppressed

European corn borer (ECB)	*Ostrinia nubilalis*
Southwestern corn borer (SWCB)	*Diatraea grandiosella*
Southern cornstalk borer (SCSB)	*Diatraea crambidoides*
Corn earworm (CEW)	*Helicoverpa zea*
Fall armyworm (FAW)	*Spodoptera frugiperda*
Stalk borer	*Papaipema nebris*
Lesser corn stalk borer	*Elasmopalpus lignosellus*
Sugarcane borer (SCB)	*Diatraea saccharalis*
Western bean cutworm (WBC)	*Richia albicosta*
Black cutworm	*Agrotis ipsilon*
Western corn rootworm (WCRW)	*Diabrotica virgifera virgifera*
Northern corn rootworm (NCRW)	*Diabrotica barberi*
Mexican corn rootworm (MCRW)	*Diabrotica virgifera zeae*

EPA Accepted: _____

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Pesticide Programs
Biopesticides and Pollution Prevention Division (7511M)
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

NOTICE OF PESTICIDE:
☒Registration
☐Reregistration
(under FIFRA, as amended)

EPA Reg. Number:	Date of Issuance:
524-631	6/14/2022

Term of Issuance:
Unconditional

Name of Pesticide Product:
MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend

Name and Address of Registrant (include ZIP Code):

Bayer CropScience LP
700 Chesterfield Parkway West
Chesterfield, Missouri 63017

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Biopesticides and Pollution Prevention Division prior to use of the label in commerce. In any correspondence on this product, always refer to the above EPA Registration Number.

On the basis of information furnished by the registrant, the above-named pesticide is hereby registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA or the Act).

Registration is in no way to be construed as an endorsement or recommendation of this product by the U.S. Environmental Protection Agency (EPA). In order to protect health and the environment, the Administrator, on his or her motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under the Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is unconditionally registered in accordance with FIFRA section 3(c)(5) provided that you comply with the following terms:

1. The subject registration will automatically expire at midnight on June 30, 2023.

Signature of Approving Official:

Alan Reynolds, Team Leader
Emerging Technologies Branch
Biopesticides and Pollution Prevention Division (7511P)

Date:
6/14/2022

2. The subject registration will be limited to *Bacillus thuringiensis* Cry1A.105 and Cry2Ab2 proteins and the genetic material necessary for their production (vector PV-ZMIR245) in MON 89034 corn (OECD Unique Identifier: MON-89Ø34-3), *Bacillus thuringiensis* Cry1F protein and the genetic material necessary for its production (vector PHP8999) in TC1507 corn (OECD Unique Identifier: DAS-Ø15Ø7-1), *Bacillus thuringiensis* Cry34Ab1/Cry35Ab1 proteins and the genetic material necessary for their production (vector PHP17662) in DAS-59122-7 corn (OECD Unique Identifier: DAS-59122-7), *DvSnf7* dsRNA [Double-stranded ribonucleic acid transcript comprising a *DvSnf7* inverted repeat sequence derived from western corn rootworm (*Diabrotica virgifera virgifera*)], *Bacillus thuringiensis* Cry3Bb1 protein and the genetic material necessary for their production (vector PV-ZMIR10871) in MON 87411 corn (OECD Unique Identifier: MON-87411-9), and a minimum of 5% non-PIP corn seed for use in field corn.

3. Submit/cite all data required for registration of your product under FIFRA section 3(c)(5) when the Environmental Protection Agency (EPA) requires registrants of similar products to submit such data.

4. This plant-incorporated protectant (PIP) may be combined through conventional breeding with other registered plant-incorporated protectants that are similarly approved for use in combination, through conventional breeding, with other registered plant-incorporated protectants to produce inbred corn lines and hybrid corn varieties with combined pesticidal traits.

5. Bayer CropScience LP (Bayer) must commit to do the following Insect Resistance Management (IRM) Program, consisting of the following elements:

   - Requirements for Bayer to implement an IPM-based stewardship program designed to reduce selection pressure for corn rootworm (CRW) resistance.

   - Requirements relating to a refuge assurance program for ensuring the correct refuge blend percentage.

   - Requirements relating to creation of a lepidopteran refuge (consisting of corn that does not contain any *Bt* trait for lepidopteran control) in cotton growing regions in conjunction with the planting of MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn;

   - Requirements for Bayer to prepare and require MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn users to sign grower agreements that impose binding contractual obligations on growers to comply with the refuge requirements.

   - Requirements for Bayer to develop, implement, and report to EPA on programs to educate growers about IRM requirements.

   - Requirements for Bayer to develop, implement, and report to EPA on programs to evaluate and promote growers' compliance with IRM requirements.

   - Requirements for Bayer to develop, implement, and report to EPA on monitoring programs to evaluate whether there are statistically significant and biologically relevant changes in susceptibility to the Cry1A.105, Cry2Ab2, and Cry1F proteins in the target insects.

   - Requirements for Bayer to develop, and if triggered, to implement a remedial action plan that would contain measures Bayer would take in the event that any field-relevant insect resistance to

Cry1A.105, Cry2Ab2, and Cry1F was detected, as well as to report on activity under the plan to EPA.

- Requirements for Bayer to investigate reports of unexpected CRW damage to MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn from growers ("performance inquiries") and sample CRW to determine if the insects are resistant to Cry34/35Ab1, DvSnf7 dsRNA, or Cry3Bb1.

- Requirements for Bayer to recommend CRW management options to growers in response to cases of unexpected CRW damage to MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn.

- Requirements regarding mitigation and notification actions that Bayer would take in the event that CRW resistance was detected.

- Requirements for Bayer to maintain, and provide the Agency upon request, the number of units sold by state and county, IRM grower agreement results, and substantive changes to educational programs. Bayer is required to submit reports within three months of the Agency's request.

- Bag Tag Requirements for MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn. Seed bags and/or bag tags for corn hybrids that contain plant- incorporated protectants produced in MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn must display the registration number and active ingredients, and stipulate that growers read the Bayer Stewardship Guide (or equivalent guidance) prior to planting these hybrids. The refuge size requirement must be displayed on the bag or bag tag in both text and graphic format.

- Requirements for Bayer to submit reports on CRW IPM Stewardship and resistance monitoring within the time frames specified in this letter.

a. Integrated Pest Management Stewardship Program

1. Bayer must implement an IPM-based stewardship program for MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn. This program must be designed to reduce selection pressure for corn rootworm (CRW) resistance by encouraging growers to engage in a multi-year crop rotation strategy involving the use of one or more of the following: a non-CRW host crop (e.g., soybean), pyramided *Bt* corn Plant Incorporated Protectants (PIPs), other PIP corn products with different modes of action, and/or non-PIP or non-CRW protected *Bt* corn. As part of the stewardship program, Bayer must update the technology use guide/grower guide and other grower educational materials to indicate that application of an insecticide to the soil surface, in furrows, and/or incorporated into the soil (referred to as "soil applied insecticide", "soil insecticide" or "SAI") with MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn is not recommended for control of CRW except under limited circumstances and in consultation with extension, crop consultants or other local experts. Grower education materials should also state that SAIs should not be necessary for CRW control with pyramided CRW trait *Bt* corn product(s). As part of the stewardship program, Bayer must promote the ABSTC/NCGA Best Management Practices (BMPs) for CRW control. Implementation of the IPM strategy can include:

   - Grower education initiatives or incentives;
   - Outreach to extension and consultant groups.

2. Bayer must submit an annual report to EPA documenting activities conducted under the IPM stewardship program. This report must include an anonymous survey of grower practices, including adoption levels of the various crop rotation options (if employed) and other elements of the stewardship program. Bayer may combine this product with other registered products to submit one annual report. The report must be submitted by January 31st each year.

b. Refuge Requirements for MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend

The following information must be included on the product bag or bag-tag as sold per respective region and in the Grower Guide:

Corn-Belt/Non-Cotton Growing Areas

MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn contains a Lepidopteran and corn rootworm refuge that is "in the bag" and is automatically implemented when the grower plants the product. No additional refuge is required when planting this product.

Foliar insecticide treatments for control of European corn borer, corn earworm, southwestern corn borer, fall armyworm, black cutworm, western bean cutworm, lesser corn stalk borer, southern corn stalk borer, stalk borer, and sugarcane borer may be applied only if economic thresholds are reached for one or more of these target pests. Foliar insecticide treatments are also permitted for control of corn rootworm adults if economic thresholds are reached. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service Agents, crop consultants).

Cotton-Growing Region Refuge Requirements

These refuge requirements do not apply to planting of inbred/hybrid corn seed productions, breeding, and small-scale research trials on up to a total of 20,000 acres per county and up to a combined United States (U.S.) total of 250,000 acres per plant-incorporated protectant (PIP) active ingredient per registrant per year. Grower agreements (also known as stewardship agreements) will specify that growers must adhere to the refuge requirements as described in the grower guide/product use guide and/or in supplements to the grower guide/product use guide.

In cotton-growing regions where corn earworm is a significant pest:

- The 20% refuge must be planted with non-PIP hybrids.
- MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend and the 20% non-PIP refuge should be sown on the same day, or with the shortest window possible between planting dates.
- External refuges may be planted as an in-field or adjacent (e.g., across the road) refuge or as a separate block within 1/2 mile of the MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn field.
- In field refuge options include blocks, perimeter strips (i.e., along the edges or headlands), or infield strips.
- When planting the refuge in strips across the field, refuges must be at least four (4) rows wide.

- Foliar insecticide treatments for control of European corn borer, corn earworm, southwestern corn borer, fall armyworm, black cutworm, western bean cutworm, lesser corn stalk borer, southern corn stalk borer, stalk borer and sugarcane borer may be applied only if economic thresholds are reached for one or more of these target pests. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants). Microbial *Bt* insecticides must not be applied to non-PIP corn refuge plants.

- Cotton-growing areas include the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex) and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard).

c. Grower Agreements for MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend

1. Persons purchasing MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn must sign a grower agreement. The term grower agreement refers to any grower purchase contract, license agreement, or similar legal document.

2. The grower agreement and/or specific stewardship documents referenced in the grower agreement must clearly set forth the terms of the current IRM program. By signing the grower agreement, a grower must be contractually bound to comply with the requirements of the IRM program.

3. Bayer must continue to integrate this registration into the current system used for its other *Bt* corn plant- incorporated protectants, which is reasonably likely to assure that persons purchasing MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn will affirm annually that they are contractually bound to comply with the requirements of the IRM program.

4. Bayer must continue to use its current grower agreement for MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn. If Bayer wishes to change any part of the grower agreement or any specific stewardship documents referenced in the grower agreement that would affect either the content of the IRM program or the legal enforceability of the provisions of the agreement relating to the IRM program, then thirty (30) days prior to implementing a proposed change, Bayer must submit to EPA the text of such changes to ensure that it is consistent with the terms and conditions of this amended registration.

5. Bayer shall maintain records of all MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn grower agreements for a period of three (3) years from December 31st of the year in which the agreement was signed.

6. Bayer shall make available to the Agency upon request records of the number of units of MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn seed sold or shipped and not returned, and the number of such units that were sold to persons who have signed grower agreements for the previous growing season. Bayer is required to submit reports within three months of the Agency's request.

7. Bayer must allow a review of the grower agreements and grower agreement records by EPA or by a State pesticide regulatory agency if the State agency can demonstrate that confidential business information, including names, personal information, and grower license numbers of the growers, will be protected.

d. IRM Education and IRM Compliance Monitoring Program for MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend in EPA-designated Cotton Counties

1. Bayer must implement and enhance (as set forth in paragraph 17 of this section) a comprehensive, ongoing IRM education program designed to convey to MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn users the importance of complying with the IRM program, as well as seed blend product performance expectations and guidance to growers on actions to take when unexpected damage occurs. The program shall include information encouraging MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn users to pursue optional elements of the IRM program relating to refuge configuration and proximity to MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn fields. The education program shall involve the use of multiple media, e.g. face-to-face meetings, mailing written materials, EPA-reviewed language on IRM requirements on the bag or bag tag, and electronic communications such as by internet, radio, or television commercials. The program shall involve at least one written communication annually to each MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn user separate from the grower technical guide. The communication shall inform the user of the current IRM requirements and specifically the need to plant a lepidopteran refuge in cotton growing regions. Bayer shall coordinate its education program with the educational efforts of other registrants and other organizations, such as the National Corn Growers Association and state extension programs.

2. Bayer shall revise, and expand as necessary, its education program to take into account the information collected through the compliance survey, required under paragraphs 6–9 of this section, and from other sources. The changes shall address aspects of grower compliance that are not sufficiently high.

3. Upon EPA request, Bayer shall provide copies of grower education materials and information on grower education activities including any substantive changes to these materials and activities conducted either individually or as part of the industry working group Agricultural Biotechnology Stewardship Technical Committee (ABSTC). Bayer is required to submit reports within three months of the Agency's request. The required features of the compliance assurance program are described in paragraphs 4–22 of this section.

4. Bayer must implement and improve an ongoing IRM compliance assurance program designed to evaluate the extent to which growers purchasing MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn are compliant with the requirement of a 20% refuge for lepidopteran pests in cotton growing areas, and that takes such actions as are reasonably needed to assure that growers who have not complied with the program either do so in the future or lose their access to Bayer's *Bt* corn products. Bayer shall coordinate with other *Bt* corn registrants in improving its compliance assurance program and integrate this registration into the current compliance assurance program used for its other *Bt* corn plant-incorporated protectants. Other required features of the program are described in paragraphs 5–22 of this section.

5. Bayer must maintain and publicize a phased compliance approach (i.e., a guidance document that indicates how it will address instances of non-compliance with the terms of the IRM program and general criteria for choosing among options for responding to any non-compliant growers after the first year of non-compliance). While recognizing that for reasons of difference in business practices there

are needs for flexibility between different companies, Bayer must use a consistent set of standards for responding to non-compliance. A grower found with a second incident of significant non-compliance with refuge requirements for the *Bt* corn product within a five-year period will be denied access the next year to Bayer's *Bt* corn products. Similarly, seed dealers who are not fulfilling their obligations to inform/educate growers of their IRM obligations will lose their opportunity to sell *Bt* corn.

6. The IRM compliance assurance program shall include an annual survey, conducted by an independent third-party, of a statistically representative sample of growers MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn. The survey shall be conducted in odd-numbered years beginning in 2023 and shall include growers who plant 100 or more acres of corn in the Southern U.S. corn-cotton areas. Bayer may collaborate with other registrants of *Bt* corn [for example, through the industry working group the Agricultural Biotechnology Stewardship Technical Committee (ABSTC)] to conduct the survey.

   In the U.S. Corn Belt, no anonymous grower survey is required for MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn if Bayer can demonstrate that the industry-wide adoption of integrated refuge products (i.e., refuge seed blends) is equal to or greater than 70% of *Bt* corn acres in the Corn Belt. If industry- wide adoption of integrated refuge products (i.e., refuge seed blends) falls below 70% of *Bt* corn acres in the Corn Belt, an anonymous grower survey shall also be conducted in this region during the next growing season using a statistically representative sample of growers who plant 200 or more acres of corn, and grower surveys shall be continued every odd-numbered year until the industry-wide adoption of integrated refuge products (i.e., refuge seed blends) is again equal to or greater than 70% of *Bt* corn acres in this region. Bayer may collaborate with other registrants of *Bt* corn (for example, through the industry working group the ABSTC) to compile the integrated refuge adoption data and to conduct the surveys.

   Alternatively, if Bayer is not a participant of an industry working group (e.g., the ABSTC) and Bayer's sales of integrated refuge products are equal to or greater than 70% of Bayer's total *Bt* corn sales in the prior year, then no anonymous grower survey is required in the U.S. Corn Belt. If Bayer's sales of integrated refuge products fall below 70% of Bayer's total *Bt* corn sales, an anonymous grower survey shall also be conducted in this region during the next growing season using a statistically representative sample of growers who plant 200 or more acres of corn, and grower surveys shall be continued every odd-numbered year until sales of integrated refuge products (i.e., refuge seed blends) are again equal to or greater than 70% of Bayer's total *Bt* corn sales in this region.

   - A third-party is classified as a party other than the registrant, the grower, or anyone else with a direct interest in IRM compliance for *Bt* corn.

7. The survey shall be designed to provide an understanding of any difficulties growers encounter in implementing IRM requirements. An analysis of survey results must include the reasons, extent, and potential biological significance of any implementation deviations.

8. The survey shall be designed to obtain grower feedback on the usefulness of specific educational tools and initiatives.

9. In years in which the survey is conducted, Bayer shall provide a final written summary of the results of the survey (together with a description of the regions, the methodology used, and the supporting data) to EPA on or before January 31st of the following year. Bayer shall confer with other registrants and EPA on the design and content of the survey prior to its implementation.

10. Bayer shall revise, and expand as necessary, its compliance assurance program to take into account the information collected through the compliance survey, required under paragraphs 6–9 of this section, and from other sources. The changes shall address aspects of grower compliance that are not sufficiently high. Bayer must confer with EPA prior to adopting any changes.

11. Bayer shall conduct and enhance an annual on-farm assessment program. Bayer shall train its representatives who make on-farm visits with MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn growers to perform assessments of compliance with IRM requirements. There is no minimum corn acreage size for this program. Therefore, growers will be selected for this program from across all farm sizes. In the event that any of these visits result in the identification of a grower who is not in compliance with the IRM program, Bayer shall take appropriate action, consistent with its phased compliance approach, to promote compliance.

12. Bayer shall implement a program for investigating legitimate tips and complaints that MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn growers are not in compliance with the IRM program. Whenever an investigation results in the identification of a grower who is not in compliance with the IRM program, Bayer shall take appropriate action, consistent with its phased compliance approach.

13. If a grower, who purchases MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn for planting, was specifically identified as not being in compliance during the previous year, Bayer shall visit with the grower and evaluate whether the grower is in compliance with the IRM program for the current year.

14. Annually, by January 31st each year, Bayer must provide a report to EPA summarizing the MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend compliance assurance program activities and results for the prior year and plans for the MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend compliance assurance program for the current year. Within one month of submitting this report to EPA, the registrant shall meet with EPA to discuss its findings. The report must inform EPA of the number of growers deemed ineligible to purchase *Bt* corn seed on the basis of continued non-compliance with the insect resistance management refuge requirements. Bayer may elect to coordinate information with other registrants and report collectively the results of compliance assurance programs.

15. Bayer and the seed corn dealers for Bayer must allow a review of the compliance records by EPA or by a State pesticide regulatory agency if the State agency can demonstrate that confidential business information, including the names, personal information, and grower license numbers of the growers, will be protected.

16. Bayer shall revise and expand its existing Compliance Assurance Program to include the following elements. The registrant may coordinate with other registrants in designing and implementing its Compliance Assurance Program.

17. Bayer will enhance the refuge education program throughout the seed delivery channel:

    - Ensure sales representatives, licensees, seed dealers, and growers recognize the importance of correct refuge implementation and potential consequences of failure to plant the required refuge.

    - Implement a “bag tag” that will be attached to all bags of MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend seed sold and delivered. The purpose of this bag tag is to remind growers that MON 89034 x TC1507 x MON 87411 x DAS- 59122-7 Seed Blend products

require a separate 20% lepidopteran refuge in cotton growing areas. The PIP product label accepted by EPA must include how this information will be conveyed to growers via text and graphics.

18. Bayer will focus the majority of on-farm assessments on regions with the greatest risks for resistance:

    - Use *Bt* corn adoption, pest pressure information, and other available information to identify regions where the risk of resistance is greatest;

    - Focus approximately two-thirds of on-farm assessments on these regions, with the remaining assessments conducted across other regions where MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend is used.

19. Bayer will use its available MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend sales records and other information to refine grower lists for on-farm assessments of their compliance with refuge requirements:

    - Identify for potential on-farm assessment growers whose sales information indicates they have purchased MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn product but may have purchased little or no refuge seed from the registrant, licensee, or affiliated company.

20. Bayer will contract with third parties to perform on-farm assessments of compliance with refuge requirements:

    - The third-party assessors will conduct all first-time on-farm assessments as well as second-year on-farm assessments of those growers found out of compliance in a first- time assessment.

21. Bayer will annually refine the on-farm assessment program for the MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn product to reflect the adoption rate and level of refuge compliance for the product.

22. Bayer will follow up with growers who have been found significantly out of compliance under the on-farm assessment program and are found to be back in compliance the following year:

    - All growers found to be significantly out of compliance in a prior year will annually be sent additional refuge assistance information for a minimum of two years by Bayer, seed supplier, or third-party assessor, after completing the assessment process;

    - Bayer will conduct follow-up checks on growers found to be significantly out of compliance within three years after they are found to be back in compliance;

    - A grower found with a second incident of significant non-compliance with refuge requirements for the *Bt* corn product within a five-year period will be denied access to Bayer's *Bt* corn products the next year. Similarly, seed dealers who are not fulfilling their obligations to inform/educate growers of their IRM obligations will lose their opportunity to sell *Bt* corn.

e. Insect Resistance Monitoring and Mitigation Plan for MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend

1. <u>EPA is imposing the following conditions for the Cry1A.105, Cry2Ab2, and Cry1F toxins expressed in MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend</u>

Bayer will monitor for resistance to Cry1A.105, Cry2Ab2, and Cry1F expressed in MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn. The monitoring program shall consist of two approaches: (1) focused population sampling and laboratory testing; and (2) investigation of reports of less-than expected control of labeled insects. Should field-relevant resistance be confirmed, an appropriate resistance management action plan will be implemented.

<u>Focused Population Sampling</u>

Bayer shall annually sample and bioassay populations of the key target pests: Ostrinia nubilalis (European corn borer; ECB), Diatraea grandiosella (southwestern corn borer; SWCB), and Helicoverpa zea (corn earworm; CEW). Sampling for the target pests will be focused in areas identified as those with the highest risk of resistance development (e.g., where lepidopteran active *Bt* hybrids are planted on a high proportion of the corn acres, and where the insect species are regarded as key pests of corn). Bioassay methods must be appropriate for the goal of detecting field-relevant shifts in population response to MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn and/or changes in resistance allele frequency in response to the use of MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn and, as far as possible, should be consistent across sampling years to enable comparisons with historical data.

The number of populations to be collected shall reflect the regional importance of the insect species as a pest, and specific collection regions will be identified for each pest. For ECB, a minimum of twelve (12) populations across the sampling region will be targeted for collection at each annual sampling. For SWCB, the target will be a minimum of six (6) populations. For CEW, the target will be a minimum of ten (10) populations. Pest populations should be collected from multiple corn-growing states reflective of different geographies and agronomic conditions. To obtain sufficient sensitivity to detect resistance alleles before they become common enough to cause measurable field damage, each population collection shall attempt to target 400 insect genomes (egg masses, larvae, mated females, and/or mixed-sex adults), but a successful population collection will contain a minimum of 100 genomes. It is recognized that it may not be possible to collect the target number of insect populations or genomes due to factors such as natural fluctuations in pest density, environmental conditions, and area-wide pest suppression.

The sampling program and geographic range of collections may be modified as appropriate based on changes in pest importance and for the adoption levels of MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn. EPA shall be consulted prior to the implementation of such modifications.

Bayer will report to EPA, on or before January 31st of each year, the results of the population sampling and bioassay monitoring program.

Any incidence of unusually low sensitivity to the Cry1A.105, Cry2Ab2, and Cry1F proteins in

bioassays shall be investigated as soon as possible to understand any field relevance of such a finding. Such investigations shall proceed in a stepwise manner until the field relevance can be either confirmed or refuted, and results of these shall be reported to EPA annually on or before January 31st. The investigative steps will include the following:

i. Re-test progeny of the collected population to determine whether the unusual bioassay response is reproducible and heritable. If it is not reproducible and heritable, no further action is required.

ii. If the unusual response is reproducible and heritable, progeny of insects that survive the diagnostic concentration will be tested using methods that are representative of exposure to MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn under field conditions. If progeny do not survive to adulthood, any suspected resistance is not field relevant and no further action is required.

iii. If insects survive steps 1 and 2, resistance is confirmed, and further steps will be taken to evaluate the resistance. These steps may include the following:

   a. Determining the nature of the resistance (i.e., recessive or dominant, and the level of functional dominance);

   b. Estimating the resistance allele frequency in the original population;

   c. Determining whether the resistance allele frequency is increasing by analyzing field collections in subsequent years sampled from the same site where the resistance allele(s) was originally collected;

   d. Determining the geographic distribution of the resistance allele by analyzing field collections in subsequent years from sites surrounding the site where the resistance allele(s) was originally collected.

Should field-relevant resistance be confirmed, and the resistance appears to be increasing or spreading, Bayer will consult with EPA to develop and implement a case-specific resistance management action plan.

Investigation of Reports of Unexpected Levels of Damage by the Target Pests

Bayer will follow up on grower, extension specialist, or consultant reports of unexpected levels of damage by the lepidopteran pests listed on the pesticide label. Bayer will instruct its customers to contact them if such incidents occur. Bayer will investigate all legitimate reports submitted to the company or the company's representatives.

If reports of unexpected levels of damage lead to the suspicion of resistance in any of the key target pests (ECB, SWCB, and CEW), Bayer will implement the actions described below, based on the following definitions of ***suspected resistance*** and ***confirmed resistance***.

Suspected Resistance

EPA defines ***suspected resistance*** to mean field reports of unexpected levels of insect-feeding

damage for which:

- The corn in question has been confirmed to be lepidopteran-active *Bt* corn;
- The seed used had the proper percentage of corn expressing *Bt* protein;
- The relevant plant tissues are expressing the expected level of *Bt* protein; and
- It has been ruled out that species not susceptible to the protein could be responsible for the damage, that no climatic or cultural reasons could be responsible for the damage, and
- That there could be no other reasonable causes for the damage.

EPA does not interpret ***suspected resistance*** to mean grower reports of possible control failures or suspicious results from annual insect monitoring assays, nor does EPA intend that extensive field studies and testing be undertaken to confirm scientifically the presence of insects resistant to MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn in commercial production fields before responsive measures are undertaken.

If resistance is ***suspected***, Bayer will instruct growers to do the following:

- Use alternative control measures in MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn fields in the affected region to control the target pest during the immediate growing season.
- Destroy MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn crop residues in the affected region within one (1) month after harvest with a technique appropriate for local production practices to minimize the possibility of resistant insects over- wintering and contributing to the next season's target pest population.

Additionally, if possible, and prior to the application of alternative control measures or destruction of crop residues, Bayer will collect samples of the insect population in the affected fields for laboratory rearing and testing. Such rearing and testing shall be conducted as expeditiously as practical.

<u>Confirmed Resistance</u>

EPA defines ***confirmed resistance*** to mean, in the case of field reports of unexpected levels of damage from the key target pests, that all the following criteria are met:

- There is >30% insect survival and commensurate insect feeding in a bioassay, initiated with neonate larvae, that uses methods that are representative of exposure to *Bt* corn hybrids under field conditions (ECB and SWCB only).
- In standardized laboratory bioassays using diagnostic concentrations of the *Bt* protein suited to the target pest in question, the pest exhibits resistance that has a genetic basis and the level of survivorship indicates that there may be a resistance allele frequency of ≥ 0.1 in the sampled population.

- In standardized laboratory bioassays, the LC_{50} exceeds the upper limit of the 95% confidence interval of the LC50 for susceptible populations surveyed both in the original baselines developed for this pest species and in previous years of field monitoring.

Response to Confirmed Resistance in a Key Target Pest as the Cause of Unexpected Levels of Damage in the Field

When field resistance is ***confirmed*** (as defined above), the following steps will be taken by Bayer:

- EPA will receive notification within 30 days of resistance confirmation;
- Affected customers and extension agents will be notified about confirmed resistance within 30 days;
- Monitoring will be increased in the affected area and local target pest populations will be sampled annually to determine the extent and impact of resistance;
- If appropriate (depending on the resistant pest species, the extent of resistance, the timing of resistance, and the nature of resistance, and the availability of suitable alternative control measures), alternative control measures will be employed to reduce or control target pest populations in the affected area. Alternative control measures may include advising customers and extension agents in the affected area to incorporate crop residues into the soil following harvest to minimize the possibility of over-wintering insects, and/or applications of chemical insecticides;
- Unless otherwise agreed with EPA, stop sale and distribution of the relevant lepidopteran-active *Bt* corn hybrids in the affected area immediately until an effective local mitigation plan, approved by EPA, has been implemented;
- Bayer will develop a case-specific resistance management action plan within 90 days according to the characteristics of the resistance event and local agronomic needs. Bayer will consult with appropriate stakeholders in the development of the action plan, and the details of such a plan shall be approved by EPA prior to implementation;
- Bayer will notify affected parties (e.g., growers, consultants, extension agents, seed distributors, university cooperators, and state/federal authorities as appropriate) in the region of the resistance situation and approved action plan; and
- In subsequent growing seasons, maintain sales suspension and alternative resistance management strategies in the affected region(s) for the *Bt* corn hybrids that are affected by the resistant population until an EPA-approved local resistance management plan is in place to mitigate the resistance.

A report on results of resistance monitoring and investigations of damage reports must be submitted to EPA, on or before January 31st of each year, for the duration of the registration.

2. **EPA is imposing the following conditions for the Cry34/35Ab1, DvSnf7 dsRNA, and Cry3Bb1 toxins expressed in MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend:**

a) Investigation of Reports of Unexpected Levels of Damage (UXD) by Corn Rootworm (CRW): Performance Inquiries

1) Bayer is required to investigate "performance inquiries" (i.e., reports of unexpected CRW damage to MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn) from growers. Fields (defined as a tract separated by permanent boundaries such as fences, permanent waterways, woodlands, croplines not subject to change because of farming practices, or other similar features) with unexpected damage that meet both of the criteria below must be subjected to the follow-up actions in part 2) below:

a. The affected plants are confirmed to be MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn plants (take leaf samples to determine the presence of the CRW-active *Bt* protein); and

b. Corn rootworm feeding caused root damage with a Node Injury Score (NIS) > 0.5 on at least 50% of plants surveyed in a transect sampling of the damaged site(s) within the field.

2) Follow-up actions (performance inquiries). For MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn fields meeting the criteria in part 1) above, Bayer must take the following actions:

a. Collect at least 250 (ideally 500 or more) CRW adult individuals from the damaged site within the field in question. Collections may be extended to the whole field, if necessary to obtain sufficient CRW adult individuals. Collected populations must be subjected to the steps described for "investigation of populations of concern" in section e(2)(b) below.

- If collections are unsuccessful, visit affected farm or field the following year (assuming the grower continues to be a customer and repurchases seed and does not rotate the field to a non-host crop) and attempt to collect CRW adults. If beetles are not present the subsequent year, see section e(2)(b)(3)(c) below.

b. Review with the grower their CRW management practices and provide CRW management recommendations including an assessment of corn fields with similar trait(s) adjacent to the affected corn field that are managed by the same grower.

c. Use of single trait products containing the CRW traits in MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend in fields with unexpected damage in previous years should be discouraged. Recommended management options include, but are not limited to, the following:

- Primary option:
  - Rotation to non-host crop (e.g., soybean)
- Secondary options:
  - Use of pyramided *Bt* corn products one or more different CRW PIP trait(s);

- Use of different CRW PIP traits (i.e., an alternative CRW-active PIP);
- Use of non-PIP or non-CRW protected corn.

o Tertiary options:

- If additional pest management need is determined beyond the secondary options listed above, use of the same pyramided *Bt* corn product is acceptable if it is very unlikely that both of the traits are affected (e.g., the affected field experienced UXD to one of the traits in the product in the previous year, the NIS is less than 1.0, there has been no continuous use of the second trait in the product in the affected field, and Bayer has not been informed of resistance to the second trait in the county)
- Additional corn rootworm control tools (e.g., soil applied insecticides, chemigation) should be considered

d. If field(s) with UXD is/are planted to a non-host crop (e.g., soybean) the following year, then the area will be considered "mitigated" (as discussed in section e(2)(b)(3)(d) below) even if subsequent bioassay results show that the population was resistant. No further action will be required by Bayer for the UXD case.

3) Bayer must submit an annual report to EPA detailing activities related to investigations of unexpected damage (UXD). This report will include the information from the most recent and previous corn growing seasons:

a. Information from the most recent season:

o The number of UXD reports investigated;

o Location (by county and state);

o CRW sampling (number and location of populations collected).

b. Information from the previous season:

o The final disposition of UXD fields from the previous season (i.e., the management practices employed in response to UXD if the grower continues to be a customer.

o Results from bioassays conducted on CRW populations from UXD fields where the primary management option, rotation to non-host crop, was not used.

c. Grower information, such as farm addresses or other personally identifiable information, or other sensitive business/customer information must not be included in this report. This report must be submitted by November 30th each year.

b) <u>Investigation of Populations of Concern</u>

1) Bayer must conduct investigations of all CRW populations collected as part of the performance

inquiry process in section e(2)(a) above. These investigations must include the use of an EPA-approved bioassay to determine if sampled CRW populations are resistant to any of the CRW PIP toxins in MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend. Acceptable assays must be able to function as diagnostic tools capable of distinguishing resistant populations from susceptible ones. Unless previously approved, Bayer must consult with EPA on their bioassay prior to its use.

2) A CRW population will be considered by EPA to be resistant to a CRW PIP toxin if the following criteria are met and additional collections and testing are not deemed to be necessary (based on part 3) below):

   a. An initial performance inquiry investigation results in a finding of Unexpected Damage; and

   b. Where green tissues are available and if plants are unusually stressed due to agronomic and/or environmental factors, *Bt* protein levels in affected plants are found to be within the documented range for that hybrid (if data are available); and

   c. Either (A): On-plant bioassays of insect collections from the UXD fields result in the following two statistically relevant comparisons:

      i. A statistically significant difference in measures of either mortality or sublethal effects (growth/development) between the field population and a relevant susceptible control population (i.e., one that responds as a typical susceptible field population) on *Bt* corn containing the single PIP and/or lack of a statistically significant difference in measures of mortality or sublethal effect between the field population and a resistant positive control population[1]; and

      ii. A lack of a statistically significant difference in the same measures of the field population raised on *Bt* corn containing the single PIP and non-PIP corn plants.

      Or (B): Sublethal seedling bioassay of insect collections from the UXD fields result in two statistically relevant comparisons:

      i. A statistically significant difference in measures of sublethal effects (growth/development) for populations on *Bt* corn containing the single PIP (normalized using non-PIP) seedlings between the field population and a relevant susceptible control population where available or historical field populations and/or lack of a statistically significant difference in measures between the field population and a resistant positive control population[1]; and

      ii. A lack of a statistically significant difference in the same measures of the field population raised on *Bt* corn seedlings containing the single PIP and non-PIP corn seedlings

      Or (C): Diet-based bioassays of insect collections from the UXD fields result in two statistically relevant comparisons:

[1] If a resistant positive control population is not available or accessible, Bayer must consult with EPA prior to initiating bioassays and work to develop an appropriate resistant positive control population.

i. A statistically significant difference in measures of lethal or sublethal effects (growth/development) on diet containing the *Bt* protein (diagnostic concentration or concentration-response measures) between the field population and a relevant susceptible control population where available or historical field populations and/or lack of a statistically significant difference in measures between field population and a resistant positive control population[1]; and

ii. Either a lack of a statistically significant difference in the same measures of the field population exposed to diet containing the *Bt* protein (diagnostic concentration) and diet not containing the *Bt* protein and/or lack of a statistically significant difference in measures between the field population and a resistant positive control population, or lack of a statistically significant concentration and/or lack of a statistically significant difference in concentration response between the field and a resistant positive control population[1].

3) Mitigation, as detailed in section e(2)(c) below, is required for any CRW population that meets EPA's resistance criteria above for any of the CRW traits in MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend, unless the circumstances described below are applicable.

a. To minimize the potential for incorrectly reaching a conclusion of resistance, another year of CRW adult collections and additional testing is needed to determine resistance if:

i. The results of the bioassays are inconclusive (e.g., the results of the statistical analysis are unclear because of low sample sizes); or

ii. Another reasonable explanation for the unexpected damage exists (e.g., high pest pressure and/or high plant stress).

b. In these cases, Bayer and EPA will discuss and align on next steps before reaching any resistance conclusion.

c. If CRW collections are not possible in the current year or subsequent year due to successful management practices, then no further investigation is needed. The population would be considered "mitigated" meaning, in this case, that the population is suppressed or extirpated for the UXD field. However, EPA recommends that Bayer continue to be vigilant in areas where CRW populations were successfully mitigated.

d. If a UXD field receives non-host crop (e.g., soybean) rotation the following year as described in Section e(2)(a)(2) above, no additional mitigation is subsequently required.

c) <u>Mitigation of CRW Populations Meeting EPA's Resistance Criteria</u>

1) For any CRW population found to be resistant to one or more of the CRW traits in MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend under EPA's criteria described in section e(2)(b) above, Bayer must take the following steps:

a) Bayer must inform EPA of all the results of the bioassays as soon as possible, but at least within 30 days if measures are triggered.

b) The mitigation action area (MAA) is defined as the growers' farming operation up to a ½ mile radius from the damaged site that produced the resistant population.

c) Within 30 days of informing EPA of the results of the bioassays, Bayer must notify state extension agents and crop consultants who operate within the county in which resistance was identified. Information shared must include identification of the county in which resistance was detected and trait(s) affected.

d) Within the MAA, Bayer must do the following:

i. Prior to finalizing the grower's seed order for the following season, inform the affected grower and other registrants that hold registrations containing the compromised trait(s). Bayer must also inform neighboring growers if those growers are customers of Bayer. Information shared must include identification of the county in which resistance was detected and trait(s) affected;

ii. Discontinue sales/planting of products containing the compromised trait(s) without additional/alternative (i.e. non-compromised) CRW traits until resistance has been demonstrated to have been mitigated. Other *Bt* registrants selling such products in the MAA are encouraged, but cannot be required, to follow suit;

iii. Bayer must monitor the resistant population in the MAA, as long as grower remains a customer of the company, until mitigation has been demonstrated as described in part e below unless otherwise agreed with EPA.

iv. Require any pyramids sold by Bayer containing the compromised trait(s) be planted with a 20% refuge until resistance has been demonstrated to have been mitigated. Other *Bt* corn registrants selling such pyramided products in the MAA are encouraged, but cannot be required by this term of registration, to follow suit;

v. For Bayer's affected customer's field(s), the mitigation goal is to control the resistant CRW population. Within the MAA Bayer shall encourage the use of "Mitigation Practices" including:

1. Primary option: Rotation to a non-host crop (e.g., soybean);

2. Secondary options:
   a. Use of pyramided *Bt* corn products with different CRW PIP traits;

   b. Only in the case that the resistance definition for one of the CRW traits in the MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend is not met, continued use of the product with a 20% refuge;

   c. Use of different CRW PIP traits (i.e., an alternative CRW-active PIP);

   d. Use of non-PIP corn or non-CRW protected corn (with/without soil-applied insecticide);

3. Tertiary options:

    a. If additional pest management need is determined beyond the secondary options listed above, additional CRW control tools (e.g., soil insecticides, seed-applied insecticides, chemigation) should be used.

    b. Use of foliar applications to control adults (when appropriate economic thresholds have been met) may be used in conjunction with one or more of the above.

e) A resistant CRW population in the MAA will be considered mitigated if one of the following criteria is met:

    i. Corn fields within the MAA are rotated to a non-host crop (e.g. soybean) for one growing season.

    ii. After implementation of mitigation practices (part d.v above), resistance monitoring (sampling) is conducted but few CRW are found (i.e., <0.1 adults per plant) and environmental conditions (e.g., weather) are unlikely to be responsible for the lack of adult CRW presence. If environmental conditions are a factor, then monitoring should continue for another season.

    iii. After implementation practices (part d.v above), resistance monitoring (sampling) is conducted, CRW are found and collected, and bioassays (section e(2)(b)(2) above) show that the population susceptibility to the compromised trait(s) has returned to baseline levels.

f) The mitigation actions in part d above can be lifted, and growers can resume the use of MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn as a primary tool for CRW management in the MAA, only when Bayer demonstrates that successful mitigation as described in part e above has been achieved.

2) Based on further research to understand CRW resistance to *Bt* PIPs, EPA will consider refinements to the resistance mitigation program. Such research may include characterizing the genetics of resistance (e.g., number of genes, functional dominance, mechanism of resistance, and cross-resistance) and the biology of resistant insects (e.g., fitness in the presence and absence of the product), and other control tactics.

f. Refuge Assurance Program for MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend

Bayer must implement a Blended Seed Refuge Assurance Program designed to ensure MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn products are formulated with the appropriate rate of refuge seeds. The program must include the following four elements:

1. Trait purity check on seed lots prior to blending;

2. ISO 9000 Standard Operating Procedures for the blending process;

3. Calibration of blending equipment; and

4. Records and data retention records for seed blend products.

    - Calibration records - Bayer will retain documentation for a specified period of time on the equipment calibration including the procedure, when it was conducted and the results.

    - Blend proportion records (weight and kernel based) - Bayer will retain documentation for a specified period of time on the kernel per pound data of the components, the calculations to determine the proportions based on weight and the actual weights that are blended together to make up an MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend corn product by seed lot.

All records must be maintained at the Bayer blending facility and must be available for the EPA review upon request.

Should Bayer CropScience LP or its Licensees be notified by USDA/AMS or State Seed Control Officials that their seed blend products have been found to have a lower percentage of the refuge component than is represented on the label, they must notify EPA within 30 days. This would constitute information reportable under FIFRA 6(a)(2).

g. Annual Reporting Requirements for MON 89034 x TC1507 x MON 87411 x DAS-59122-7 Seed Blend

The following annual reports must be submitted:

1. Compliance Assurance Plan: Compliance Assurance Program activities, including IRM Grower Survey results and on-farm assessment results for the prior year and plans for the compliance assurance program for the current year, on or before January 31st each year.

2. Insect Resistance Monitoring Results (Cry1A.105, Cry2Ab2, and Cry1F only): results of monitoring and investigations of damage reports, January 31st of each year.

3. IPM Stewardship Program (Cry34/35Ab1, DvSnf7 dsRNA, and Cry3Bb1 only): Activities conducted under the IPM stewardship program, including an anonymous survey of grower practices, adoption levels of the various crop rotation options (if employed) and other elements of the stewardship program, on or before January 31st of each year.

4. Unexpected Damage Investigations (Cry34/35Ab1, DvSnf7 dsRNA, and Cry3Bb1only): Activities related to investigations of unexpected damage (UXD), including number and location of UXD cases, insect sampling, bioassays, and final disposition of UXD fields from the most recent and previous corn growing seasons, on or before November 30th of each year.

Should you wish to add/retain a reference to your company's website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the EPA. If the website is false or misleading, the product will be considered to be misbranded and sale or distribution of the product is unlawful under FIFRA section 12(a)(1)(E). 40 CFR § 156.10(a)(5) lists examples of statements the EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the EPA find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA-approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance Assurance.

Your release for shipment of this product constitutes acceptance of these terms and conditions. If you fail to satisfy these terms and conditions, the EPA will consider appropriate regulatory action including, among other things, cancellation under FIFRA section 6(e).

A stamped copy of the labeling is enclosed for your records. Please also note that the record for this product currently contains the following acceptable Confidential Statement of Formula (CSF):

- Basic CSF dated 2/26/2016

If you have any questions, please contact Matt Weiner by phone at (202) 564-1509 or via email at weiner.matthew@epa.gov.

Sincerely,

Alan Reynolds, Team Leader
Emerging Technologies Branch
Biopesticides and Pollution
Prevention Division (7511M)
Office of Pesticide Programs

Enclosure

Plant-Incorporated Protectant Label

MON 89034 × TC1507 × MON 87411 × DAS-59122-7 Seed Blend

Insect-Protected, Herbicide-Tolerant Corn
(OECD Unique Identifier: MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS-59122-7)

Active Ingredients:

dsRNA transcript comprising a DvSnf7 inverted repeat sequence derived from *Diabrotica virgifera virgifera*, and the genetic material (vector PV-ZMIR10871) necessary for its production in MON 89034 × TC1507 × MON 87411 × DAS-59122-7 (OECD Unique Identifier MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS-59122-7) ..... ≤ 0.00000044%*

Bacillus thuringiensis Cry1A.105 protein and the genetic material (vector PV-ZMIR245) necessary for its production in MON 89034 × TC1507 × MON 87411 × DAS-59122-7 (OECD Unique Identifier MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS-59122-7) .... ≤ 0.0088%*

Bacillus thuringiensis Cry2Ab2 protein and the genetic material (vector PV-ZMIR245) necessary for its production in MON 89034 × TC1507 × MON 87411 × DAS-59122-7 (OECD Unique Identifier MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS-59122-7) .... ≤ 0.0048%*

Bacillus thuringiensis Cry1F protein and the genetic material (vector PHP8999) necessary for its production in MON 89034 × TC1507 × MON 87411 × DAS-59122-7 (OECD Unique Identifier MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS-59122-7) ..... ≤ 0.00096%*

Bacillus thuringiensis Cry3Bb1 protein and the genetic material (vector PV-ZMIR10871) necessary for its production in MON 89034 × TC1507 × MON 87411 × DAS-59122-7 (OECD Unique Identifier MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS 59122 7) .... ≤ 0.0041%*

Bacillus thuringiensis Cry34Ab1 protein and the genetic material (vector PHP17662) necessary for its production in MON 89034 × TC1507 × MON 87411 × DAS-59122-7 (OECD Unique Identifier MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS-59122-7) ..... ≤ 0.012%*

Bacillus thuringiensis Cry35Ab1 protein and the genetic material (vector PHP17662) necessary for its production in MON 89034 × TC1507 × MON 87411 × DAS-59122-7 (OECD Unique Identifier MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS-59122-7) ..... ≤ 0.0026%*

Other Ingredients:

The marker protein CP4 EPSPS and the genetic material (vector PV-ZMIR10871) necessary for its production in MON 89034 × TC1507 × MON 87411 × DAS-59122-7 (OECD Unique Identifier MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS-59122-7) ..... ≤ 0.036%*

The marker protein PAT and the genetic material (vector PHP17662) necessary for its production in MON 89034 × TC1507 × MON 87411 × DAS-59122-7 (OECD Unique Identifier MON-89Ø34-3 × DAS-Ø15Ø7-1 × MON-87411-9 × DAS-59122-7) ..... ≤ 0.0001%*

*Percentage (wt/wt) on a dry weight basis for forage tissue

KEEP OUT OF REACH OF CHILDREN

CAUTION

NET CONTENTS_____

EPA Registration No. 524-631

EPA Establishment No. 524-MO-002

Bayer CropScience LP
800 North Lindbergh Blvd.
St. Louis, MO 63167

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in any manner inconsistent with its labeling. This product must be used as specified in the terms and conditions of the registration.

This Plant-Incorporated Protectant (PIP) may be combined or produced through conventional breeding with other registered plant-incorporated protectants that are similarly approved for use in combination, through conventional breeding, with other registered plant-incorporated protectants to produce inbred corn lines and hybrid corn varieties with combined pesticidal traits.

MON 89034 × TC1507 × MON 87411 × DAS-59122-7 seed blend protects corn crops from leaf, stalk, and ear damage caused by lepidopteran corn pests listed on this label and root damage caused by corn rootworm larvae listed on this label. In order to minimize the risk of these pests developing resistance to MON 89034 × TC1507 × MON 87411 × DAS-59122-7 seed blend, an insect resistance management plan must be implemented as defined in the registration terms and conditions.

Grower agreements will specify that growers must adhere to the refuge requirements that will be described on the bag or bag/tag for MON 89034 × TC1507 × MON 87411 × DAS-59122-7 seed blend or other applicable product use documents.

Sales of corn hybrids that contain Bayer's *Bt* corn plant-incorporated pesticide(s) must be accompanied by either an IRM/Grower Guide or information on the bag or bag-tag on planting, production, and insect resistance management and notes that routine applications of insecticides to control these insects are usually unnecessary when corn containing the *B.t.* proteins is planted.

Corn seed bags or bag tags for products containing MON 89034 × TC1507 × MON 87411 × DAS-59122-7 seed blend must include the refuge size requirement in text and graphical format.

INSECT RESISTANCE MANAGEMENT

Growers are instructed to read information on insect resistance management in the bag and/or bag-tag.

These refuge requirements do not apply to planting of inbred/hybrid corn seed productions, breeding, and small scale research trials on up to a total of 20,000 acres per county and up to a combined United States (U.S.) total of 250,000 acres per plant-incorporated protectant (PIP) active ingredient per registrant per year.

The seed producer must ensure a minimum of 5% non-PIP refuge seed is included with MON 89034 × TC1507 × MON 87411 × DAS-59122-7 in each lot of seed corn. The refuge seed in the seed mixture may not be treated with seed-applied insecticides for corn rootworm (CRW) control unless the MON 89034 × TC1507 × MON 87411 × DAS-59122-7 seed in the seed mixture receives the same treatment.

The IRM/Grower Guide for MON 89034 × TC1507 × MON 87411 × DAS-59122-7 seed blend or comparable information presented on the product bag or bag-tag must contain the following information:

This product is a seed mixture containing MON 89034 × TC1507 × MON 87411 × DAS-59122-7 and a minimum of 5% non-*B.t.* seed that when planted creates an interspersed refuge within the field. There are no requirements for a separate structured refuge for MON 89034 × TC1507 × MON 87411 × DAS-59122-7 seed blend when planted in the U.S. corn-growing region, including Alaska and Hawaii, because the refuge seed is contained within the bag/container.

The interspersed refuge can only be used by planting seed corn specifically generated by qualified seed producers/conditioners licensed by the registrant. Insecticidal treatments labeled for adult CRW control are discouraged during the time of adult CRW emergence.

The seed mix refuge option for MON 89034 × TC1507 × MON 87411 × DAS-59122-7 seed blend satisfies the refuge requirements in all regions other than in the cotton-growing region where corn earworm is a significant pest as defined below.

Additional refuge requirements in the cotton-growing region where corn earworm is a significant pest

In the cotton-growing region where corn earworm is a significant pest, as defined below, MON 89034 × TC1507 × MON 87411 × DAS-59122-7 seed blend requires the planting of an additional 20% structured refuge (i.e., 20 acres of non-*B.t.* corn for every 80 acres of MON 89034 × TC1507 × MON 87411 × DAS-59122-7 seed blend planted).

The 20% refuge must be planted with corn hybrids that do not contain *B.t.* technologies for the control of corn rootworms or corn borers. The refuge and the MON 89034 × TC1507 × MON 87411 × DAS-59122-7 seed blend should be sown on the same day or with the shortest window possible between planting dates to ensure that corn root development is similar among varieties. The structured refuge may be planted as an in-field or adjacent (e.g., across the road) refuge or planted as a separate block that is within ½ mile of the MON 89034 × TC1507 × MON 87411 × DAS-59122-7 seed blend field. In-field refuge options include blocks, perimeter strips (i.e., strips around the field), or in-field strips. If perimeter or in-field strips are implemented, the strips must be at least four (4) consecutive rows wide. The refuge can be protected from lepidopteran damage by use of non-*B.t.* insecticides if the population of one or more target lepidopteran pests of MON 89034 × TC1507 × MON 87411 × DAS-59122-7 seed blend in the refuge exceeds economic thresholds. In addition, the refuge can be protected from CRW damage by an appropriate seed treatment or soil insecticide; however, insecticides labeled for adult CRW control must be avoided in the refuge during the period of CRW adult emergence. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants).

The cotton-growing region requiring the additional 20% refuge consists of the following states: Alabama, Arkansas, Georgia, Florida, Louisiana, North Carolina, Mississippi, South Carolina, Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), Tennessee (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), Texas (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman), Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex), and Missouri (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard).

Corn Insects Controlled or Suppressed

European corn borer (ECB)	*Ostrinia nubilalis*
Southwestern corn borer (SWCB)	*Diatraea grandiosella*
Southern cornstalk borer (SCSB)	*Diatraea crambidoides*
Corn earworm (CEW)	*Helicoverpa zea*
Fall armyworm (FAW)	*Spodoptera frugiperda*
Stalk borer	*Papaipema nebris*
Lesser corn stalk borer	*Elasmopalpus lignosellus*
Sugarcane borer (SCB)	*Diatraea saccharalis*
Black cutworm	*Agrotis ipsilon*
Western corn rootworm (WCRW)	*Diabrotica virgifera virgifera*
Northern corn rootworm (NCRW)	*Diabrotica barberi*
Mexican corn rootworm (MCRW)	*Diabrotica virgifera zeae*

MON 89034 × TC1507 × MON 87411 × DAS-59122-7 seed blend is a product of Bayer's research program offering unique genetic characteristics for specific grower needs and may be protected by one or more of the following U.S. patents that can be found at http://www.monsantotechnology.com

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

April 26, 2023

Ashley Young
U.S. Seeds Regulatory Specialist
Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

Subject: Non-PRIA (Pesticide Registration Improvement Act) Labeling Amendment –Revision to the Name of the Company
Product Name: SmartStax Enlist
EPA Registration Number: 68467-7
EPA Receipt Date: February 16, 2023
Action Case Number: 00432995

Dear Ms. Young:

The amended labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is acceptable.

The primary company name of this product has been changed from Mycogen Seeds c/o Dow Agrosciences LLC to Corteva Agriscience LLC, and our records have been updated accordingly. This approval does not affect any terms or conditions that were previously imposed on this registration. You continue to be subject to existing terms or conditions on your registration and any deadlines connected with them.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one (1) copy of the final printed labeling before you release this product for shipment with the new labeling. In accordance with 40 CFR § 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. “To distribute or sell” is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR § 152.3.

Should you wish to add/retain a reference to your company’s website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the U.S. Environmental Protection Agency (EPA). If the website is false or misleading, the product will be considered to be misbranded and sale or distribution of the product is unlawful under FIFRA section 12(a)(1)(E). 40 CFR § 156.10(a)(5) lists examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product’s label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should EPA find or if it is brought to our attention that a website contains statements or claims substantially differing from statements or claims made in connection with obtaining a FIFRA

section 3 registration, the website will be referred to EPA's Office of Enforcement and Compliance Assurance.

Your release for shipment of this product constitutes acceptance of these terms. If these terms are not complied with, this registration will be subject to cancellation in accordance with FIFRA section 6. If you have any questions, please contact Leslie Paul via email at paul.leslie@epa.gov.

Sincerely,

Digitally signed by ALAN REYNOLDS
Date: 2023.04.26 14:46:37 -04'00'

Alan Reynolds, Team Leader
Emerging Technologies Branch
Biopesticides and Pollution
Prevention Division (7511M)
Office of Pesticide Programs

Enclosure: Final Stamped Label

Plant-Incorporated Protectant Label

SmartStax® Enlist™

(Alternate Brand Name MON 89034 × TC1507 × MON 88017 × DAS-59122-7 Insect Protected Herbicide-Tolerant Corn)
(Alternate Brand Name SmartStax®)
(OECD Unique Identifier: MON-89Ø34-3 × DAS- Ø15Ø7-1 × MON-88Ø17-3 × DAS-59122-7)

Active Ingredients:

Bacillus thuringiensis Cry1A.105 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3) .....≤ 0.0026%*

Bacillus thuringiensis Cry2Ab2 protein and the genetic material (vector PV-ZMIR245) necessary for its production in corn event MON 89034 (OECD Unique Identifier: MON-89Ø34-3) .....≤ 0.0053%*

Bacillus thuringiensis Cry1F protein and the genetic material (vector PHP8999) necessary for its production in corn event TC1507 (OECD Unique Identifier: DAS- Ø15Ø7-1) .....≤ 0.0012%*

Bacillus thuringiensis Cry3Bb1 protein and the genetic material (vector PV-ZMIR39) necessary for its production in corn event MON 88017 (OECD Unique Identifier: MON-88Ø17-3) .....≤ 0.0079%*

Bacillus thuringiensis Cry34Ab1 protein and the genetic material (vector PHP17662) necessary for its production in corn event DAS-59122-7 (OECD Unique Identifier: DAS-59122-7) .....≤ 0.0194%*

Bacillus thuringiensis Cry35Ab1 protein and the genetic material (vector PHP17662) necessary for its production in corn event DAS-59122-7 (OECD Unique Identifier: DAS-59122-7) .....≤ 0.0042%*

Other Ingredients:

CP4 EPSPS protein (5-enolpyruvylshikimate-3-phosphate synthase) and the genetic material (vector PV-ZMIR39) necessary for its production in corn event MON 88017 .....≤ 0.0052%*

PAT protein (phosphinothricin acetyl transferase) and the genetic material (vectors PHP17662 and PHP8999) necessary for its production in corn events TC1507 and DAS-59122-7.....≤ 0.00045%*

*Maximum percent (wt/wt) of dry forage

KEEP OUT OF REACH OF CHILDREN

CAUTION

NET CONTENTS_____

EPA Registration No. 68467-7
EPA Establishment No. 62719-IN-001

Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in any manner inconsistent with its labeling. Information regarding commercial production reflected here and in the terms and conditions of this registration must be included in the Grower Guide.

SmartStax® Enlist™ protects corn crops from leaf, stalk, and ear damage caused by corn borers and root damage caused by corn rootworm larvae. In order to minimize the risk of these pests developing resistance to SmartStax® Enlist™ corn, an insect resistance management plan must be implemented which includes planting of a structured refuge. Growers who fail to comply with the IRM requirements risk losing access to corn PIP products.

These refuge requirements do not apply to seed propagation of inbred and hybrid seed corn up to a total of 20,000 acres per county and up to a combined US total of 250,000 acres per PIP active ingredient per year.

A common refuge must be planted for both corn borers and corn rootworms. The refuge must be planted with corn hybrids that do not contain Bt technologies for the control of corn rootworms or corn borers. The refuge and SmartStax® Enlist™ corn should be sown on the same day, or with the shortest window possible between planting dates to ensure that corn root development is similar among varieties. If the refuge is planted on rotated ground, then the SmartStax® Enlist™ corn must also be planted on rotated ground. If the combined refuge is planted on continuous corn, the SmartStax® Enlist™ field may be planted on either continuous or rotated land (option encouraged where WCRW rotation resistant biotype may be present). Refuge options are based on the planting of MON 89034 × TC1507 × MON 88017 × DAS-59122-7 in cotton or non-cotton growing regions and the insect pressure present in those locations.

If insecticides are applied to the refuge for control of CRW adults, the same treatment must also be applied in the same timeframe to SmartStax® Enlist™.

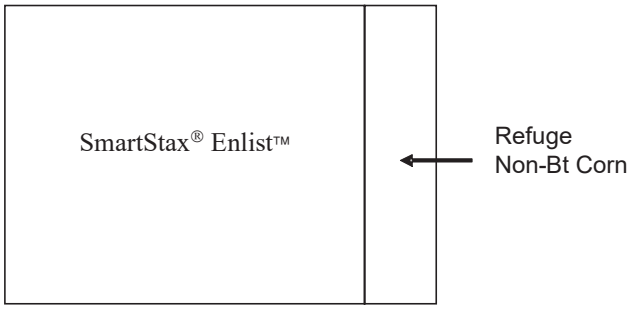
Several options for deployment of the refuge for SmartStax® Enlist™ are available to growers. These options are based on the planting of SmartStax® Enlist™ in cotton or non-cotton growing regions and the insect pressure present in those locations. The refuge sizes for these regions are either 5% (i.e. 5 acres of non-Bt corn for every 95 acres of SmartStax® Enlist™ planted) or 20% (20 acres of non-Bt corn for every 80 acres of SmartStax® Enlist™ planted), and are presented in the table below:

Region	Refuge size	In-field or adjacent refuge allowed	Refuge separated by up to ½ mile allowed
Cotton growing where CEW is a significant pest and WCRW, NCRW and MCRW are not significant: NC, SC, GA, FL, TN (only the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton), AL, MS, LA, AR, VA (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex)	20% non-Bt corn	Yes	Yes
Cotton growing where CEW is a significant pest and WCRW, NCRW, and/or MCRW are significant: TX (except the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and	20% non-Bt corn	Yes	No

Sherman), OK (only the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), MO (only the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard)			
Cotton growing where CEW is not a significant pest and WCRW, NCRW and MCRW are not significant: NM, AZ, CA, NV	5% non-Bt corn	Yes	Yes
Non-cotton growing where WCRW, NCRW and MCRW are not significant: OR, WA, ID, MT, WY, UT, VA (except the counties of Dinwiddie, Franklin City, Greensville, Isle of Wight, Northampton, Southampton, Suffolk City, Surrey, and Sussex), WV, PA, MD, DE, CT, RI, NJ, NY, ME, MA, NH, VT, HI, AK, TN (except the counties of Carroll, Chester, Crockett, Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford, Shelby, and Tipton)	5% non-Bt corn	Yes	Yes
Non-cotton-growing where WCRW, NCRW and/or MCRW are significant: KS, NE, SD, ND, MN, IA, MO (except the counties of Dunklin, New Madrid, Pemiscot, Scott, and Stoddard), IL, WI, MI, IN, OH, KY, CO, OK (except the counties of Beckham, Caddo, Comanche, Custer, Greer, Harmon, Jackson, Kay, Kiowa, Tillman, and Washita), TX (only the counties of Carson, Dallam, Hansford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, and Sherman)	5% non-Bt corn	Yes	No

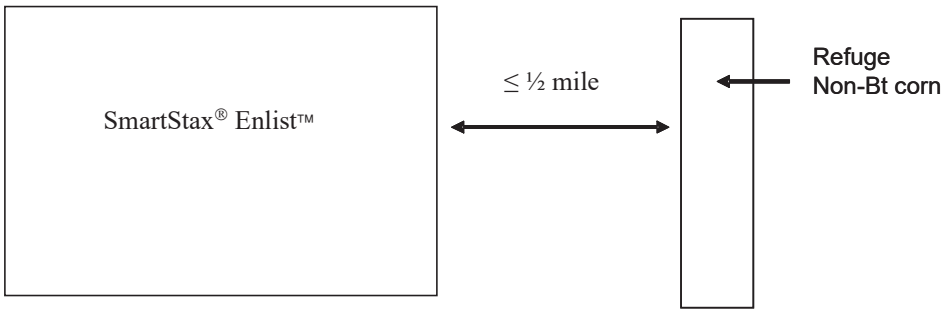
If corn rootworms are significant within a region, the structured refuge must be planted as an in-field or adjacent refuge using corn hybrids that do not contain Bt technologies for the control of corn borers or corn rootworms. It can be planted as a block within or adjacent (e.g., across the road) to the SmartStax® Enlist™, perimeter strips (i.e., strips around the field), or in-field strips. If perimeter or in-field strips are implemented, the strips must be at least 4 consecutive rows wide. The refuge can be protected from lepidopteran damage by use of non-Bt insecticides if the population of one or more target lepidopteran pests of SmartStax® Enlist™ in the refuge exceeds economic thresholds. In addition, the refuge can be protected from CRW damage by an appropriate seed treatment or soil insecticide; however, insecticides labeled for adult CRW control must be avoided in the refuge during the period of CRW adult emergence. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants). A schematic of one common refuge deployment option is shown below:

Structured Refuge



If corn rootworms are not significant within a region, the structured refuge may be planted as an in-field or adjacent refuge, or as a separate block that is within ½ mile of the SmartStax® Enlist™ field. The structured refuge must be planted with corn hybrids that do not contain Bt technologies for the control of corn borers or corn rootworms. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants). A schematic of one refuge option with the refuge planted within a ½ mile of the SmartStax® Enlist™ field is shown below:

Separated Structured Refuge



Corn Insects Controlled or Suppressed

European corn borer (ECB)	*Ostrinia nubilalis*
Southwestern corn borer (SWCB)	*Diatraea grandiosella*
Southern cornstalk borer (SCSB)	*Diatraea crambidoides*
Corn earworm (CEW)	*Helicoverpa zea*
Fall armyworm (FAW)	*Spodoptera frugiperda*
Stalk borer	*Papaipema nebris*
Lesser corn stalk borer	*Elasmopalpus lignosellus*
Sugarcane borer (SCB)	*Diatraea saccharalis*
Western bean cutworm (WBC)	*Richia albicosta*
Black cutworm	*Agrotis ipsilon*
Western corn rootworm (WCRW)	*Diabrotica virgifera virgifera*
Northern corn rootworm (NCRW)	*Diabrotica barberi*
Mexican corn rootworm (MCRW)	*Diabrotica virgifera zeae*

Sales of corn hybrids that contain Bt corn plant pesticide must be accompanied by a IRM/Grower Guide which includes information on planting, production, and insect resistance management and notes that routine applications of insecticides to control these insects are usually unnecessary when corn containing the Bt proteins is planted.

EPA Accepted: _____

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

To: Board of Pesticides Control Members
From: BPC Staff
RE: Five year extension request for SLN ME-040001 [FIFRA, Section 24(c)], Arsenal Herbicide Applicators Concentrate, EPA Reg. No. 241-299, for Jack pine, red spruce and white spruce release
Date: December 28, 2023
****

Ronald Lemin, Jr., Vegetation Management Sales Consultant, Nutrien Solutions, is requesting an extension of SLN (Special Local Needs) registration for Arsenal Herbicide Applicators Concentrate, ME-040001. Active ingredient is imazapyr. No changes have been made in the SLN label.

The market label specifies a maximum surfactant concentration of 0.25% (v/v) for conifer release. The SLN permits use of Arsenal at less than the labeled rate when tank mixed with glyphosate at rates greater 0.25% v/v. This reduces the rate of Arsenal and maximizes the effectiveness of glyphosate while reducing spruce injury and the need for repeat applications. The SLN has been active since 2004 and expired Dec. 31, 2023.

BASF continues its efforts to incorporate the use into the EPA label. Because EPA is experiencing delays in label amendment reviews, BASF requests an extension of five years to bridge the gap until the use is added to the label and BASF begins production and distribution of the revised label. Should this occur sooner than five years, the SLN becomes void.

The section 3 product label is registered for multiple sites, including use as an aquatic herbicide. Pam Byer, Ph.D., BPC toxicologist has previously indicated the rate under this SLN should not cause any undue harm to humans or the environment.

Please review the attached documents and let me know if you have any questions.

- Letters of request (2023 and 2004) from Ronald Lemin, Jr.
- Letter of support from Effie Toren, Registration Specialist, BASF
- Arsenal SLN label with five-year extension
- Arsenal EPA label
- Arsenal Section 3 label
- Arsenal SDS

Ronald C. Lemin, Jr.
Vegetation Management Sales Consultant
291 Lincoln Street
Bangor, Maine 04401
207-944-6160 (m)
Ronald.lemin@nutrien.com

December 27, 2023

Mary E. Tomlinson
Pesticide Registrar- Water Quality Specialist
Maine Board of Pesticides Control
28 SHS
Augusta, Maine 04333

Dear Mary and the Board of Pesticides Control,

I am writing this letter to request a continuation of the Special Local Needs label (EPA SLN NO. ME-04001) for Arsenal Applicators Concentrate, EPA Registration Number 241-299. This letter reiterates my 2021 request to extend the registration, and my initial request to establish the SLN back in 2004. I attached my original letter to the Maine Board of Pesticides Control from 2004.

Forest industry in Maine has been using this SLN annually in the release of spruce for the last 20 years and continues to need this SLN label until the EPA and BASF incorporates the wording into the existing Arsenal Applicators Concentrate label. I cannot explain why the wording hasn't been incorporated in the last 20 years, but it should be done at the next re-registration of EPA 241-299.

The current Arsenal Applicators Concentrate label requires 6-12 ounces of Arsenal A.C. per acre for spruce release, however in Maine we are only able to use 1-1.5 ounces of Arsenal Applicators Concentrate when tank mixed with 1.5-2.25 quarts of unloaded forestry labelled glyphosate. Anything greater than 1.5 ounces of Arsenal Applicators Concentrate on planted spruce results in significant top kill. From and IPM standpoint alone, it would be prudent to apply only what is needed rather than too much pesticide to complete the task. The label specifies a surfactant rate of 0.25% v/v when adding Arsenal Applicators Concentrate for forestry release. In Maine we require a surfactant load higher than 0.25% for the imazapyr and glyphosate prescription to control the woody vegetation. Rates at 0.25% or lower would result in respray on the same sites in subsequent years.

These rates specified on the SLN NO. ME-04001 have been in use for well over 20 years and based on experimenting with these products and surfactants in the mid to late 1990's. I would again like to reiterate my request for a continuation of the SLN for another 5 years, or until the federal label incorporates the existing wording for Maine forestry release.

Thank you for your time and consideration. If you have any further questions, please feel free to contact me at the address below.

Sincerely,

Ronald C. Lemin, Jr.
Vegetation Management Consultant, Nutrien Solutions
Licensed Professional Forester, ME, NH
SAF Certified Forester
Maine Licensed Applicator

UAP Timberland LLC

May 24, 2004

Maine Board of Pesticide Control
Attn: Bob Batteese
28 State House Station
Augusta, ME 04333-0028

Dear Mr. Batteese:

I am writing to express support for the request for a special local need (24(c)) label for Arsenal Applicators Concentrate to allow for the use of increased nonionic surfactant concentration in Maine for forestry conifer release when used in tank mix concentrations with Accord Concentrate and Oust. Currently the Arsenal label allows for a maximum nonionic surfactant concentration of ¼ of one percent. When releasing conifers at 8 to 10 gallons per acre, this represents only 2.6 to 3.2 ounces of surfactant per acre. The Arsenal label requires 6-12 ounces of Arsenal per acre for spruce release, however in Maine we are using only 1-2.5 ounces tank mixed with 1.5-2.25 quarts of Accord Concentrate. Consequently, the bulk of the active ingredient (glyphosate) will not perform adequately at this low surfactant level.

At the current labeled rate of surfactant, and using the tank mixes of 1.5 -2.25 quarts of Accord Concentrate and 1-2.5 ounces of Arsenal A.C., the result would be significant poor performance and re-spray claims from forest industry. In a time of increased emphasis on IPM, and as a member of the governor's Integrated Pest Management Council, I feel that the need to increase the surfactant level on the Arsenal label is essential for the forestry industry. The alternative result could be unnecessary re-sprays and therefore, increased chemical usage per treatment area.

Thank you for your time and consideration. If you have any further questions, please feel free to contact me at the address below.

Sincerely,

Ronald C. Lemin, Jr.
UAP Timberland, Market Manager
Licensed Professional Forester, ME, NH
SAF Certified Forester
Maine Licensed Applicator

We create chemistry

Agricultural Solutions

December 15, 2023

Mary Tomlinson
Board of Pesticide Control
Maine Department of Agriculture
28 State House Station
Augusta, ME 04333-0028

Re: Arsenal® Applicators Concentrate Herbicide, EPA Reg. No. 241-299
Section 24(c) Registration

Dear Ms. Tomlinson,

Enclosed is revised Section 24(c) labeling (coded NVA 2023-04-104-0181) extending the expiration date for labeling allowing the use of an increased concentration of nonionic surfactant when **Arsenal Applicators Concentrate** is used in tank mix concentrations with glyphosate for the purpose forestry conifer release.

There is a previous 24(c) label granted (SLN No. ME-040001) which is set to expire on December 31, 2023. BASF plans to submit amended Section 3 labeling to the US EPA, but it will take years to achieve EPA acceptance and to incorporate those changes into production on product containers. This 24(c) request is to maintain the ability of the increased concentration of nonionic surfactant use with glyphosate tank mixes while BASF incorporates the use into Section 3 labeling.

Thank you very much. Please contact me at 919-724-1350 or effie.toren@basf.com if you require anything else.

Sincerely,
BASF Corporation

Effie Toren
State Registration Manager

Encl.

BASF Corporation
26 Davis Drive, PO Box 13528
Research Triangle Park
NC 27709-3528
Tel: (919) 547-2000
www.basf.com/usa

Helping Make Products Better™

For distribution and use only in the state of Maine

Imazapyr	Group	2	Herbicide

FIFRA Sec. 24(c) Special Local Need Label

ARSENAL®
herbicide

APPLICATORS CONCENTRATE

For Jack Pine, Black Spruce, Red Spruce, and White Spruce release

This special local need label expires on December 31, 2028 and must not be used or distributed after this date.

Active Ingredient:

Isopropylamine salt of imazapyr: (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-3-pyridinecarboxylic acid)*	53.1%
Other Ingredients:	46.9%
Total:	100.0%

*Equivalent to 43.3% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-3-pyridinecarboxylic acid or 4 pounds acid per gallon

EPA Reg. No. 241-299 **EPA SLN No. ME-040001**

CAUTION/PRECAUCION

Directions For Use

Refer to the Arsenal® herbicide Applicators Concentrate main label, EPA Reg. No. 241-299, for complete Directions For Use and all applicable restrictions and precautions. When following the instructions on this label, the user must have this label and the entire Arsenal herbicide Applicators Concentrate container label in possession at the time of pesticide application.

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

Application Methods

Conifer Release Treatment

Arsenal® herbicide Applicators Concentrate may be used to release Jack Pine, Black Spruce, Red Spruce, and White Spruce from labeled brush, vine, grass, and broadleaf weeds at rates less than 6 fl ozs/A when tank mixed with glyphosate.

A nonionic surfactant may be tank mixed at rates greater than 0.25% v/v when using less than 6 fl ozs/A of **Arsenal herbicide Applicators Concentrate**. The use of **Arsenal herbicide Applicators Concentrate** with more than 0.25% v/v nonionic surfactant can result in conifer growth inhibition or mortality, and should not be used if this type of conifer injury cannot be tolerated.

The use of **Arsenal herbicide Applicators Concentrate** rates below 6 fl ozs/A are intended for hardwood brush growth suppression and hardwood brush resprouting should be expected.

BASF Corporation
26 Davis Drive, Research Triangle Park, NC 27709

BASF
We create chemistry

Conditions of Sale and Warranty

The **Directions For Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling, all of which are beyond the control of BASF CORPORATION ("BASF") or the Seller. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer.

BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions For Use**, subject to the inherent risks, referred to above.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BUYER'S EXCLUSIVE REMEDY AND BASF'S EXCLUSIVE LIABILITY, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, SHALL BE LIMITED TO REPAYMENT OF THE PURCHASE PRICE OF THE PRODUCT.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, EXEMPLARY, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.

BASF and the Seller offer this product, and the Buyer and User accept it, subject to the foregoing **Conditions of Sale and Warranty** which may be varied only by agreement in writing signed by a duly authorized representative of BASF. 1108

Arsenal *is a registered trademark of BASF.*

000241-00299.20231129.**NVA 2023-04-0104-0181**
Supersedes NVA 2021-04-104-0221

24(c) registrant:
BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

We create chemistry

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

September 7, 2017

Nina S. Rao
Regulatory Manager
BASF Corporation
26 Davis Drive
P. O. Box 13528
Research Triangle Park, NC
27709-3528

Subject: Notification per PRN 98-10 – Updating label language to specify NY State applicator requirements.
Product Name: Arsenal Herbicide Applicators Concentrate
EPA Registration Number: 241-299
Application Date: 08/10/2017
Decision Number: 532575

Dear Nina S. Rao:

The Agency is in receipt of your Application for Pesticide Notification under Pesticide Registration Notice (PRN) 98-10 for the above referenced product. The Registration Division (RD) has conducted a review of this request for its applicability under PRN 98-10 and finds that the action requested falls within the scope of PRN 98-10.

The label submitted with the application has been stamped "Notification" and will be placed in our records.

Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance.

If you have any questions, you may contact Gene Kaudy at 703-347-0585 or via email at kaudy.gene@epa.gov.

Sincerely,

Erik Kraft, Product Manager 24
Fungicide and Herbicide Branch
Registration Division (7505P)
Office of Pesticide Programs

Enclosure

[Note to PM: This is the Front Panel/First Page of Booklet]

ARSENAL®
herbicide

APPLICATORS CONCENTRATE

For the control of undesirable vegetation growing within specified aquatic sites, forestry sites, pasture/rangeland, and nonagricultural lands; and for the establishment and maintenance of wildlife openings, release of unimproved Bermudagrass and Bahiagrass, bareground weed control, and for use under certain paved surfaces

Active Ingredient:

isopropylamine salt of imazapyr: (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-3-pyridinecarboxylic acid)*	53.1%
Other Ingredients:	46.9%
Total:	100.0%

*Equivalent to 43.3% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-3-pyridinecarboxylic acid or 4 pounds acid per gallon

EPA Reg. No. 241-299 **EPA Est. No.**

KEEP OUT OF REACH OF CHILDREN
CAUTION/PRECAUCION

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 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 by a poison control center or doctor. • **DO NOT** give anything to an unconscious person.
If on skin or clothing	• 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.
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.
If in eyes	• Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses, if present, after first 5 minutes; then continue rinsing eyes. • Call a poison control center or doctor for treatment advice.
HOTLINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor or going for treatment. In case of an emergency endangering life or property involving this product, call BASF Corporation for emergency medical treatment information, day or night 1-800-832-HELP (4357).	

See inside booklet for complete **Precautionary Statements**, **Directions For Use**, **Conditions of Sale and Warranty**, and state-specific crop and/or use site restrictions.

Net Contents:

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

NOTIFICATION
241-299
The applicant has certified that no changes, other than those reported to the Agency have been made to the labeling. The Agency acknowledges this notification by letter dated:
09/07/2017

BASF
We create chemistry

FIRST AID	
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Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION. Harmful if swallowed. Avoid contact with skin, eyes, or clothing. Avoid breathing spray mist.

Personal Protective Equipment (PPE)

Mixers, loaders, applicators, and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical-resistant gloves made of any waterproof material such as 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

Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions are given for washables, 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 that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(6)].

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.

Physical and Chemical Hazards

Spray solutions of **Arsenal® herbicide Applicators Concentrate** must be mixed, stored and applied only in stainless steel, fiberglass, plastic and plastic-lined steel containers.

Thoroughly clean application equipment, including landing gear, immediately after use of this product. Prolonged exposure of this product to uncoated steel (except stainless steel) surfaces may result in corrosion and failure of the exposed part. The maintenance of an organic coating (paint) may prevent corrosion.

Environmental Hazards

This product is toxic to plants. Drift and runoff may be hazardous to plants in water adjacent to treated areas. **DO NOT** apply to water except as specified in this label. Treatment of aquatic weeds may result in oxygen depletion or loss due to decomposition of dead plants. This oxygen loss may cause the suffocation of some aquatic organisms. **DO NOT** treat more than 1/2 of the surface area of the water in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outward in bands to allow aquatic organisms to

move into untreated areas. **DO NOT** contaminate water when disposing of equipment washwaters or rinsate.

This pesticide is toxic to vascular plants and must be used strictly in accordance with the drift precautions on the label.

Directions For Use

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

Arsenal® herbicide Applicators Concentrate must be used only in accordance with the instructions on the leaflet label attached to the container. Keep containers closed to avoid spills and contamination.

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.

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 **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
- Shoes plus socks
- Chemical-resistant gloves made of any waterproof material
- Protective eyewear

NONAGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard (WPS) 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.

STORAGE AND DISPOSAL

DO NOT contaminate water, food or feed by storage or disposal.

Pesticide Storage

DO NOT store below 10° F.

Pesticide Disposal

Wastes resulting from the use of this product must be disposed of on-site or at an approved waste disposal facility.

Container Handling

Nonrefillable Container. DO NOT reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying; then offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

Triple rinse containers small enough to shake (capacity ≤ 5 gallons) 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.

Triple rinse containers too large to shake (capacity > 5 gallons) as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Repeat this procedure two more times.

Pressure rinse as follows: Empty the remaining contents into application equipment or 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.

Refillable Container. Refill this container with pesticide only. **DO NOT** reuse this container for any other purpose. Triple rinsing the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

(continued)

STORAGE AND DISPOSAL *(continued)*

Container Handling *(continued)*

Triple rinse as follows: To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

When this container is empty, replace the cap and seal all openings that have been opened during use; return the container to the point of purchase or to a designated location. This container must only be refilled with a pesticide product. Prior to refilling, inspect carefully for damage such as cracks, punctures, abrasions, worn-out threads and closure devices. Check for leaks after refilling and before transport. **DO NOT** transport if this container is damaged or leaking. If the container is damaged, or leaking, or obsolete and not returned to the point of purchase or to a designated location, triple rinse emptied container and offer for recycling, if available, or dispose of container in compliance with state and local regulations.

In Case of Emergency

In case of large-scale spillage regarding this product, call:

- CHEMTREC 1-800-424-9300
- BASF Corporation 1-800-832-HELP (4357)

In case of medical emergency regarding this product, call:

- Your local doctor for immediate treatment
- Your local poison control center (hospital)
- BASF Corporation 1-800-832-HELP (4357)

Steps to be taken in case material is released or spilled:

- Dike and contain the spill with inert material (sand, earth, etc.) and transfer liquid and solid diking material to separate containers for disposal.
- Remove contaminated clothing and wash affected skin areas with soap and water.
- Wash clothing before reuse.
- Keep the spill out of all sewers and open bodies of water.

Product Information

Arsenal® herbicide Applicators Concentrate is an aqueous solution to be mixed with water and a surfactant and applied as a spray solution to control undesirable vegetation growing within specified aquatic sites, forestry sites, pasture/rangeland and nonagricultural lands. Aquatic sites consist of standing and flowing water, estuarine/marine, wetland, and riparian areas. Nonagricultural lands include private, public and military lands as follows: uncultivated nonagricultural areas (including airports, highway, railroad and utility rights-of-way, sewage disposal areas, etc.); uncultivated agricultural areas - noncrop producing (including farmyards, fuel storage areas, fence rows, nonirrigation ditchbanks, barrier strips, etc.); industrial sites - outdoor (including lumberyards, pipeline and tank farms, etc.); and natural areas (including wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads, and trails). **Arsenal herbicide Applicators Concentrate** may also be used for the release of unimproved Bermudagrass and Bahiagrass, for bareground weed control, and for use under certain paved surfaces.

Herbicidal Activity

Arsenal herbicide Applicators Concentrate will control most annual and perennial grass and broadleaf weeds in addition to many brush and vine species with some residual control of undesirable species that germinate above the waterline. **Arsenal herbicide Applicators Concentrate** is readily absorbed through emergent leaves and stems and is translocated rapidly throughout the plant with accumulation in the meristematic regions. For maximum activity, weeds should be growing vigorously at the time of application, and the spray solution should include a surfactant (see **Adjuvants** section for specific use directions). Treated plants stop growing soon after spray application. Chlorosis appears first in the newest leaves, and necrosis spreads from this point. In perennials, the herbicide is translocated into, and kills, underground or submerged storage organs, which prevents regrowth. Chlorosis and tissue necrosis may not be apparent in some plant species until 2 or more weeks after application. Complete kill of plants may not occur for several weeks. **Arsenal herbicide Applicators Concentrate** applications are rainfast 1 hour after treatment.

Use Information

Applications may be made for the control of undesirable vegetation growing within specified aquatic sites, forestry sites, pasture/rangeland and nonagricultural lands. Aquatic sites consist of standing and flowing water; estuarine/marine, wetland, and riparian areas; for control of most annual and perennial grass weeds, broadleaf weeds, vines and brambles, and hardwood brush and trees for forestry site preparation and release of conifers from woody and herbaceous competition. **Arsenal herbicide Applicators Concentrate** may be used for selective woody and herbaceous weed control in natural regeneration of certain conifers (see **Conifer Release Treatment**).

Nonagricultural lands include private, public and military lands as follows: uncultivated nonagricultural areas (including airports, highway, railroad and utility rights-of-way, sewage disposal areas, etc.); uncultivated agricultural areas - noncrop producing (including farmyards, fuel storage areas, fence rows, nonirrigation ditchbanks, barrier strips, etc.); industrial sites - outdoor (including lumberyards, pipeline and tank farms, etc.); and natural areas (including wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads, and trails).

Precautions

- Keep from contact with fertilizers, insecticides, fungicides and seeds.
- Clean application equipment after using this product by thoroughly flushing with water.

Restrictions

- **DO NOT** use on food crops.
- **DO NOT** apply this product within 1/2 mile upstream of an active potable water intake in flowing water (i.e. river, stream, etc.) or within 1/2 mile of an active potable water intake in a standing body of water, such as a lake, pond, or reservoir.
- **DO NOT** apply to water used for irrigation except as described in **Product Use Precautions and Restrictions** section of this label.
- **DO NOT** drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the treated soil may be washed or moved into contact with their roots.
- **DO NOT** use on lawns, walks, driveways, tennis courts, or similar areas.
- **DO NOT** side trim desirable vegetation with this product unless severe injury and plant death can be tolerated. Prevent drift of spray to desirable plants.

Site Specific Restrictions

Nonagricultural Lands and Forestry Sites

- **DO NOT** apply more than 1.5 lbs acid equivalent (ae) imazapyr (equivalent to 48 fl ozs of **Arsenal® herbicide Applicators Concentrate**) per acre per year.

Pasture/Rangeland Sites

- For spot treatment only.
- **DO NOT** treat more than 1/10 of the available area to be grazed or cut for hay.
- **DO NOT** apply more than 0.75 lb ae imazapyr (equivalent to 24 fl ozs of **Arsenal herbicide Applicators Concentrate**) per acre per year.

Aquatic Sites

- **DO NOT** apply more than 1.5 lbs ae imazapyr (equivalent to 48 fl ozs of **Arsenal herbicide Applicators Concentrate**) per acre per year.
- **Public waters** - Application of **Arsenal herbicide Applicators Concentrate** to water can only be made by federal or state agencies, such as Water Management District personnel, municipal officials, and the U.S. Army Corps of Engineers, or those applicators who are licensed or certified as aquatic pest control applicators and are authorized by the state or local government. Treatment to other than non-native invasive species is limited to only those plants that have been determined to be a nuisance by a federal or state government entity.
- **Aerial application** - Aerial application to aquatic sites is restricted to helicopter only.
- **Irrigation water** - Application to water used for irrigation that results in **Arsenal herbicide Applicators Concentrate** residue greater than 1.0 ppb **MUST NOT** be used for irrigation purposes for 120 days after application or until **Arsenal herbicide Applicators Concentrate** residue levels are determined by laboratory analysis or other appropriate means of analysis to be 1.0 ppb or less. When applications are made within 500 feet of an active irrigation intake, **DO NOT** irrigate for at least 24 hours following application to allow for dissipation.

Recreational Use of Water in Treatment Area

There are no restrictions on the use of water in the treatment area for recreational purposes, including swimming and fishing.

Livestock Use of Water in/from Treatment Area

There are no restrictions on livestock consumption of water from the treatment area.

Potable Water Intakes

DO NOT apply **Arsenal herbicide Applicators Concentrate** directly to water within 1/2 mile upstream of an active potable water intake in flowing water (i.e. river, stream, etc.) or within 1/2 mile of an active potable water intake in a standing body of water such as a lake, pond, or reservoir. To make aquatic applications around and within 1/2 mile of active potable water intakes, the water intake **must** be turned off during application and for a minimum of 48 hours after the application. These aquatic applications may be made only in the cases where there are alternative water sources or holding ponds that would permit the turning off of an active potable water intake for a minimum period of 48 hours after the applications.

NOTE: Existing potable water intakes that are no longer in use, such as those replaced by connections to wells or a municipal water system, are not considered to be active potable water intakes. This restriction does not apply to intermittent, inadvertent overspray of water in terrestrial use sites.

Quiescent or Slow-moving Waters

In lakes and reservoirs, **DO NOT** apply **Arsenal herbicide Applicators Concentrate** within one (1) mile of an active irrigation water intake during the irrigation season. Applications less than one (1) mile from an active irrigation water intake may be made during the off-season, provided that the irrigation intake will remain inactive for a minimum of 120 days after application or until **Arsenal herbicide Applicators Concentrate** residue levels are determined by laboratory analysis or other appropriate means of analysis to be 1.0 ppb or less.

Avoiding Injury to Nontarget Plants

If treated vegetation is to be removed from the application site, **DO NOT** use the vegetative matter as mulch or compost on or around desirable species.

Precautions for Avoiding Injury to Nontarget Plants

Untreated desirable plants can be affected by root uptake of **Arsenal® herbicide Applicators Concentrate** from treated soil. Injury or loss of desirable plants may result if **Arsenal herbicide Applicators Concentrate** is applied on or near desirable plants, on areas where their roots extend, or in locations where the treated soil may be washed or moved into contact with their roots. When making application along shorelines where desirable plants may be present, use caution to avoid spray contact with their foliage or spray application to the soil in which they are rooted. Shoreline plants that have roots which extend into the water in an area where **Arsenal herbicide Applicators Concentrate** has been applied generally will not be adversely affected by uptake of the herbicide from the water.

Managing Off-target Movement

Aerial Application

- Applicators are required to use a coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater for release heights below 10 feet. Applicators are required to use a very coarse or coarser droplet size or, if specifically using a spinning atomizer nozzle, applicators are required to use a VMD of 475 microns or greater for release heights above 10 feet. Applicators must consider the effects of nozzle orientation and flight speed when determining droplet size.
- Applicators are required to use upwind swath displacement.
- The boom length must not exceed 60% of the wingspan or 90% of the rotor blade diameter to reduce spray drift.
- Applications with wind speeds less than 3 mph and with wind speeds greater than 10 mph are prohibited.
- Applications into temperature inversions are prohibited.

Ground Boom Application

- Applicators are required to use a nozzle height below 4 feet above the ground or plant canopy and coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater.
- Applications with wind speeds greater than 10 mph are prohibited.
- Applications into temperature inversions are prohibited.

Wind Erosion

Avoid treating powdery, dry or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.

Adjuvants

Postemergence applications of **Arsenal herbicide Applicators Concentrate** require the addition of a spray adjuvant. When making aquatic applications, only spray adjuvants approved or appropriate for aquatic use must be utilized.

Nonionic Surfactant

Use a nonionic surfactant (NIS) at the rate of 0.25% volume/volume (v/v) or higher (see manufacturer's label) of the spray solution (0.25% v/v is equivalent to 1 quart in 100 gallons). For best results, select a nonionic surfactant with an HLB (hydrophilic to lipophilic balance) ratio between 12 and 17 with at least 70% surfactant in the formulated product. Alcohols, fatty acids, oils, ethylene glycol or diethylene glycol should not be considered as surfactants to meet the above requirements.

Methylated Seed Oil or Vegetable Oil Concentrate

Instead of a surfactant, a methylated seed oil (MSO) or vegetable-based seed oil concentrate may be used at the rate of 1.5 to 2 pints per acre. When using spray volumes greater than 30 gallons per acre, methylated seed oil or vegetable-based seed oil concentrates should be mixed at a rate of 1% of the total spray volume, or alternatively use a nonionic surfactant as described above. Research indicates that these oils may aid in **Arsenal herbicide Applicators Concentrate** deposition and uptake by plants under moisture or temperature stress.

Silicone-based Surfactant

See manufacturer's label for specific rates. Silicone-based surfactants may reduce the surface tension of the spray droplet allowing greater spreading on the leaf surface as compared to conventional nonionic surfactants. However, some silicone-based surfactants may dry too quickly, limiting herbicide uptake.

Invert Emulsions

Arsenal herbicide Applicators Concentrate can be applied as an invert emulsion. The spray solution results in an invert (water-in-oil) spray emulsion designed to minimize spray drift and spray runoff, resulting in more herbicide on the target foliage. The spray emulsion may be formed in a single tank (batch mixing) or injected (in-line mixing). Consult the invert chemical label for proper mixing directions.

Other

An antifoaming agent, spray pattern indicator, or drift-reducing agent may be applied at the product labeled rate if necessary or desired.

Tank Mixes

Arsenal® herbicide Applicators Concentrate may be tank mixed with other herbicides.

Consult manufacturer's labels for specific rate restrictions and weeds controlled. Always follow the more restrictive label restrictions and precautions for all products used when making an application involving tank mixes.

Application Methods

Arsenal herbicide Applicators Concentrate may be selectively applied using low-volume directed application techniques or may be broadcast-applied using ground equipment, watercraft, or aircraft. Aerial applications to aquatic sites must be made by helicopter. In addition, **Arsenal herbicide Applicators Concentrate** may also be applied using cut-stump, cut-stem, and frill or girdle treatment techniques within nonagricultural lands, pasture/rangeland, and aquatic sites (see **Aerial Application** and **Ground Application** sections for additional details).

Aerial Application

All precautions must be taken to minimize or eliminate spray drift. Both fixed-wing aircraft and helicopters can be used to apply **Arsenal herbicide Applicators Concentrate** on nonagricultural lands, but only helicopters can be used for aquatic applications. **DO NOT** make applications by fixed-wing aircraft or helicopter unless appropriate buffer zones can be maintained to prevent spray drift out of the target area, or when treating open tracts of land, spray drift as a result of fixed-wing aircraft application can be tolerated. Aerial equipment designed to minimize spray drift, such as a helicopter equipped with a **Microfoil™ boom**, **Thru-Valve™ boom**, or raindrop nozzles, must be used and calibrated. Except when applying with a **Microfoil boom**, a drift control agent may be added at the specified label rate. **DO NOT** side trim with **Arsenal herbicide Applicators Concentrate** unless death of treated tree can be tolerated.

Uniformly apply the specified amount of **Arsenal herbicide Applicators Concentrate** in 2 to 30 gallons of water per acre. A foam-reducing agent may be added at the specified label rate, if needed.

Thoroughly clean application equipment, including landing gear, immediately after use of this product. Prolonged exposure of this product to uncoated steel (except stainless steel) surfaces may result in corrosion and failure of the exposed part. The maintenance of an organic coating (paint) may prevent corrosion.

Ground Application

Foliar Application

Low-volume Foliar Application

Use equipment calibrated to deliver 5 to 20 gallons of spray solution per acre. To prepare the spray solution, thoroughly mix in water 0.25% to 2.50% **Arsenal herbicide Applicators Concentrate** plus surfactant (see the **Adjuvants** section of this label for specific use directions). A foam-reducing agent may be applied at the specified label rate, if needed. For control of difficult species (see **Aquatic Weeds Controlled** section and the **Terrestrial Weeds Controlled** section for relative susceptibility of weed species), use the higher concentrations of herbicide and/or spray volumes, but **DO NOT** apply more than 3 pints of **Arsenal herbicide Applicators Concentrate** per acre in aquatic sites and nonagricultural lands and 1.5 pints per acre in pasture/rangeland. Excessive wetting of foliage is not necessary.

For low-volume foliar application, select proper nozzles to avoid overapplication. Proper application is critical to ensure desirable results. Best results are achieved when the spray covers the crown and approximately 70 percent of the plant. The use of an even, flat-fan tip with a spray angle of 40 degrees or less will aid in proper deposition.

Appropriate tip sizes include 4004E or 1504E. For a straight-stream and cone pattern, adjustable cone nozzles, such as 5500 X3 or 5500 X4, may be used. Attaching a rollover valve onto a Spraying Systems Model 30 gunjet or other similar spray gun allows for the use of both flat-fan and cone tips on the same gun.

Moisten, but **DO NOT** drench target vegetation causing spray solution to run off.

Low-volume Foliar Application with Backpack. For low-growing species, spray down on the crown, covering crown and penetrating approximately 70% of the plant.

For target species 4 to 8 feet tall, swipe the sides of target vegetation by directing spray to at least 2 sides of the plant in smooth vertical motions from the crown to the bottom. Make sure to cover the crown whenever possible.

For target species over 8 feet tall, lace sides of the target vegetation by directing spray to at least 2 sides of the target in smooth zigzag motions from crown to bottom.

Low-volume Foliar Application with Hydraulic Handgun Application Equipment. Use the same technique as described above for **Low-volume Foliar Application with Backpack**.

For broadcast applications, simulate a gentle rain near the top of target vegetation allowing spray to contact the crown and penetrate the target foliage without falling to the understory. Herbicide spray solution that contacts the understory may result in severe injury or death of plants in the understory.

High-volume Foliar Application

For optimum performance when spraying medium-density to high-density vegetation, use equipment calibrated to deliver up to 100 gallons of spray solution per acre (GPA). Spray solutions exceeding 100 GPA may result in excessive spray runoff, causing increased ground cover injury and injury to desirable species. To prepare the spray solution, thoroughly mix **Arsenal® herbicide Applicators Concentrate** in water and add a surfactant (see **Adjuvants** section for specific use directions and rates for surfactants). A foam-reducing agent may be added at the specified label rate, if needed. For control of difficult species (see **Aquatic Weeds Controlled** chart and the **Terrestrial Weeds Controlled** section for relative susceptibility of weed species), use the higher concentrations of herbicide and/or spray volumes, but **DO NOT** apply more than 3 pints of **Arsenal herbicide Applicators Concentrate** per acre in aquatic sites and nonagricultural lands and 1.5 pints per acre in pasture/rangeland. Uniformly cover the foliage of the vegetation to be controlled, but **DO NOT** apply to runoff. Excessive wetting of foliage is not necessary.

Side Trimming

DO NOT side trim with **Arsenal herbicide Applicators Concentrate** unless severe injury or death of the treated tree can be tolerated. **Arsenal herbicide Applicators Concentrate** is readily translocated and can result in death of the entire tree.

Cut-surface Treatment

Arsenal herbicide Applicators Concentrate may be used to control undesirable woody vegetation by applying the **Arsenal herbicide Applicators Concentrate** solution to the cambium area of freshly cut stump surfaces or to fresh cuts on the stem of the target woody vegetation. Applications can be made at any time of the year except during periods of heavy sap flow in the spring. **DO NOT** overapply solution causing runoff from the cut surface.

Injury may occur to desirable woody plants if the shoots extend from the same root system or their root systems are grafted to those of the treated tree.

Cut-surface Application with Dilute and Concentrate Solutions

Arsenal herbicide Applicators Concentrate may be mixed as either a concentrate or dilute solution. The dilute solution may be used for applications to the cut surface of the stump or to cuts on the stem of the target woody vegetation. Concentrate solutions may be used for applications to cuts on the stem. Use of the concentrate solution permits application to fewer cuts on the stem, especially for large-diameter trees. Follow the application instructions for proper application techniques for each type of solution.

- To prepare a dilute solution, mix 4 to 6 fluid ounces of **Arsenal herbicide Applicators Concentrate** with 1 gallon of water. A surfactant or penetrating agent may improve uptake through partially callused cambiums.
- To prepare a concentrate solution, mix 1 quart of **Arsenal herbicide Applicators Concentrate** with no more than 1 pint of water.

Cut-stump Treatment

Dilute Solution. Spray or brush the solution onto the cambium area of the freshly cut stump surface. Ensure that the solution thoroughly wets the entire cambium area (the wood next to the bark of the stump).

Cut-stem Treatment (injection, hack-and-squirt)

Dilute Solution. Using standard injection equipment, apply 1 milliliter of solution at each injection site around the tree with no more than 1-inch intervals between cut edges. Ensure that the injector completely penetrates the bark at each injection site.

Concentrate Solution. Using standard injection equipment, apply 1 milliliter of solution at each injection site. Make at least 1 injection cut for every 3 inches of diameter at breast height (DBH) on the target tree. For example, a 3-inch DBH tree will receive 1 injection cut, and a 6-inch DBH tree will receive 2 injection cuts. On trees requiring more than 1 injection site, place the injection cuts at approximately equal intervals around the tree.

Frill or Girdle Treatment

Using a hatchet, machete, or chainsaw, make cuts through the bark and completely around the tree to expose the cambium. The cut should angle downward extending into the cambium enough to expose at least 2 growth rings. Using a spray applicator or brush, apply a 12.5% to 50.0% solution of **Arsenal herbicide Applicators Concentrate** into each cut until thoroughly wet. Avoid applying so much herbicide that runoff to the ground or water occurs.

Forestry Use

Site Preparation Treatment

Arsenal® herbicide Applicators Concentrate may be used to control labeled grass weeds, broadleaf weeds, vines and brambles, and woody brush and trees on forest sites in advance of regeneration for the following conifer crop species:

Common Name	Scientific Name	Rate (fl ozs/A)
Loblolly pine	*Pinus taeda*	24 to 40
Loblolly X pitch hybrid		
Longleaf pine	*Pinus palustris*	
Shortleaf pine	*Pinus echinata*	
Virginia pine	*Pinus virginiana*	
Slash pine	*Pinus elliottii*	20 to 32
Coastal redwood	*Sequoia sempervirens*	12 to 24
Douglas fir	*Pseudotsuga menziesii*	
Western hemlock	*Tsuga heterophylla*	
California red fir	*Abies magnifica*	12 to 20
California white fir	*Abies concolor*	
Jack pine	*Pinus banksiana*	12 to 16
Lodgepole pine	*Pinus contorta*	
Pitch pine	*Pinus rigida*	
Ponderosa pine	*Pinus ponderosa*	
Sugar pine	*Pinus lambertiana*	
White pine	*Pinus strobus*	
Black spruce	*Picea mariana*	
Red spruce	*Picea rubens*	
White spruce	*Picea glauca*	

Use the label rate of **Arsenal herbicide Applicators Concentrate** per acre applied as a broadcast foliar spray for long-term control of labeled woody plants and residual control of herbaceous weeds. Within 4 to 6 weeks of treatment, grass and other herbaceous weeds will be controlled and may provide fuel to facilitate a site preparation burn, if desired, to control conifers or other species tolerant to the herbicide.

Apply the label rate of **Arsenal herbicide Applicators Concentrate** per acre in 5 to 30 gallons total spray solution for helicopter applications or 5 to 100 gallons total spray solution for mechanical ground spray and backpack applications. Use a minimum of 1/2 percent by volume nonionic surfactant (NIS). Use the higher label rates of **Arsenal herbicide Applicators Concentrate** and higher spray volumes when controlling particularly dense or multi-layered canopies of hardwood stands, or difficult-to-control species.

In certain cases, tank mixes may be necessary for chemical control of conifers and other species tolerant to **Arsenal herbicide Applicators Concentrate**. Observe all precautions and restrictions on the product labels. Always follow the most restrictive label. Combinations with other products labeled for forest site preparation may kill certain plants such as legumes and blackberry, which are desirable for wildlife habitat.

Where quick initial brownout (deadening of foliage) is desired for burning, apply a tank mixture of 16 fl ozs to 32 fl ozs **Arsenal herbicide Applicators Concentrate** with 16 ozs to 64 ozs glyphosate or 16 ozs to 48 ozs triclopyr ester per acre. For control of seedling pines, apply 16 fl ozs to 32 fl ozs **Arsenal herbicide Applicators Concentrate** with 3 to 4 quarts glyphosate. For site preparation, rates less than 24 fl ozs **Arsenal herbicide Applicators Concentrate** will provide suppression of hardwood brush and trees; some resprouting may occur.

DO NOT plant seedlings of black spruce (*Picea mariana*) or white spruce (*Picea glauca*) on sites that have been broadcast-treated with **Arsenal herbicide Applicators Concentrate** or into the treated zone of spot or banded applications for three months following application or injury may occur.

Herbaceous Weed Control

Use **Arsenal herbicide Applicators Concentrate** for selective weeding in the following conifers:

Common Name	Scientific Name	Rate (fl ozs/A)
Loblolly pine	*Pinus taeda*	6 to 10
Loblolly X pitch hybrid		
Virginia pine	*Pinus virginiana*	
Longleaf pine[1]	*Pinus palustris*	4 to 6
Slash pine[1]	*Pinus elliottii*	
Douglas fir[1]	*Pseudotsuga menziesii*	

[1] Use of surfactant is not recommended.

Arsenal herbicide Applicators Concentrate may be applied as a broadcast treatment, banded over tree rows, or as a directed spray for release of young conifers from herbaceous weeds. To prevent possibility of conifer injury, **DO NOT** apply **Arsenal herbicide Applicators Concentrate** when conifers are under stress from drought, disease, animal or winter injury, planting shock, or other stresses reducing conifer vigor. Broadcast applications may be made by helicopter, ground, or backpack sprayer. For difficult-to-control weeds, use the higher labeled rates. Where herbaceous weeds have overtopped conifer seedlings, a nonionic surfactant may be added to improve weed control (except for slash pine, long-leaf pine, and Douglas fir), at a rate not to exceed 1/4 percent of spray solution volume. Some minor conifer growth inhibition may be observed when herbaceous weed control treatments are made during periods of active conifer growth.

Arsenal herbicide Applicators Concentrate may also be applied using backpack or handheld sprayers to control herbaceous weeds around individual conifer seedlings. Mix 0.4 fl oz to 0.6 fl oz **Arsenal herbicide Applicators Concentrate** and 0.2 oz nonionic surfactant per gallon of

water. Direct the spray to the weeds and minimize the amount applied to conifer foliage for best conifer tolerance. Ensure that maximum labeled rates per acre for previously listed crop species are not exceeded.

Arsenal® herbicide Applicators Concentrate may be tank mixed with sulfometuron to broaden the spectrum of weeds controlled. For loblolly pine, apply 4 fl ozs to 6 fl ozs **Arsenal herbicide Applicators Concentrate** plus 1 oz to 2 ozs sulfometuron per acre. The application of **Arsenal herbicide Applicators Concentrate** plus sulfometuron on other conifer species may cause growth suppression.

Conifer Release Treatment

Arsenal herbicide Applicators Concentrate may be applied as a broadcast or directed spray application for suppression of labeled brush, tree, and herbaceous weed species. Directed spray applications may be made with low-volume applications in conifer stands of all ages by targeting the unwanted vegetation and avoiding direct application to the conifer. Ensure that maximum labeled rates per acre listed for the following crop species are not exceeded.

Broadcast Applications for release of the following conifers from hardwood competition:

Common Name	Scientific Name	Rate (fl ozs/A)
Loblolly pine[3]	*Pinus taeda*	12 to 20
Loblolly X pitch hybrid[3]		
Virginia pine[3]	*Pinus virginiana*	
Atlantic white cedar[4]	*Chamaecyparis thyoides*	12 to 16
Longleaf pine	*Pinus palustris*	
Pitch pine	*Pinus rigida*	
Shortleaf pine	*Pinus echinata*	
Slash pine	*Pinus elliottii*	
White pine[1]	*Pinus strobus*	8 to 16
California red fir	*Abies magnifica*	8 to 12
California white fir	*Abies concolor*	
Lodgepole pine[2]	*Pinus contorta*	
Douglas fir[2]	*Pseudotsuga menziesii*	
Jack pine[2]	*Pinus banksiana*	6 to 12
Black spruce[2]	*Picea mariana*	
Red spruce[2]	*Picea rubens*	
White spruce[2]	*Picea glauca*	

[1] **DO NOT** make applications to white pine stands younger than three years old. To minimize potential white pine injury, release treatments should not be made prior to July 15.

[2] Applications should be made after formation of final conifer resting buds in the fall or height growth inhibition may occur.

[3] **Mid-rotation release:** For broadcast applications below the pine canopy in established stands of loblolly pine, loblolly X pitch hybrid, and Virginia pine, use 16 fl ozs to 32 fl ozs product per acre. For mid-rotation release of other species, use rates listed in chart above.

[4] Apply **Arsenal herbicide Applicators Concentrate** after July 15 and before hardwood defoliation in the fall. The use of rates below 16 ozs/A are intended for hardwood growth suppression and some hardwood resprouting should be expected.

For slash pine and longleaf pine, broadcast release treatments over the top of pines for the purpose of woody plant control must be made after August 15 and only in stands 2 through 5 years old. For applications over the top of slash pine and longleaf pine, DO NOT add surfactant and use lower labeled rates on sandy soils.

Apply the label rate of **Arsenal herbicide Applicators Concentrate** per acre when making broadcast applications with helicopter or ground spray equipment. Refer to mixing and application instructions for proper spray volumes. A nonionic surfactant may be added at no more than 1/4 percent by volume.

Use the higher label rates of **Arsenal herbicide Applicators Concentrate** when controlling particularly dense stands or difficult-to-control species.

Some minor conifer growth inhibition may be observed when release treatments are made during periods of active conifer growth. To minimize potential conifer height growth inhibition, **DO NOT** make broadcast applications to conifer stands except loblolly pine before the end of the second growing season. To minimize potential conifer height growth inhibition, broadcast release treatments may be made late in the growing season. To prevent possibility of conifer injury, **DO NOT** apply **Arsenal herbicide Applicators Concentrate** when conifers are under stress from drought, disease, animal or winter injury, or other stresses reducing conifer vigor.

Arsenal herbicide Applicators Concentrate may be used to release loblolly pine seedlings during the first growing season following planting or for one-year-old natural loblolly pine regeneration. For one-year-old loblolly pine release, apply 12 fl ozs to 20 fl ozs/A of **Arsenal herbicide Applicators Concentrate** after July 15. Rates below 16 fl ozs/A are intended for hardwood growth suppression; some hardwood resprouting should be expected.

Spot Treatment of Undesirable Hardwood Vegetation

Arsenal herbicide Applicators Concentrate may be used as a directed foliar or cut-stem application to control undesirable brush and hardwoods in the management of stands of all ages for the conifer species listed in the broadcast application section above. Refer to mixing and application instructions in the directed foliar or cut-stem sections above for proper use rates, equipment, and application techniques. **DO NOT** exceed maximum labeled rates per acre listed for crop species. Cut-stem applications may be used for spot treatment of undesirable hardwoods in Ponderosa pine stands using 12 fl ozs or less of product per acre.

Avoid direct application to desired plant species or injury may occur. Injury may occur to nontarget or desirable hardwoods or conifers if they extend from the same root system, or their root systems are grafted to those of the treated tree, or their roots extend into the treated zone.

Late Rotation Vegetation Control in Western Conifer

In California, the Pacific Northwest and Inland Northwest, broadcast aerial applications of **Arsenal® herbicide Applicators Concentrate** up to 24 fl ozs/A are permissible in conifer stands that are targeted for harvesting the year following treatment. Use minimum spray volume of 15 gallons per acre. Significant conifer injury or mortality must be expected. **DO NOT** use this treatment if conifer injury or mortality cannot be tolerated.

Bag and Spray Application for Conifer Release

In Douglas fir and Ponderosa pine stands, broadcast applications of **Arsenal herbicide Applicators Concentrate** up to 16 fl ozs/A are permissible when the trees are covered by bags prior to the application. The bags must prevent the spray mix from contacting the conifer foliage. On sites with coarse textured soils (e.g. decomposed granite, pumice, sandy or rocky sites) or low levels of soil organic matter (generally 5% or less), significant conifer growth inhibition and mortality is possible. **DO NOT** use this treatment on these types of sites if conifer growth inhibition and mortality cannot be tolerated.

Nonagricultural Land Use

Arsenal herbicide Applicators Concentrate may be used for woody and herbaceous weed control in nonagricultural lands including private, public and military lands as follows: uncultivated nonagricultural areas (including airports, highway, railroad and utility rights-of-way, sewage disposal areas, etc.); uncultivated agricultural areas - non-crop producing (including farmyards, fuel storage areas, fence rows, nonirrigation ditchbanks, barrier strips, etc.); industrial sites - outdoor (including lumberyards, pipeline and tank farms, etc.); and natural areas (including wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads, and trails).

Applications to nonagricultural lands are not applicable to treatment of commercial timber or other plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes.

Brush Control

Use the specified rate of **Arsenal herbicide Applicators Concentrate** with the preferred application technique for the control of undesirable brush.

Tank Mixes and Application Rates for Low-volume Foliar Brush Control*

Target Vegetation	Arsenal herbicide Applicators Concentrate Rate (by volume)	Tank Mix
Mixed hardwoods without elm, locust, or pine	0.50 to 0.75%	Surfactant
Mixed hardwoods containing elm, locust, and pine	0.25 to 0.50%	**Accord®** at 2% to 3% by volume plus surfactant
Mixed hardwoods with locust and pine but no elm	0.25 to 0.50%	**Krenite®** at 2% to 5% by volume plus surfactant
Mixed hardwoods with locust and elm but no pine	0.25 to 0.50%	**Escort®** at 2 ozs/A **or** 2.3 grams/gal plus surfactant

*Tank mixes with 2,4-D or products containing 2,4-D have resulted in reduced **Arsenal herbicide Applicators Concentrate** efficacy.

Backpack and Handheld Spray Mixing Guide

% Solution	Product per gallon of mix (fl ozs)	Product per 4-gallon backpack (fl ozs)
0.25%	0.3	1.3
0.5%	0.6	2.6
1.0%	1.3	5.1
2.0%	2.6	10.2
3.0%	3.8	15.4
5.0%	6.4	25.6

Measuring Chart

128 ounces	=	1 gallon
16 ounces	=	1 pint
8 pints	=	1 gallon
4 quarts	=	1 gallon
2 pints	=	1 quart

Selective Control of Undesirable Weeds in Unimproved Bermudagrass and Bahiagrass

Arsenal® herbicide Applicators Concentrate may be used on unimproved Bermudagrass and Bahiagrass turf such as roadsides, utility rights-of-way, and other nonagricultural lands. The application of **Arsenal herbicide Applicators Concentrate** on established common and coastal Bermudagrass and Bahiagrass provides control of labeled broadleaf and grass weeds. Competition from these weeds is eliminated, releasing the Bermudagrass and Bahiagrass. Treatment of Bermudagrass with **Arsenal herbicide Applicators Concentrate** results in a compacted growth habit and seedhead inhibition.

Uniformly apply with properly calibrated ground equipment using at least 10 gallons of water per acre.

Temporary yellowing of grass may occur when treatment is made after growth commences.

Restrictions

- **DO NOT** add surfactant in excess of the specified rate (1 fl oz per 25 gallons of spray solution).
- **DO NOT** apply to grass during its first growing season.
- **DO NOT** apply to grass that is under stress from drought, disease, insects, or other causes.

Dosage Rate and Timing

Bermudagrass. Apply **Arsenal herbicide Applicators Concentrate** at 3 fl ozs to 6 fl ozs per acre when the Bermudagrass is dormant. Apply **Arsenal herbicide Applicators Concentrate** at 3 fl ozs to 4 fl ozs per acre after the Bermudagrass has reached full greenup. Applications made during greenup will delay greenup. Include a surfactant in the spray solution.

For additional preemergence control of annual grass and small-seeded broadleaf weeds, add **Pendulum® AquaCap™ herbicide** at the rate of 3.1 to 6.3 pints per acre. Consult the **Pendulum AquaCap** label for weeds controlled and for other use directions and precautions.

For control of Johnsongrass in Bermudagrass turf, apply **Arsenal herbicide Applicators Concentrate** at 4 fl ozs per acre, plus **Roundup® herbicide** at 12 ozs per acre, plus surfactant. For additional control of broadleaves and vines, **Garlon® 3A herbicide** may be added to the above mix at the rate of 1 to 2 pints per acre. Observe all precautions and restrictions on the **Garlon 3A** and **Roundup** labels.

Bahiagrass. Apply **Arsenal herbicide Applicators Concentrate** at 2 fl ozs to 4 fl ozs per acre when the Bahiagrass is dormant or after the grass has initiated greenup but has not exceeded 25% greenup. Include a surfactant in the spray solution (see **Adjuvants** section for specific use directions for surfactants).

Weeds Controlled in Unimproved Bermudagrass and Bahiagrass

Common Name	Scientific Name
Bedstraw*	*Galium* spp.
Bishopweed*	*Ptilimnium capillaceum*
Buttercup*	*Ranunculus parviflorus*
Carolina geranium	*Geranium carolinianum*
Fescue	*Festuca* spp.
Foxtail	*Setaria* spp.
Little barley	*Hordeum pusillum*
Seedling Johnsongrass	*Sorghum halepense*
White clover	*Trifolium repens*
Wild carrot	*Daucus carota*
Yellow woodsorrel	*Oxalis stricta*

*Use not permitted in California unless otherwise directed by supplemental labeling.

Grass Growth and Seedhead Suppression

Arsenal herbicide Applicators Concentrate may be used to suppress growth and seedhead development of certain turfgrass in unimproved areas. When **Arsenal herbicide Applicators Concentrate** is applied to desirable turf, it may result in temporary turf damage and/or discoloration. Effects to the desirable turf may vary with environmental conditions. For optimum performance, application should be made prior to culm elongation. Applications may be made before or after mowing. If applied prior to mowing, allow at least 3 days of active growth before mowing. If applied following a mowing, allow sufficient time for the grasses to recover before applying this product or injury may be amplified.

DO NOT APPLY to turf under stress (drought, cold, insect damage, etc.) or severe injury or death may occur.

Bermudagrass. Apply **Arsenal herbicide Applicators Concentrate** at 3 fl ozs to 4 fl ozs per acre from early greenup to prior to seedhead initiation. **DO NOT** add a surfactant for this application.

Cool-season Unimproved Turf. Apply **Arsenal herbicide Applicators Concentrate** at 1 fl oz per acre plus 0.25% nonionic surfactant. For increased suppression, **Arsenal herbicide Applicators Concentrate** may be tank mixed with such products as **Campaign® herbicide** (24 ozs per acre) or **Embark® growth regulator** (8 ozs per acre). Tank mixes may increase injury to desired turf. Consult each product label for labeled turf species and other use directions and precautions. Tank mixes with 2,4-D or products containing 2,4-D may decrease the effectiveness of **Arsenal herbicide Applicators Concentrate**.

Total Vegetation Control where Bare Ground is Desired

Arsenal® herbicide Applicators Concentrate is an effective herbicide for preemergence or postemergence control of many annual and perennial broadleaf and grass weeds where bare ground is desired. **Arsenal herbicide Applicators Concentrate** is particularly effective on hard-to-control perennial grasses. **Arsenal herbicide Applicators Concentrate** at 0.75 to 3 pints per acre can be used alone or in tank mix with herbicides approved for use in bare ground. The degree and duration of control are dependent on the rate of **Arsenal herbicide Applicators Concentrate** used, tank mix partner, the volume of carrier, soil texture, rainfall, and other conditions.

Consult manufacturer's labels for specific rates and weeds controlled. Always follow the more restrictive label restrictions and precautions for all products used when making an application involving tank mixes.

Applications of **Arsenal herbicide Applicators Concentrate** may be made any time of the year. Use equipment calibrated to deliver desired gallons per acre spray volume and uniformly distribute the spray pattern over the treated area.

Postemergence Application. Always use a spray adjuvant (see **Adjuvants** section of this label) when making a postemergence application. For optimum performance on tough-to-control annual grass weeds, apply at a total volume of 100 gallons per acre or less. For quicker burndown or brownout of target weeds, **Arsenal herbicide Applicators Concentrate** may be tank mixed with **Roundup® herbicide**. Tank mixes with 2,4-D or products containing 2,4-D may reduce the performance of **Arsenal herbicide Applicators Concentrate**. Always follow the more restrictive label restrictions and precautions for all products used when tank mixing.

Spot Treatment. Arsenal herbicide Applicators Concentrate may be used as a follow-up treatment to control escapes or weed encroachment in a bareground situation. To prepare the spray solution, thoroughly mix in each gallon of water 0.25% to 2.5% **Arsenal herbicide Applicators Concentrate** plus an adjuvant. For increased burndown, include **Roundup** as a tank mixture. For added residual weed control or to increase the weed spectrum, add **Pendulum® AquaCap™ herbicide**, **Overdrive® herbicide**, or diuron. Always follow the more restrictive label restrictions and precautions for all products used when tank mixing.

Control of Undesirable Weeds under Paved Surfaces

Arsenal herbicide Applicators Concentrate can be used under asphalt, pond liners and other paved areas, **ONLY** in industrial sites or where the pavement has a suitable barrier along the perimeter that prevents encroachment of roots of desirable plants.

Use **Arsenal herbicide Applicators Concentrate** only where the area to be treated has been prepared according to good construction practices. If rhizomes, stolons, tubers or other vegetative plant parts are present in the site, remove them by scalping with a grader blade to a depth sufficient to ensure their complete removal.

Follow **Arsenal herbicide Applicators Concentrate** applications with paving as soon as possible. **DO NOT** apply where the chemical may contact the roots of desirable trees or other plants.

This product is not to be used under pavement on residential properties, such as driveways or parking lots, or for use in recreational areas, such as under bike or jogging paths, golf cart paths, or tennis courts, or where landscape plantings could be anticipated.

Injury or death of desirable plants may result if this product is applied where roots are present or where roots may extend into the treated area. Roots of trees and shrubs may extend a considerable distance beyond the branch extremities (drip line).

Apply to the soil surface only when final grade is established. **DO NOT** move soil following **Arsenal herbicide Applicators Concentrate** application.

Apply **Arsenal herbicide Applicators Concentrate** in sufficient water (at least 100 gals per acre) to ensure thorough and uniform wetting of the soil surface, including the shoulder areas. Add **Arsenal herbicide Applicators Concentrate** at a rate of 3 pints per acre (1.1 fluid ounces per 1000 square feet) to clean water in the spray tank during the filling operation. Agitate before spraying.

If the soil is not moist prior to treatment, incorporation of **Arsenal herbicide Applicators Concentrate** is needed for herbicide activation. Incorporate **Arsenal herbicide Applicators Concentrate** into the soil to a depth of 4 to 6 inches using a rototiller or disc. Rainfall or irrigation of 1 inch will also provide uniform incorporation. **DO NOT** allow treated soil to wash or move into untreated areas.

Spot Treatment and Crack-and-crevice Treatment

Use **Arsenal herbicide Applicators Concentrate** as an initial or follow-up treatment to control weed escapes or weed encroachment in a bareground situation, including cracks and crevices in paved surfaces such as roadways, runways, and parking areas.

Grass Pasture and Rangeland Spot Treatment Weed Control

For the control of undesirable vegetation in grass pasture and rangeland, **Arsenal herbicide Applicators Concentrate** may be applied as a spot treatment at a rate of 1 to 24 fluid ounces of product per treated acre using any of the described ground application methods. Spot applications to grass pasture and rangeland may not exceed more than 1/10 of the area to be grazed or cut for

hay. See appropriate sections of this label for specific use directions for the application method and vegetation control desired. **DO NOT** apply more than 24 fluid ounces per acre per year.

Grazing and Haying Restrictions

- There are no grazing restrictions following **Arsenal® herbicide Applicators Concentrate** application.
- **DO NOT** cut forage grass for hay for 7 days after **Arsenal herbicide Applicators Concentrate** application.

Rangeland Use Instructions

Arsenal herbicide Applicators Concentrate may be applied to rangeland for the control of undesirable vegetation to achieve one or more of the following vegetation management objectives:

- Control of undesirable (nonnative, invasive and noxious) plant species
- Control of undesirable vegetation to aid in the establishment of desirable rangeland plant species
- Control of undesirable vegetation to aid in the establishment of desirable rangeland vegetation following a fire
- Control of undesirable vegetation to reduce wildfire fuel
- Release of existing desirable rangeland plant communities from the competitive pressure of undesirable plant species
- Control of undesirable vegetation for wildlife habitat improvement

To ensure the protection of threatened and endangered plants when applying **Arsenal herbicide Applicators Concentrate** to rangeland:

- Federal agencies must follow NEPA regulations to ensure protection of threatened and endangered plants.
- State agencies must work with the Fish and Wildlife Service or the Service's designated state conservation agency to ensure protection of threatened and endangered plants.
- Other organizations or individuals must operate under a habitat conservation plan if threatened or endangered plants are known to be present on the land to be treated.

See the appropriate section(s) of this label for specific use directions for the desired rangeland vegetation management objective.

Arsenal herbicide Applicators Concentrate must only be applied to a given rangeland acre as specific weed problems arise. Long-term control of undesirable weed species ultimately depends on the successful use of land management practices that promote the growth and sustainability of desirable rangeland plant species.

Rotational Crop Instructions

Rotational crops may be planted 12 months after applying **Arsenal herbicide Applicators Concentrate** at the specified pasture and rangeland rate. Following 12 months after an **Arsenal herbicide Applicators Concentrate** application and before planting any crop, a successful field bioassay must be completed. The field bioassay consists of a test strip of the intended rotational crop planted in the previously treated area in the grass pasture/rangeland and grown to maturity. The test strip should include low areas and knolls and include variations in soil type and pH within the treated area. If no crop injury is evident in the test strip, the intended rotational crop may be planted the following year.

Use of **Arsenal herbicide Applicators Concentrate** in accordance with label directions is expected to result in normal growth of rotational crops in most situations; however, various environmental and agronomic factors make it impossible to eliminate all risks associated with the use of this product and, therefore, rotational crop injury is always possible.

Aquatic Weed Control

Arsenal herbicide Applicators Concentrate may be applied for the control of floating and emergent undesirable vegetation (see the **Aquatic Weeds Controlled** and the **Terrestrial Weeds Controlled** section) in or near bodies of water that may be flowing, nonflowing, or transient. **Arsenal herbicide Applicators Concentrate** may be applied to aquatic sites that include lakes, rivers, streams, ponds, seeps, drainage ditches, canals, reservoirs, swamps, bogs, marshes, estuaries, bays, brackish water, transitional areas between terrestrial and aquatic sites, riparian sites, and seasonal wet areas. See **Product Use Precautions and Restrictions** section of this label for precautions, restrictions, and instructions on aquatic uses.

Read and observe the following directions if aquatic sites are present in nonagricultural lands and are part of the intended treatment area.

Arsenal herbicide Applicators Concentrate must be applied to the emergent foliage of the target vegetation and has little-to-no activity on submerged aquatic vegetation. **Arsenal herbicide Applicators Concentrate** concentrations resulting from direct application to water are not expected to be of sufficient concentration nor duration to provide control of target vegetation. Application should be made in such a way as to maximize spray interception by the target vegetation while minimizing the amount of overspray that enters the water.

Arsenal herbicide Applicators Concentrate does not control plants that are completely submerged or have a majority of their foliage under water.

Arsenal herbicide Applicators Concentrate may be applied with surface or helicopter application equipment in a minimum of 2 gallons of water per acre. When applying by helicopter, follow directions under the **Aerial Application** section of this label; otherwise, refer to the **Ground Application** section when using surface equipment.

Applications to moving bodies of water should be made while traveling upstream to prevent concentration of this

herbicide in water. **DO NOT** apply to bodies of water or portions of bodies of water where emergent and/or floating weeds do not exist.

When application is to be made to target vegetation that covers a large percentage of the surface area of impounded water, treating the area in strips may avoid oxygen depletion due to decaying vegetation. Oxygen depletion may result in the suffocation of some sensitive aquatic organisms. If oxygen depletion is a concern, treat no more than 1/2 of the surface area of the water in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outward in bands to allow aquatic organisms to move into untreated areas.

Avoid washoff of sprayed foliage by spray boat or recreational boat backwash for 1 hour after application.

Apply **Arsenal® herbicide Applicators Concentrate** at 1 to 3 pints per acre depending on species present and weed density. **DO NOT** exceed the maximum label rate of 3 pints per acre (1.5 lbs ae/A) per year. Use the higher labeled rates for heavy weed pressure. Consult the **Aquatic Weeds Controlled** section and the **Terrestrial Weeds Controlled** section of this label for specific rates.

Arsenal herbicide Applicators Concentrate may be applied as a draw-down treatment in areas described above. Apply **Arsenal herbicide Applicators Concentrate** to weeds after water has been drained and allow 14 days before reintroduction of water.

Permitting - Consult local state fish and game agency and water control authorities before applying this product to public water. Permits may be required to treat such water.

Private waters - Applications may be made to private waters that are still, such as ponds, lakes, and drainage ditches where there is minimal or no outflow to public waters.

In New York state, a permit is required for application to private water bodies.

Weeds Controlled

Aquatic Weeds Controlled

Arsenal® herbicide Applicators Concentrate will control the following target species as specified in the **Use Rates and Application Directions** column of the table. Rates are expressed in terms of product volume for broadcast applications and as a % solution for directed applications including spot treatments. **For % solution applications, DO NOT apply more than the equivalent of 3 pints of Arsenal herbicide Applicators Concentrate per acre.**

Common Name	Scientific Name	Use Rates and Application Directions
Floating		
*Floating heart	*Nymphodes* spp.	1 to 2 pints/A (0.25 to 0.50% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Frogbit	*Limnobium spongia*	0.5 to 1.0 pint/A (0.25% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Spatterdock	*Nuphar luteum*	Apply a tank mix of 1 to 2 pints/A **Arsenal herbicide Applicators Concentrate** + 4 to 6 pints/A glyphosate (0.25% **Arsenal herbicide Applicators Concentrate** + 1.5% glyphosate) in 100 GPA water for best control. Ensure 100% coverage of actively growing emergent foliage.
*Water hyacinth	*Eichhornia crassipes*	0.5 to 1.0 pint/A (0.25% solution) applied in 100 GPA water to actively growing foliage.
*Water lettuce	*Pistia stratiotes*	0.5 to 1.0 pint/A (0.25% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
Emerged		
*Alligatorweed	*Alternanthera philoxeroides*	0.5 to 2.0 pints/A (0.25% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Arrowhead, duck-potato	*Sagittaria* spp.	0.5 to 1.0 pint/A (0.25% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Bacopa, lemon	*Bacopa* spp.	0.5 to 1.0 pint/A (0.25% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Parrot feather	*Myriophyllum aquaticum*	Must be foliage above water for sufficient **Arsenal herbicide Applicators Concentrate** uptake. Apply 1 to 2 pints/A to actively growing emergent foliage.
*Pennywort	*Hydrocotyle* spp.	0.5 to 1.0 pint/A (0.25% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Pickerelweed	*Pontederia cordata*	1.0 to 1.5 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Taro, wild Dasheen Elephant's ear Coco yam	*Colocasia esculentum*	2 to 3 pints/A (0.75% solution) applied in 100 GPA with a high quality sticker adjuvant. Ensure good coverage of actively growing emergent foliage.

***Use not permitted in California unless otherwise directed by supplemental labeling.**

(continued)

Aquatic Weeds Controlled *(continued)*

Common Name	Scientific Name	Use Rates and Application Directions
Emerged *(continued)*		
*Water chestnut	*Trappa natans*	2 to 3 pints/A (0.75% solution) applied in 100 GPA with a high quality sticker adjuvant. Ensure good coverage of actively growing emergent foliage.
*Water lily	*Nymphaea odorata*	1.0 to 1.5 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Water primrose	*Ludwigia uruguayensis*	2 to 3 pints/A (0.75% solution). Ensure 100% coverage of actively growing emergent foliage.
Terrestrial/Marginal		
*Soda apple, Aquatic nightshade	*Solanum tampicense*	1 pint/A applied to foliage
*Bamboo, Japanese	*Phyllostachys* spp.	1.5 to 2.0 pints/A applied to the foliage when plant is actively growing; before setting seedhead. More foliage will result in greater herbicide uptake, resulting in greater root kill.
Beach, vitex	*Vitex rotundifolia*	2.5% solution + 1% MSO foliar spray. 8.5% solution stem injection (hack and squirt)
Brazilian pepper Christmasberry	*Schinus terebinthifolius*	1 to 2 pints/A applied to foliage
Cattail	*Typha* spp.	1 to 2 pints/A (0.5% solution) applied to actively growing green foliage after full leaf elongation. Lower rates will control cattail in the North; higher rates are needed in the South.
Chinese tallow tree	*Sapium sebiferum*	8 to 12 fl ozs/A applied to foliage
Cogongrass	*Imperata cylindrica*	Burn foliage, till area; then fall-spray 1 quart/A **Arsenal® herbicide Applicators Concentrate** + MSO applied to new growth.
Cordgrass, prairie	*Spartina* spp.	2 to 3 pints/A applied to actively growing foliage
*Cutgrass	*Zizaniopsis miliacea*	2 to 3 pints/A applied to actively growing foliage
*Elephant grass Napier grass	*Pennisetum purpureum*	1.5 pints/A applied to actively growing foliage
*Flowering rush	*Butomus umbellatus* L.	1.0 to 1.5 pints/A applied to actively growing foliage
Giant reed Wild cane	*Arundo donax*	2 to 3 pints/A applied in spring to actively growing foliage
*Golden bamboo	*Phyllostachys aurea*	1.5 to 2.0 pints/A applied to foliage when plant is actively growing; before setting seedhead. More foliage will result in greater herbicide uptake, resulting in greater root kill.
Junglerice	*Echinochloa colonum*	1.5 to 2.0 pints/A applied to actively growing foliage
Knapweed	*Centaurea* spp.	Russian knapweed: 1.0 to 1.5 pints + 1 quart/A MSO fall-applied after senescence begins
Knotweed, Japanese	*Polygonum cuspidatum* *Fallopia japonica*	1.5 to 2.0 pints/A applied postemergence to actively growing foliage

***Use not permitted in California unless otherwise directed by supplemental labeling.**

(continued)

Aquatic Weeds Controlled *(continued)*

Common Name	Scientific Name	Use Rates and Application Directions
Terrestrial/Marginal *(continued)*		
Melaleuca Paperbark tree	*Melaleuca quinquenervia*	**For established stands**, apply 3 pints/A **Arsenal® herbicide Applicators Concentrate** + 6 pints/A glyphosate + spray adjuvant. For best results, use 4 quarts/A methylated seed oil as an adjuvant. **For ground foliar application**, uniformly apply to ensure 100% coverage. **For broadcast foliar control**, apply aerially in a minimum of 2 passes at 10 gallons/A applied cross treatment. **For spot treatment**, use a 12.5% **Arsenal herbicide Applicators Concentrate** + 25% solution of glyphosate + 1.25% MSO in water applied as a frill or stump treatment.
*Nutgrass Kili'p'opu	*Cyperus rotundus*	1 pint **Arsenal herbicide Applicators Concentrate** + 1 quart/A MSO applied early postemergence
*Nutsedge	*Cyperus* spp.	1.0 to 1.5 pints postemergence to foliage or preemergence incorporated, nonincorporated, preemergence applications will not control.
Phragmites Common reed	*Phragmites australis*	2 to 3 pints/A applied to actively growing green foliage after full leaf elongation. Ensure 100% coverage. If stand has a substantial amount of old stem tissue, mow or burn, allow to regrow to approximately 5 feet tall before treatment. Lower rates will control phragmites in the North; higher rates are needed in the South.
*Poison hemlock	*Conium maculatum*	1 pint **Arsenal herbicide Applicators Concentrate** + 1 quart/A MSO applied preemergence to early postemergence to rosette prior to flowering
Purple loosestrife	*Lythrum salicaria*	0.5 pint/A applied to actively growing foliage
Reed canarygrass	*Phalaris arundinacea*	1.5 to 2.0 pints/A applied to actively growing foliage
Rose, swamp	*Rosa palustris*	1.0 to 1.5 pints/A applied to actively growing foliage
Russian olive	*Elaeagnus angustifolia*	1 to 2 pints/A or a 0.5% solution applied to foliage
Saltcedar Tamarisk	*Tamarix* spp.	Aerial apply 1 quart **Arsenal herbicide Applicators Concentrate** + 0.25% v/v NIS to actively growing foliage during flowering. For spot spraying, use 0.5% solution of **Arsenal herbicide Applicators Concentrate** + 0.25% v/v NIS and spray to wet foliage. After application, wait at least 2 years before disturbing treated saltcedar. Earlier disturbance can reduce overall control.
Smartweed	*Polygonum* spp.	1 pint/A applied early postemergence
Sumac	*Rhus* spp.	1.0 to 1.5 pints/A applied to foliage
Swamp morningglory Water spinach Kangkong	*Ipomoea aquatica*	0.5 to 1.0 pint/A **Arsenal herbicide Applicators Concentrate** + 1 quart/A MSO applied early postemergence

***Use not permitted in California unless otherwise directed by supplemental labeling.**

(continued)

Aquatic Weeds Controlled *(continued)*

Common Name	Scientific Name	Use Rates and Application Directions
Terrestrial/Marginal *(continued)*		
Torpedo grass	*Panicum repens*	2 pints/A (0.50 to 0.75% solution); ensure good coverage to actively growing foliage
*White top Hoary cress	*Cardaria draba*	0.5 to 1.0 pint/A applied in spring to foliage during flowering
Willow	*Salix* spp.	1.0 to 1.5 pints/A **Arsenal® herbicide Applicators Concentrate** applied to actively growing foliage. Ensure good coverage

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Terrestrial Weed Control

In terrestrial sites, **Arsenal® herbicide Applicators Concentrate** will provide preemergence or postemergence control with residual control of the following target vegetation species at the rates listed. Residual control refers to control of newly germinating seedlings in both annuals and perennials. In general, annual weeds may be controlled by preemergence or postemergence applications of **Arsenal herbicide Applicators Concentrate**. For established biennials and perennials, postemergence applications of **Arsenal herbicide Applicators Concentrate** will provide the best control.

The rates shown below pertain to broadcast applications and indicate the relative sensitivity of these weeds. The relative sensitivity should be referenced when preparing low-volume spray solutions (see **Low-volume Foliar Application** section of **Ground Application**); low-volume applications may provide control of the target species with less **Arsenal herbicide Applicators Concentrate** per acre than is shown for the broadcast treatments. Use **Arsenal herbicide Applicators Concentrate** only in accordance with the specific use directions on this label and the leaflet label.

The relative sensitivity of the species listed following can also be used to determine the relative risk of causing nontarget plant injury if any of the species listed following are considered to be desirable within the area to be treated.

Resistant Biotypes. Naturally occurring biotypes (a plant within a given species that has a slightly different but distinct genetic makeup from other plants of the same species) of some weeds listed on this label may not be effectively controlled. If naturally occurring, resistant biotypes are present in an area, **Arsenal herbicide Applicators Concentrate** should be tank mixed or applied sequentially with an appropriate registered herbicide having a different mode of action to ensure control.

Grass Weeds

Common Name	Scientific Name	Growth Habit[2]
Apply 1.0 to 1.5 pts/A[1]		
Annual bluegrass	*Poa annua*	A
Broadleaf signalgrass	*Brachiaria platyphylla*	A
Canada bluegrass	*Poa compressa*	P
Downy brome	*Bromus tectorum*	A
Fescue	*Festuca* spp.	A/P
Foxtail	*Setaria* spp.	A
Italian ryegrass	*Lolium multiflorum*	A
Johnsongrass[4]	*Sorghum halepense*	P
Kentucky bluegrass	*Poa pratensis*	P
Napier grass[5]	*Pennisetum purpureum*	P
Orchardgrass	*Dactylis glomerata*	P
Paragrass	*Brachiaria mutica*	P
Quackgrass	*Agropyron repens*	P

(continued)

Grass Weeds *(continued)*

Common Name	Scientific Name	Growth Habit[2]
Apply 1.0 to 1.5 pts/A[1] *(continued)*		
Sandbur	*Cenchrus* spp.	A
Smooth brome	*Bromus inermis*	P
Vaseygrass	*Paspalum urvillei*	P
Wild oats	*Avena fatua*	A
Witchgrass	*Panicum capillare*	A
Apply 1.5 to 2.0 pts/A[1]		
Barnyardgrass	*Echinochloa crus-galli*	A
Beardgrass	*Andropogon* spp.	P
Bluegrass, annual	*Poa annua*	A
Bulrush[5]	*Scirpus validus*	P
Cogongrass	*Imperata cylindrica*	P
Cheat	*Bromus secalinus*	A
Crabgrass	*Digitaria* spp.	A
Crowfootgrass	*Dactyloctenium aegyptium*	A
Fall panicum	*Panicum dichotomiflorum*	A
Goosegrass	*Eleusine indica*	A
Itchgrass	*Rottboellia exaltata*	A
Lovegrass[4]	*Eragrostis* spp.	P
Maidencane[5]	*Panicum hemitomon*	A
Panicum, browntop	*Panicum fasciculatum*	A
Panicum, Texas	*Panicum texanum*	A
Prairie threeawn	*Aristida oligantha*	P
Sandbur, field	*Cenchrus incertus*	A
Signalgrass	*Brachiaria platyphylla*	A
Wild barley	*Hordeum* spp.	A
Woolly cupgrass	*Eriochloa villosa*	A
Apply 2 to 3 pts/A[1]		
Bahiagrass	*Paspalum notatum*	P
Bermudagrass[3, 4]	*Cynodon dactylon*	P
Big bluestem	*Andropogon gerardii*	P
Dallisgrass	*Paspalum dilatatum*	P
Feathertop	*Pennisetum villosum*	P
Guineagrass	*Panicum maximum*	P
Saltgrass[3]	*Distichlis stricta*	P
Sand dropseed	*Sporobolus cryptandrus*	P
Sprangletop	*Leptochloa* spp.	A
Timothy	*Phleum pratense*	P
Wirestem muhly	*Muhlenbergia frondosa*	P

[1] Use higher rates where heavy or well-established infestations occur.
[2] Growth Habit: A = Annual, B = Biennial, P = Perennial
[3] Use a minimum of 75 GPA.
[4] Use higher labeled rates.
[5] Use not permitted in California unless otherwise directed by supplemental labeling.

Broadleaf Weeds

Common Name	Scientific Name	Growth Habit[2]
Apply 1.0 to 1.5 pts/A[1]		
Burdock	*Arctium* spp.	B
Carolina geranium	*Geranium carolinianum*	A
Carpetweed	*Mollugo verticillata*	A
Clover	*Trifolium* spp.	A/P
Common chickweed	*Stellaria media*	A
Common ragweed	*Ambrosia artemisiifolia*	A
Dandelion	*Taraxacum officinale*	P
Dogfennel	*Eupatorium capillifolium*	A
Filaree	*Erodium* spp.	A
Fleabane	*Erigeron* spp.	A
Hoary vervain	*Verbena stricta*	P
Indian mustard	*Brassica juncea*	A
Kochia	*Kochia scoparia*	A
Lambsquarters	*Chenopodium album*	A
Lespedeza[3]	*Lespedeza* spp.	P
Miner's lettuce	*Montia perfoliata*	A
Mullein	*Verbascum* spp.	B
Nettleleaf goosefoot	*Chenopodium murale*	A
Oxeye daisy	*Chrysanthemum leucanthemum*	P
Pepperweed	*Lepidium* spp.	A
Pigweed	*Amaranthus* spp.	A
Puncturevine	*Tribulus terrestris*	A
Russian thistle	*Salsola kali*	A
Smartweed	*Polygonum* spp.	A/P
Sorrell	*Rumex* spp.	P
Sunflower	*Helianthus* spp.	A
Sweet clover	*Melilotus* spp.	A/B
Tansymustard	*Descurainia pinnata*	A
Western ragweed	*Ambrosia psilostachya*	P
Wild carrot	*Daucus carota*	B
Wild lettuce	*Lactuca* spp.	A/B
Wild parsnip	*Pastinaca sativa*	B
Wild turnip	*Brassica campestris*	B
Woollyleaf bursage	*Franseria tomentosa*	P
Yellow woodsorrel	*Oxalis stricta*	P
Apply 1.5 to 2.0 pts/A[1]		
Broom snakeweed[4]	*Gutierrezia sarothrae*	P
Bull thistle	*Cirsium vulgare*	B
Burclover	*Medicago* spp.	A
Chickweed, mouseear	*Cerastium vulgatum*	A
Clover, hop	*Trifolium procumbens*	A
Cocklebur	*Xanthium strumarium*	A
Cudweed	*Gnaphalium* spp.	A
Desert camelthorn	*Alhagi pseudalhagi*	P
Dock	*Rumex* spp.	P
Fiddleneck	*Amsinckia intermedia*	A
Goldenrod	*Solidago* spp.	P
Henbit	*Lamium amplexicaule*	A
Knotweed, prostrate	*Polygonum aviculare*	A/P

(continued)

Broadleaf Weeds *(continued)*

Common Name	Scientific Name	Growth Habit[2]
Apply 1.5 to 2.0 pts/A[1] *(continued)*		
Pokeweed	*Phytolacca americana*	P
Purslane	*Portulaca* spp.	A
Pusley, Florida	*Richardia scabra*	A
Rocket, London	*Sisymbrium irio*	A
Rush skeletonweed[4]	*Chondrilla juncea*	B
Saltbush	*Atriplex* spp.	A
Shepherdspurse	*Capsella bursa-pastoris*	A
Spurge, annual	*Euphorbia* spp.	A
Stinging nettle[4]	*Urtica dioica*	P
Velvetleaf	*Abutilon theophrasti*	A
Yellow starthistle	*Centaurea solstitialis*	A
Apply 2 to 3 pts/A[1]		
Arrowwood	*Pluchea sericea*	A
Canada thistle	*Cirsium arvense*	P
Giant ragweed	*Ambrosia trifida*	A
Gray rabbitbrush	*Chrysothamnus nauseosus*	P
Little mallow	*Malva parviflora*	B
Milkweed	*Asclepias* spp.	P
Primrose	*Oenothera kunthiana*	P
Silverleaf nightshade	*Solanum elaeagnifolium*	P
Sowthistle	*Sonchus* spp.	A
Texas thistle	*Cirsium texanum*	P

[1] Use higher rates where heavy or well-established infestations occur.
[2] Growth Habit: A = Annual, B = Biennial, P = Perennial
[3] Use not permitted in California unless otherwise directed by supplemental labeling.
[4] For best results, early postemergence applications are required.

Vines and Brambles

Common Name	Scientific Name	Growth Habit[2]
Apply 0.5 pt/A		
Field bindweed	*Convolvulus arvensis*	P
Hedge bindweed	*Calystegia sepium*	A
Apply 1.0 to 1.5 pts/A[1]		
Wild buckwheat	*Polygonum convolvulus*	P
Apply 1.5 to 2.0 pts/A[1]		
Greenbriar	*Smilax* spp.	P
Honeysuckle[3]	*Lonicera* spp.	P
Morningglory	*Ipomoea* spp.	A/P
Poison ivy	*Rhus radicans*	P
Redvine	*Brunnichia cirrhosa*	P
Wild rose[3]	*Rosa* spp.	P
including:		
Multiflora rose	*Rosa multiflora*	P
Macartney rose	*Rosa bracteata*	P
Apply 2 to 3 pts/A[1]		
Trumpetcreeper	*Campsis radicans*	P
Virginia creeper	*Parthenocissus quinquefolia*	P
Wild grape	*Vitis* spp.	P

[1] Use higher rate where heavy or well-established infestations occur.
[2] Growth Habit: A = Annual, B = Biennial, P = Perennial
[3] Use higher labeled rates.

Brush Species

Common Name	Scientific Name	Growth Habit[2]
Apply 1 to 2 pts/A[1]		
Brazilian peppertree	*Schinus terebinthifolius*	P
Chinese tallow tree Popcorn tree	*Sapium sebiferum*	P
Russian olive	*Elaeagnus angustifolia*	P
Sumac	*Rhus* spp.	P
Willow	*Salix* spp.	P
Apply 2 to 3 pts/A[1]		
Alder	*Alnus* spp.	P
American beech	*Fagus grandifolia*	P
Ash[3]	*Fraxinus* spp.	P
Aspen	*Populus* spp.	P
Autumn olive	*Elaeagnus umbellata*	P
Bald cypress	*Taxodium distichum*	P
Bigleaf maple	*Acer macrophyllum*	P
Birch[3]	*Betula* spp.	P
Black gum[4]	*Nyssa sylvatica*	P
Black locust[5]	*Robinia pseudoacacia*	P
Black oak	*Quercus kelloggii*	P
Boxelder	*Acer negundo*	P
Ceanothis	*Ceanothis* spp.	P
Cherry[3, 4]	*Prunus* spp.	P
Chinaberry	*Melia azedarach*	P

(continued)

Brush Species *(continued)*

Common Name	Scientific Name	Growth Habit[2]
Apply 2 to 3 pts/A[1] *(continued)*		
Chinquapin	*Castanopsis chrysophylla*	P
Cottonwood	*Populus trichocarpa* *P. deltoides*	P
Cypress	*Taxodium* spp.	P
Dogwood[3]	*Cornus* spp.	P
Elm[6]	*Ulmus* spp.	P
Eucalyptus	*Eucalyptus* spp.	P
Hawthorn	*Crataegus* spp.	P
Hickory[3]	*Carya* spp.	P
Honeylocust[5]	*Gleditsia triacanthos*	P
Huckleberry	*Gaylussacia* spp.	P
Lyonia spp.		
including:		
Fetterbush	*Lyonia lucida*	
Staggerbush	*Lyonia mariana*	P
Madrone	*Arbutus menziesii*	P
Maple	*Acer* spp.	P
Melaleuca	*Melaleuca quinquenervia*	P
Mulberry[3, 7]	*Morus* spp.	P
Oak[8]	Quercus spp.	P
Persimmon[4]	*Diospyros virginiana*	P
Pine[5,10]	*Pinus* spp.	P
Poison oak	*Rhus diversiloba*	P
Poplar	*Populus* spp.	P
Privet	*Ligustrum vulgare*	P
Red alder	*Alnus rubra*	P
Red maple	*Acer rubrum*	P
Saltcedar	*Tamarix pentandra*	P
Sassafras	*Sassafras albidum*	P
Sourwood[4]	*Oxydendrum arboreum*	P
Sweetgum	*Liquidambar styraciflua*	P
Sycamore	*Platanus occidentalis*	P
Tanoak[3]	*Lithocarpus densiflorus*	P
Titi[9]	*Cyrilla racemiflora*	P
Tree of heaven	*Ailanthus altissima*	P
Vaccinium spp.		
including:		
Blueberry	*Vaccinium* spp.	
Sparkleberry	*Vaccinium arboreum*	P
Water willow[10]	*Justicia americana*	P
Yellow poplar[3]	*Liriodendron tulipifera*	P

[1] Use the higher rates where heavy or well-established infestations occur.
[2] Growth Habit: A = Annual, B = Biennial, P = Perennial
[3] Use higher labeled rates.
[4] Best control with applications prior to formation of fall leaf color
[5] Tank mix with glyphosate or triclopyr
[6] Tank mix with glyphosate
[7] Degree of control may be species dependent.
[8] For water oak (*Quercus nigra*), laurel oak (*Q. laurifloria*), willow oak (*Q. phellos*) and live oak (*Q. virginiana*), use higher labeled rates.
[9] Suppression only
[10] **Use not permitted in California unless otherwise directed by supplemental labeling.**

Conditions of Sale and Warranty

The **Directions For Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling, all of which are beyond the control of BASF CORPORATION ("BASF") or the Seller. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer.

BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions For Use**, subject to the inherent risks, referred to above.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BUYER'S EXCLUSIVE REMEDY AND BASF'S EXCLUSIVE LIABILITY, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, SHALL BE LIMITED TO REPAYMENT OF THE PURCHASE PRICE OF THE PRODUCT.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, EXEMPLARY, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.

BASF and the Seller offer this product, and the Buyer and User accept it, subject to the foregoing **Conditions of Sale and Warranty** which may be varied only by agreement in writing signed by a duly authorized representative of BASF. 1108

000241-00299.20170810.**NVA 2017-04-104-0175**
Supersedes: NVA 2016-04-104-0107

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

We create chemistry

Arsenal®

Herbicide

Applicators Concentrate

For the control of undesirable vegetation growing within specified aquatic sites, forestry sites, pasture/rangeland, and nonagricultural lands; and for the establishment and maintenance of wildlife openings, release of unimproved Bermudagrass and Bahiagrass, bareground weed control, and for use under certain paved surfaces

Active Ingredient:	
isopropylamine salt of imazapyr: (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-3-pyridinecarboxylic acid)*	53.1%
Other Ingredients:	46.9%
Total:	100.0%

* Equivalent to 43.3% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-3-pyridinecarboxylic acid or 4 pounds acid per gallon

EPA Reg. No. 241-299 **EPA Est. No. 241-PR-002**

KEEP OUT OF REACH OF CHILDREN

CAUTION/PRECAUCION

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 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 by a poison control center or doctor. **DO NOT** give anything to an unconscious person. **If on skin or clothing:** 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. **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. **If in eyes:** Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after first 5 minutes; then continue rinsing eyes. Call a poison control center or doctor for treatment advice. **HOTLINE NUMBER:** Have the product container or label with you when calling a poison control center or doctor or going for treatment. In case of an emergency endangering life or property involving this product, call BASF Corporation for emergency medical treatment information, day or night 1-800-832-HELP (4357).

See inside booklet for complete **Precautionary Statements**, **Directions For Use**, **Conditions of Sale and Warranty**, and state-specific crop and/or use site restrictions.

Net Contents: 2.5 Gallons

81045263 NVA 2017-05-104-0198
Product of U.S.A.

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

BASF
We create chemistry

FIRST AID	
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 by a poison control center or doctor. • **DO NOT** give anything to an unconscious person.
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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

CAUTION. Harmful if swallowed. Avoid contact with skin, eyes, or clothing. Avoid breathing spray mist.

Personal Protective Equipment (PPE)

Mixers, loaders, applicators, and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical-resistant gloves made of any waterproof material such as 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

Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions are given for washables, 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 that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(6)].

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.

Physical and Chemical Hazards

Spray solutions of **Arsenal® herbicide Applicators Concentrate** must be mixed, stored and applied only in stainless steel, fiberglass, plastic and plastic-lined steel containers.

Thoroughly clean application equipment, including landing gear, immediately after use of this product. Prolonged exposure of this product to uncoated steel (except stainless steel) surfaces may result in corrosion and failure of the exposed part. The maintenance of an organic coating (paint) may prevent corrosion.

Environmental Hazards

This product is toxic to plants. Drift and runoff may be hazardous to plants in water adjacent to treated areas. **DO NOT** apply to water except as specified in this label. Treatment of aquatic weeds may result in oxygen depletion or loss due to decomposition of dead plants. This oxygen loss may cause the suffocation of some aquatic organisms. **DO NOT** treat more than 1/2 of the surface area of the water in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outward in bands to allow aquatic organisms to move into untreated areas. **DO NOT** contaminate water when disposing of equipment washwaters or rinsate.

This pesticide is toxic to vascular plants and must be used strictly in accordance with the drift precautions on the label.

Directions For Use

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

Arsenal herbicide Applicators Concentrate must be used only in accordance with the instructions on the leaflet label attached to the container. Keep containers closed to avoid spills and contamination.

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.

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 **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
- Shoes plus socks
- Chemical-resistant gloves made of any waterproof material
- Protective eyewear

NONAGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard (WPS) 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.

STORAGE AND DISPOSAL

DO NOT contaminate water, food or feed by storage or disposal.

Pesticide Storage

DO NOT store below 10° F.

Pesticide Disposal

Wastes resulting from the use of this product must be disposed of on-site or at an approved waste disposal facility.

Container Handling

Nonrefillable Container. DO NOT reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying; then offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

Triple rinse containers small enough to shake (capacity ≤ 5 gallons) 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.

(continued)

STORAGE AND DISPOSAL *(continued)*

Container Handling *(continued)*

Triple rinse containers too large to shake (capacity > 5 gallons) as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Repeat this procedure two more times.

Pressure rinse as follows: Empty the remaining contents into application equipment or 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.

Refillable Container. Refill this container with pesticide only. **DO NOT** reuse this container for any other purpose. Triple rinsing the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

Triple rinse as follows: To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

When this container is empty, replace the cap and seal all openings that have been opened during use; return the container to the point of purchase or to a designated location. This container must only be refilled with a pesticide product. Prior to refilling, inspect carefully for damage such as cracks, punctures, abrasions, worn-out threads and closure devices. Check for leaks after refilling and before transport. **DO NOT** transport if this container is damaged or leaking. If the container is damaged, or leaking, or obsolete and not returned to the point of purchase or to a designated location, triple rinse emptied container and offer for recycling, if available, or dispose of container in compliance with state and local regulations.

In Case of Emergency

In case of large-scale spillage regarding this product, call:

- CHEMTREC 1-800-424-9300
- BASF Corporation 1-800-832-HELP (4357)

In case of medical emergency regarding this product, call:

- Your local doctor for immediate treatment
- Your local poison control center (hospital)
- BASF Corporation 1-800-832-HELP (4357)

Steps to be taken in case material is released or spilled:

- Dike and contain the spill with inert material (sand, earth, etc.) and transfer liquid and solid diking material to separate containers for disposal.
- Remove contaminated clothing and wash affected skin areas with soap and water.
- Wash clothing before reuse.
- Keep the spill out of all sewers and open bodies of water.

Product Information

Arsenal® herbicide Applicators Concentrate is an aqueous solution to be mixed with water and a surfactant and applied as a spray solution to control undesirable vegetation growing within specified aquatic sites, forestry sites, pasture/rangeland and nonagricultural lands. Aquatic sites consist of standing and flowing water, estuarine/marine, wetland, and riparian areas. Nonagricultural lands include private, public and military lands as follows: uncultivated nonagricultural areas (including airports, highway, railroad and utility rights-of-way, sewage disposal areas, etc.); uncultivated agricultural areas - noncrop producing (including farmyards, fuel storage areas, fence rows, nonirrigation ditchbanks, barrier strips, etc.); industrial sites - outdoor (including lumberyards, pipeline and tank farms, etc.); and natural areas (including wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads, and trails). **Arsenal herbicide Applicators Concentrate** may also be used for the release of unimproved Bermudagrass and Bahiagrass, for bareground weed control, and for use under certain paved surfaces.

Herbicidal Activity

Arsenal herbicide Applicators Concentrate will control most annual and perennial grass and broadleaf weeds in addition to many brush and vine species with some residual control of undesirable species that germinate above the waterline. **Arsenal herbicide Applicators Concentrate** is readily absorbed through emergent leaves and stems and is translocated rapidly throughout the plant with accumulation in the meristematic regions. For maximum activity, weeds should be growing vigorously at the time of application, and the spray solution should include a surfactant (see **Adjuvants** section for specific use directions). Treated plants stop growing soon after spray application. Chlorosis appears first in the newest leaves, and necrosis spreads from this point. In perennials, the herbicide is translocated into, and kills, underground or submerged storage organs, which prevents regrowth. Chlorosis and tissue necrosis may not be apparent in some plant species until 2 or more weeks after application. Complete kill of plants may not occur for several weeks. **Arsenal herbicide Applicators Concentrate** applications are rainfast 1 hour after treatment.

Use Information

Applications may be made for the control of undesirable vegetation growing within specified aquatic sites, forestry sites, pasture/rangeland and nonagricultural lands. Aquatic sites consist of standing and flowing water; estuarine/marine, wetland, and riparian areas; for control of most annual and perennial grass weeds, broadleaf weeds, vines and brambles, and hardwood brush and trees for forestry site preparation and release of conifers from woody and herbaceous competition. **Arsenal herbicide Applicators Concentrate** may be used for selective woody and herbaceous weed control in natural regeneration of certain conifers (see **Conifer Release Treatment**).

Nonagricultural lands include private, public and military lands as follows: uncultivated nonagricultural areas (including airports, highway, railroad and utility rights-of-way, sewage disposal areas, etc.); uncultivated agricultural areas - noncrop producing (including farmyards, fuel storage areas, fence rows, nonirrigation ditchbanks, barrier strips, etc.); industrial sites - outdoor (including lumberyards, pipeline and tank farms, etc.); and natural areas (including wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads, and trails).

Precautions

- Keep from contact with fertilizers, insecticides, fungicides and seeds.
- Clean application equipment after using this product by thoroughly flushing with water.

Restrictions

- **DO NOT** use on food crops.
- **DO NOT** apply this product within 1/2 mile upstream of an active potable water intake in flowing water (i.e. river, stream, etc.) or within 1/2 mile of an active potable water intake in a standing body of water, such as a lake, pond, or reservoir.
- **DO NOT** apply to water used for irrigation except as described in **Product Use Precautions and Restrictions** section of this label.
- **DO NOT** drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the treated soil may be washed or moved into contact with their roots.
- **DO NOT** use on lawns, walks, driveways, tennis courts, or similar areas.
- **DO NOT** side trim desirable vegetation with this product unless severe injury and plant death can be tolerated. Prevent drift of spray to desirable plants.

Site Specific Restrictions

Nonagricultural Lands and Forestry Sites

- **DO NOT** apply more than 1.5 lbs acid equivalent (ae) imazapyr (equivalent to 48 fl ozs of **Arsenal herbicide Applicators Concentrate**) per acre per year.

Pasture/Rangeland Sites

- For spot treatment only.
- **DO NOT** treat more than 1/10 of the available area to be grazed or cut for hay.
- **DO NOT** apply more than 0.75 lb ae imazapyr (equivalent to 24 fl ozs of **Arsenal herbicide Applicators Concentrate**) per acre per year.

Aquatic Sites

- **DO NOT** apply more than 1.5 lbs ae imazapyr (equivalent to 48 fl ozs of **Arsenal herbicide Applicators Concentrate**) per acre per year.
- **Public waters** - Application of **Arsenal herbicide Applicators Concentrate** to water can only be made by federal or state agencies, such as Water Management District personnel, municipal officials, and the U.S. Army Corps of Engineers, or those applicators who are licensed or certified as aquatic pest control applicators and are authorized by the state or local government. Treatment to other than non-native invasive species is limited to only those plants that have been determined to be a nuisance by a federal or state government entity.
- **Aerial application** - Aerial application to aquatic sites is restricted to helicopter only.
- **Irrigation water** - Application to water used for irrigation that results in **Arsenal herbicide Applicators Concentrate** residue greater than 1.0 ppb **MUST NOT** be used for irrigation purposes for 120 days after application or until **Arsenal herbicide Applicators Concentrate** residue levels are determined by laboratory analysis or other appropriate means of analysis to be 1.0 ppb or less. When applications are made within 500 feet of an active irrigation intake, **DO NOT** irrigate for at least 24 hours following application to allow for dissipation.

Recreational Use of Water in Treatment Area

There are no restrictions on the use of water in the treatment area for recreational purposes, including swimming and fishing.

Livestock Use of Water in/from Treatment Area

There are no restrictions on livestock consumption of water from the treatment area.

Potable Water Intakes

DO NOT apply **Arsenal® herbicide Applicators Concentrate** directly to water within 1/2 mile upstream of an active potable water intake in flowing water (i.e. river, stream, etc.) or within 1/2 mile of an active potable water intake in a standing body of water such as a lake, pond, or reservoir. To make aquatic applications around and within 1/2 mile of active potable water intakes, the water intake **must** be turned off during application and for a minimum of 48 hours after the application. These aquatic applications may be made only in the cases where there are alternative water sources or holding ponds that would permit the turning off of an active potable water intake for a minimum period of 48 hours after the applications.

NOTE: Existing potable water intakes that are no longer in use, such as those replaced by connections to wells or a municipal water system, are not considered to be active potable water intakes. This restriction does not apply to intermittent, inadvertent overspray of water in terrestrial use sites.

Quiescent or Slow-moving Waters

In lakes and reservoirs, **DO NOT** apply **Arsenal herbicide Applicators Concentrate** within one (1) mile of an active irrigation water intake during the irrigation season. Applications less than one (1) mile from an active irrigation water intake may be made during the off-season, provided that the irrigation intake will remain inactive for a minimum of 120 days after application or until **Arsenal herbicide Applicators Concentrate** residue levels are determined by laboratory analysis or other appropriate means of analysis to be 1.0 ppb or less.

Avoiding Injury to Nontarget Plants

If treated vegetation is to be removed from the application site, **DO NOT** use the vegetative matter as mulch or compost on or around desirable species.

Precautions for Avoiding Injury to Nontarget Plants

Untreated desirable plants can be affected by root uptake of **Arsenal herbicide Applicators Concentrate** from treated soil. Injury or loss of desirable plants may result if **Arsenal herbicide Applicators Concentrate** is applied on or near desirable plants, on areas where their roots extend, or in locations where the treated soil may be washed or moved into contact with their roots. When making application along shorelines where desirable plants may be present, use caution to avoid spray contact with their foliage or spray application to the soil in which they are rooted. Shoreline plants that have roots which extend into the water in an area where **Arsenal herbicide Applicators Concentrate** has been applied generally will not be adversely affected by uptake of the herbicide from the water.

Managing Off-target Movement

Aerial Application

- Applicators are required to use a coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater for release heights below 10 feet. Applicators are required to use a very coarse or coarser droplet size or, if specifically using a spinning atomizer nozzle, applicators are required to use a VMD of 475 microns or greater for release heights above 10 feet. Applicators must consider the effects of nozzle orientation and flight speed when determining droplet size.
- Applicators are required to use upwind swath displacement.
- The boom length must not exceed 60% of the wingspan or 90% of the rotor blade diameter to reduce spray drift.
- Applications with wind speeds less than 3 mph and with wind speeds greater than 10 mph are prohibited.
- Applications into temperature inversions are prohibited.

Ground Boom Application

- Applicators are required to use a nozzle height below 4 feet above the ground or plant canopy and coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater.
- Applications with wind speeds greater than 10 mph are prohibited.
- Applications into temperature inversions are prohibited.

Wind Erosion

Avoid treating powdery, dry or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.

Adjuvants

Postemergence applications of **Arsenal herbicide Applicators Concentrate** require the addition of a spray adjuvant. When making aquatic applications, only spray adjuvants approved or appropriate for aquatic use must be utilized.

Nonionic Surfactant

Use a nonionic surfactant (NIS) at the rate of 0.25% volume/volume (v/v) or higher (see manufacturer's label) of the spray solution (0.25% v/v is equivalent to 1 quart in 100 gallons). For best results, select a nonionic surfactant with an HLB (hydrophilic to lipophilic balance) ratio between 12 and 17 with at least 70% surfactant in the formulated product. Alcohols, fatty acids, oils, ethylene glycol or diethylene glycol should not be considered as surfactants to meet the above requirements.

Methylated Seed Oil or Vegetable Oil Concentrate

Instead of a surfactant, a methylated seed oil (MSO) or vegetable-based seed oil concentrate may be used at the rate of 1.5 to 2 pints per acre. When using spray volumes greater than 30 gallons per acre, methylated seed oil or vegetable-based seed oil concentrates should be mixed at a rate of 1% of the total spray volume, or alternatively use a nonionic surfactant as described above. Research indicates that these oils may aid in **Arsenal herbicide Applicators Concentrate** deposition and uptake by plants under moisture or temperature stress.

Silicone-based Surfactant

See manufacturer's label for specific rates. Silicone-based surfactants may reduce the surface tension of the spray droplet allowing greater spreading on the leaf surface as compared to conventional nonionic surfactants. However, some silicone-based surfactants may dry too quickly, limiting herbicide uptake.

Invert Emulsions

Arsenal herbicide Applicators Concentrate can be applied as an invert emulsion. The spray solution results in an invert (water-in-oil) spray emulsion designed to minimize spray drift and spray runoff, resulting in more herbicide on the target foliage. The spray emulsion may be formed in a single tank (batch mixing) or injected (in-line mixing). Consult the invert chemical label for proper mixing directions.

Other

An antifoaming agent, spray pattern indicator, or drift-reducing agent may be applied at the product labeled rate if necessary or desired.

Tank Mixes

Arsenal herbicide Applicators Concentrate may be tank mixed with other herbicides.

Consult manufacturer's labels for specific rate restrictions and weeds controlled. Always follow the more restrictive label restrictions and precautions for all products used when making an application involving tank mixes.

Application Methods

Arsenal® herbicide Applicators Concentrate may be selectively applied using low-volume directed application techniques or may be broadcast-applied using ground equipment, watercraft, or aircraft. Aerial applications to aquatic sites must be made by helicopter. In addition, **Arsenal herbicide Applicators Concentrate** may also be applied using cut-stump, cut-stem, and frill or girdle treatment techniques within nonagricultural lands, pasture/rangeland, and aquatic sites (see **Aerial Application** and **Ground Application** sections for additional details).

Aerial Application

All precautions must be taken to minimize or eliminate spray drift. Both fixed-wing aircraft and helicopters can be used to apply **Arsenal herbicide Applicators Concentrate** on nonagricultural lands, but only helicopters can be used for aquatic applications. **DO NOT** make applications by fixed-wing aircraft or helicopter unless appropriate buffer zones can be maintained to prevent spray drift out of the target area, or when treating open tracts of land, spray drift as a result of fixed-wing aircraft application can be tolerated. Aerial equipment designed to minimize spray drift, such as a helicopter equipped with a **Microfoil™ boom**, **Thru-Valve™ boom**, or raindrop nozzles, must be used and calibrated. Except when applying with a **Microfoil boom**, a drift control agent may be added at the specified label rate. **DO NOT** side trim with **Arsenal herbicide Applicators Concentrate** unless death of treated tree can be tolerated.

Uniformly apply the specified amount of **Arsenal herbicide Applicators Concentrate** in 2 to 30 gallons of water per acre. A foam-reducing agent may be added at the specified label rate, if needed.

Thoroughly clean application equipment, including landing gear, immediately after use of this product. Prolonged exposure of this product to uncoated steel (except stainless steel) surfaces may result in corrosion and failure of the exposed part. The maintenance of an organic coating (paint) may prevent corrosion.

Ground Application

Foliar Application

Low-volume Foliar Application

Use equipment calibrated to deliver 5 to 20 gallons of spray solution per acre. To prepare the spray solution, thoroughly mix in water 0.25% to 2.50% **Arsenal herbicide Applicators Concentrate** plus surfactant (see the **Adjuvants** section of this label for specific use directions). A foam-reducing agent may be applied at the specified label rate, if needed. For control of difficult species (see **Aquatic Weeds Controlled** section and the **Terrestrial Weeds Controlled** section for relative susceptibility of weed species), use the higher concentrations of herbicide and/or spray volumes, but **DO NOT** apply more than 3 pints of **Arsenal herbicide Applicators Concentrate** per acre in aquatic sites and nonagricultural lands and 1.5 pints per acre in pasture/rangeland. Excessive wetting of foliage is not necessary.

For low-volume foliar application, select proper nozzles to avoid overapplication. Proper application is critical to ensure desirable results. Best results are achieved when the spray covers the crown and approximately 70 percent of the plant. The use of an even, flat-fan tip with a spray angle of 40 degrees or less will aid in proper deposition.

Appropriate tip sizes include 4004E or 1504E. For a straight-stream and cone pattern, adjustable cone nozzles, such as 5500 X3 or 5500 X4, may be used. Attaching a rollover valve onto a Spraying Systems Model 30 gunjet or other similar spray gun allows for the use of both flat-fan and cone tips on the same gun.

Moisten, but **DO NOT** drench target vegetation causing spray solution to run off.

Low-volume Foliar Application with Backpack. For low-growing species, spray down on the crown, covering crown and penetrating approximately 70% of the plant.

For target species 4 to 8 feet tall, swipe the sides of target vegetation by directing spray to at least 2 sides of the plant in smooth vertical motions from the crown to the bottom. Make sure to cover the crown whenever possible.

For target species over 8 feet tall, lace sides of the target vegetation by directing spray to at least 2 sides of the target in smooth zigzag motions from crown to bottom.

Low-volume Foliar Application with Hydraulic Handgun Application Equipment. Use the same technique as described above for **Low-volume Foliar Application with Backpack**.

For broadcast applications, simulate a gentle rain near the top of target vegetation allowing spray to contact the crown and penetrate the target foliage without falling to the understory. Herbicide spray solution that contacts the understory may result in severe injury or death of plants in the understory.

High-volume Foliar Application

For optimum performance when spraying medium-density to high-density vegetation, use equipment calibrated to deliver up to 100 gallons of spray solution per acre (GPA). Spray solutions exceeding 100 GPA may result in excessive spray runoff, causing increased ground cover injury and injury to desirable species. To prepare the spray solution, thoroughly mix **Arsenal herbicide Applicators Concentrate** in water and add a surfactant (see **Adjuvants** section for specific use directions and rates for surfactants). A foam-reducing agent may be added at the specified label rate, if needed. For control of difficult species (see **Aquatic Weeds Controlled** chart and the **Terrestrial Weeds Controlled** section for relative susceptibility of weed species), use the higher concentrations of herbicide and/or spray volumes, but **DO NOT** apply more than 3 pints of **Arsenal herbicide Applicators Concentrate** per acre in aquatic sites and nonagricultural lands and 1.5 pints per acre in pasture/rangeland. Uniformly cover the foliage of the vegetation to be controlled, but **DO NOT** apply to runoff. Excessive wetting of foliage is not necessary.

Side Trimming

DO NOT side trim with **Arsenal herbicide Applicators Concentrate** unless severe injury or death of the treated tree can be tolerated. **Arsenal herbicide Applicators Concentrate** is readily translocated and can result in death of the entire tree.

Cut-surface Treatment

Arsenal herbicide Applicators Concentrate may be used to control undesirable woody vegetation by applying the **Arsenal herbicide Applicators Concentrate** solution to the cambium area of freshly cut stump surfaces or to fresh cuts on the stem of the target woody vegetation. Applications can be made at any time of the year except during periods of heavy sap flow in the spring. **DO NOT** overapply solution causing runoff from the cut surface.

Injury may occur to desirable woody plants if the shoots extend from the same root system or their root systems are grafted to those of the treated tree.

Cut-surface Application with Dilute and Concentrate Solutions

Arsenal® herbicide Applicators Concentrate may be mixed as either a concentrate or dilute solution. The dilute solution may be used for applications to the cut surface of the stump or to cuts on the stem of the target woody vegetation. Concentrate solutions may be used for applications to cuts on the stem. Use of the concentrate solution permits application to fewer cuts on the stem, especially for large-diameter trees. Follow the application instructions for proper application techniques for each type of solution.

- To prepare a dilute solution, mix 4 to 6 fluid ounces of **Arsenal herbicide Applicators Concentrate** with 1 gallon of water. A surfactant or penetrating agent may improve uptake through partially callused cambiums.
- To prepare a concentrate solution, mix 1 quart of **Arsenal herbicide Applicators Concentrate** with no more than 1 pint of water.

Cut-stump Treatment

Dilute Solution. Spray or brush the solution onto the cambium area of the freshly cut stump surface. Ensure that the solution thoroughly wets the entire cambium area (the wood next to the bark of the stump).

Cut-stem Treatment (injection, hack-and-squirt)

Dilute Solution. Using standard injection equipment, apply 1 milliliter of solution at each injection site around the tree with no more than 1-inch intervals between cut edges. Ensure that the injector completely penetrates the bark at each injection site.

Concentrate Solution. Using standard injection equipment, apply 1 milliliter of solution at each injection site. Make at least 1 injection cut for every 3 inches of diameter at breast height (DBH) on the target tree. For example, a 3-inch DBH tree will receive 1 injection cut, and a 6-inch DBH tree will receive 2 injection cuts. On trees requiring more than 1 injection site, place the injection cuts at approximately equal intervals around the tree.

Frill or Girdle Treatment

Using a hatchet, machete, or chainsaw, make cuts through the bark and completely around the tree to expose the cambium. The cut should angle downward extending into the cambium enough to expose at least 2 growth rings. Using a spray applicator or brush, apply a 12.5% to 50.0% solution of **Arsenal herbicide Applicators Concentrate** into each cut until thoroughly wet. Avoid applying so much herbicide that runoff to the ground or water occurs.

Forestry Use

Site Preparation Treatment

Arsenal herbicide Applicators Concentrate may be used to control labeled grass weeds, broadleaf weeds, vines and brambles, and woody brush and trees on forest sites in advance of regeneration for the following conifer crop species:

Common Name	Scientific Name	Rate (fl ozs/A)
Loblolly pine	*Pinus taeda*	24 to 40
Loblolly X pitch hybrid		
Longleaf pine	*Pinus palustris*	
Shortleaf pine	*Pinus echinata*	
Virginia pine	*Pinus virginiana*	
Slash pine	*Pinus elliottii*	20 to 32
Coastal redwood	*Sequoia sempervirens*	12 to 24
Douglas fir	*Pseudotsuga menziesii*	
Western hemlock	*Tsuga heterophylla*	
California red fir	*Abies magnifica*	12 to 20
California white fir	*Abies concolor*	
Jack pine	*Pinus banksiana*	12 to 16
Lodgepole pine	*Pinus contorta*	
Pitch pine	*Pinus rigida*	
Ponderosa pine	*Pinus ponderosa*	
Sugar pine	*Pinus lambertiana*	
White pine	*Pinus strobus*	
Black spruce	*Picea mariana*	
Red spruce	*Picea rubens*	
White spruce	*Picea glauca*	

Use the label rate of **Arsenal herbicide Applicators Concentrate** per acre applied as a broadcast foliar spray for long-term control of labeled woody plants and residual control of herbaceous weeds. Within 4 to 6 weeks of treatment, grass and other herbaceous weeds will be controlled and may provide fuel to facilitate a site preparation burn, if desired, to control conifers or other species tolerant to the herbicide.

Apply the label rate of **Arsenal herbicide Applicators Concentrate** per acre in 5 to 30 gallons total spray solution for helicopter applications or 5 to 100 gallons total spray solution for mechanical ground spray and backpack applications. Use a minimum of 1/2 percent by volume nonionic surfactant (NIS). Use the higher label rates of **Arsenal herbicide Applicators Concentrate** and higher spray volumes when controlling particularly dense or multilayered canopies of hardwood stands, or difficult-to-control species.

In certain cases, tank mixes may be necessary for chemical control of conifers and other species tolerant to **Arsenal herbicide Applicators Concentrate**. Observe all precautions and restrictions on the product labels. Always follow the most restrictive label. Combinations with other products labeled for forest site preparation may kill certain plants such as legumes and blackberry, which are desirable for wildlife habitat.

Where quick initial brownout (deadening of foliage) is desired for burning, apply a tank mixture of 16 fl ozs to 32 fl ozs **Arsenal® herbicide Applicators Concentrate** with 16 ozs to 64 ozs glyphosate or 16 ozs to 48 ozs triclopyr ester per acre. For control of seedling pines, apply 16 fl ozs to 32 fl ozs **Arsenal herbicide Applicators Concentrate** with 3 to 4 quarts glyphosate. For site preparation, rates less than 24 fl ozs **Arsenal herbicide Applicators Concentrate** will provide suppression of hardwood brush and trees; some resprouting may occur.

DO NOT plant seedlings of black spruce (*Picea mariana*) or white spruce (*Picea glauca*) on sites that have been broadcast-treated with **Arsenal herbicide Applicators Concentrate** or into the treated zone of spot or banded applications for three months following application or injury may occur.

Herbaceous Weed Control

Use **Arsenal herbicide Applicators Concentrate** for selective weeding in the following conifers:

Common Name	Scientific Name	Rate (fl ozs/A)
Loblolly pine	*Pinus taeda*	6 to 10
Loblolly X pitch hybrid		
Virginia pine	*Pinus virginiana*	
Longleaf pine[1]	*Pinus palustris*	4 to 6
Slash pine[1]	*Pinus elliottii*	
Douglas fir[1]	*Pseudotsuga menziesii*	

[1] Use of surfactant is not recommended.

Arsenal herbicide Applicators Concentrate may be applied as a broadcast treatment, banded over tree rows, or as a directed spray for release of young conifers from herbaceous weeds. To prevent possibility of conifer injury, **DO NOT** apply **Arsenal herbicide Applicators Concentrate** when conifers are under stress from drought, disease, animal or winter injury, planting shock, or other stresses reducing conifer vigor. Broadcast applications may be made by helicopter, ground, or backpack sprayer. For difficult-to-control weeds, use the higher labeled rates. Where herbaceous weeds have overtopped conifer seedlings, a nonionic surfactant may be added to improve weed control (except for slash pine, long-leaf pine, and Douglas fir), at a rate not to exceed 1/4 percent of spray solution volume. Some minor conifer growth inhibition may be observed when herbaceous weed control treatments are made during periods of active conifer growth.

Arsenal herbicide Applicators Concentrate may also be applied using backpack or handheld sprayers to control herbaceous weeds around individual conifer seedlings. Mix 0.4 fl oz to 0.6 fl oz **Arsenal herbicide Applicators Concentrate** and 0.2 oz nonionic surfactant per gallon of water. Direct the spray to the weeds and minimize the amount applied to conifer foliage for best conifer tolerance. Ensure that maximum labeled rates per acre for previously listed crop species are not exceeded.

Arsenal herbicide Applicators Concentrate may be tank mixed with sulfometuron to broaden the spectrum of weeds controlled. For loblolly pine, apply 4 fl ozs to 6 fl ozs **Arsenal herbicide Applicators Concentrate** plus 1 oz to 2 ozs sulfometuron per acre. The application of **Arsenal herbicide Applicators Concentrate** plus sulfometuron on other conifer species may cause growth suppression.

Conifer Release Treatment

Arsenal herbicide Applicators Concentrate may be applied as a broadcast or directed spray application for suppression of labeled brush, tree, and herbaceous weed species. Directed spray applications may be made with low-volume applications in conifer stands of all ages by targeting the unwanted vegetation and avoiding direct application to the conifer. Ensure that maximum labeled rates per acre listed for the following crop species are not exceeded.

Broadcast Applications for release of the following conifers from hardwood competition:

Common Name	Scientific Name	Rate (fl ozs/A)
Loblolly pine[3]	*Pinus taeda*	12 to 20
Loblolly X pitch hybrid[3]		
Virginia pine[3]	*Pinus virginiana*	
Atlantic white cedar[4]	*Chamaecyparis thyoides*	12 to 16
Longleaf pine	*Pinus palustris*	
Pitch pine	*Pinus rigida*	
Shortleaf pine	*Pinus echinata*	
Slash pine	*Pinus elliottii*	
White pine[1]	*Pinus strobus*	8 to 16
California red fir	*Abies magnifica*	8 to 12
California white fir	*Abies concolor*	
Lodgepole pine[2]	*Pinus contorta*	
Douglas fir[2]	*Pseudotsuga menziesii*	
Jack pine[2]	*Pinus banksiana*	6 to 12
Black spruce[2]	*Picea mariana*	
Red spruce[2]	*Picea rubens*	
White spruce[2]	*Picea glauca*	

[1] **DO NOT** make applications to white pine stands younger than three years old. To minimize potential white pine injury, release treatments should not be made prior to July 15.

[2] Applications should be made after formation of final conifer resting buds in the fall or height growth inhibition may occur.

[3] **Mid-rotation release:** For broadcast applications below the pine canopy in established stands of loblolly pine, loblolly X pitch hybrid, and Virginia pine, use 16 fl ozs to 32 fl ozs product per acre. For mid-rotation release of other species, use rates listed in chart above.

[4] Apply **Arsenal herbicide Applicators Concentrate** after July 15 and before hardwood defoliation in the fall. The use of rates below 16 ozs/A are intended for hardwood growth suppression and some hardwood resprouting should be expected.

For slash pine and longleaf pine, broadcast release treatments over the top of pines for the purpose of woody plant control must be made after August 15 and only in stands 2 through 5 years old. For applications over the top of slash pine and longleaf pine, DO NOT add surfactant and use lower labeled rates on sandy soils.

Apply the label rate of **Arsenal® herbicide Applicators Concentrate** per acre when making broadcast applications with helicopter or ground spray equipment. Refer to mixing and application instructions for proper spray volumes. A nonionic surfactant may be added at no more than 1/4 percent by volume.

Use the higher label rates of **Arsenal herbicide Applicators Concentrate** when controlling particularly dense stands or difficult-to-control species.

Some minor conifer growth inhibition may be observed when release treatments are made during periods of active conifer growth. To minimize potential conifer height growth inhibition, **DO NOT** make broadcast applications to conifer stands except loblolly pine before the end of the second growing season. To minimize potential conifer height growth inhibition, broadcast release treatments may be made late in the growing season. To prevent possibility of conifer injury, **DO NOT** apply **Arsenal herbicide Applicators Concentrate** when conifers are under stress from drought, disease, animal or winter injury, or other stresses reducing conifer vigor.

Arsenal herbicide Applicators Concentrate may be used to release loblolly pine seedlings during the first growing season following planting or for one-year-old natural loblolly pine regeneration. For one-year-old loblolly pine release, apply 12 fl ozs to 20 fl ozs/A of **Arsenal herbicide Applicators Concentrate** after July 15. Rates below 16 fl ozs/A are intended for hardwood growth suppression; some hardwood resprouting should be expected.

Spot Treatment of Undesirable Hardwood Vegetation

Arsenal herbicide Applicators Concentrate may be used as a directed foliar or cut-stem application to control undesirable brush and hardwoods in the management of stands of all ages for the conifer species listed in the broadcast application section above. Refer to mixing and application instructions in the directed foliar or cut-stem sections above for proper use rates, equipment, and application techniques. **DO NOT** exceed maximum labeled rates per acre listed for crop species. Cut-stem applications may be used for spot treatment of undesirable hardwoods in Ponderosa pine stands using 12 fl ozs or less of product per acre.

Avoid direct application to desired plant species or injury may occur. Injury may occur to nontarget or desirable hardwoods or conifers if they extend from the same root system, or their root systems are grafted to those of the treated tree, or their roots extend into the treated zone.

Late Rotation Vegetation Control in Western Conifer

In California, the Pacific Northwest and Inland Northwest, broadcast aerial applications of **Arsenal herbicide Applicators Concentrate** up to 24 fl ozs/A are permissible in conifer stands that are targeted for harvesting the year following treatment. Use minimum spray volume of 15 gallons per acre. Significant conifer injury or mortality must be expected. **DO NOT** use this treatment if conifer injury or mortality cannot be tolerated.

Bag and Spray Application for Conifer Release

In Douglas fir and Ponderosa pine stands, broadcast applications of **Arsenal herbicide Applicators Concentrate** up to 16 fl ozs/A are permissible when the trees are covered by bags prior to the application. The bags must prevent the spray mix from contacting the conifer foliage. On sites with coarse textured soils (e.g. decomposed granite, pumice, sandy or rocky sites) or low levels of soil organic matter (generally 5% or less), significant conifer growth inhibition and mortality is possible. **DO NOT** use this treatment on these types of sites if conifer growth inhibition and mortality cannot be tolerated.

Nonagricultural Land Use

Arsenal herbicide Applicators Concentrate may be used for woody and herbaceous weed control in nonagricultural lands including private, public and military lands as follows: uncultivated nonagricultural areas (including airports, highway, railroad and utility rights-of-way, sewage disposal areas, etc.); uncultivated agricultural areas - noncrop producing (including farmyards, fuel storage areas, fence rows, nonirrigation ditchbanks, barrier strips, etc.); industrial sites - outdoor (including lumberyards, pipeline and tank farms, etc.); and natural areas (including wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads, and trails).

Applications to nonagricultural lands are not applicable to treatment of commercial timber or other plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes.

Brush Control

Use the specified rate of **Arsenal herbicide Applicators Concentrate** with the preferred application technique for the control of undesirable brush.

Tank Mixes and Application Rates for Low-volume Foliar Brush Control*

Target Vegetation	Arsenal herbicide Applicators Concentrate Rate (by volume)	Tank Mix
Mixed hardwoods without elm, locust, or pine	0.50 to 0.75%	Surfactant
Mixed hardwoods containing elm, locust, and pine	0.25 to 0.50%	**Accord®** at 2% to 3% by volume plus surfactant
Mixed hardwoods with locust and pine but no elm	0.25 to 0.50%	**Krenite®** at 2% to 5% by volume plus surfactant
Mixed hardwoods with locust and elm but no pine	0.25 to 0.50%	**Escort®** at 2 ozs/A **or** 2.3 grams/gal plus surfactant

*Tank mixes with 2,4-D or products containing 2,4-D have resulted in reduced **Arsenal herbicide Applicators Concentrate** efficacy.

Backpack and Handheld Spray Mixing Guide

% Solution	Product per gallon of mix (fl ozs)	Product per 4-gallon backpack (fl ozs)
0.25%	0.3	1.3
0.5%	0.6	2.6
1.0%	1.3	5.1
2.0%	2.6	10.2
3.0%	3.8	15.4
5.0%	6.4	25.6

Measuring Chart

128 ounces	=	1 gallon
16 ounces	=	1 pint
8 pints	=	1 gallon
4 quarts	=	1 gallon
2 pints	=	1 quart

Selective Control of Undesirable Weeds in Unimproved Bermudagrass and Bahiagrass

Arsenal® herbicide Applicators Concentrate may be used on unimproved Bermudagrass and Bahiagrass turf such as roadsides, utility rights-of-way, and other nonagricultural lands. The application of **Arsenal herbicide Applicators Concentrate** on established common and coastal Bermudagrass and Bahiagrass provides control of labeled broadleaf and grass weeds. Competition from these weeds is eliminated, releasing the Bermudagrass and Bahiagrass. Treatment of Bermudagrass with **Arsenal herbicide Applicators Concentrate** results in a compacted growth habit and seedhead inhibition.

Uniformly apply with properly calibrated ground equipment using at least 10 gallons of water per acre.

Temporary yellowing of grass may occur when treatment is made after growth commences.

Restrictions

- **DO NOT** add surfactant in excess of the specified rate (1 fl oz per 25 gallons of spray solution).
- **DO NOT** apply to grass during its first growing season.
- **DO NOT** apply to grass that is under stress from drought, disease, insects, or other causes.

Dosage Rate and Timing

Bermudagrass. Apply **Arsenal herbicide Applicators Concentrate** at 3 fl ozs to 6 fl ozs per acre when the Bermudagrass is dormant. Apply **Arsenal herbicide Applicators Concentrate** at 3 fl ozs to 4 fl ozs per acre after the Bermudagrass has reached full greenup. Applications made during greenup will delay greenup. Include a surfactant in the spray solution.

For additional preemergence control of annual grass and small-seeded broadleaf weeds, add **Pendulum® AquaCap™ herbicide** at the rate of 3.1 to 6.3 pints per acre. Consult the **Pendulum AquaCap** label for weeds controlled and for other use directions and precautions.

For control of Johnsongrass in Bermudagrass turf, apply **Arsenal herbicide Applicators Concentrate** at 4 fl ozs per acre, plus **Roundup® herbicide** at 12 ozs per acre, plus surfactant. For additional control of broadleaves and vines, **Garlon® 3A herbicide** may be added to the above mix at the rate of 1 to 2 pints per acre. Observe all precautions and restrictions on the **Garlon 3A** and **Roundup** labels.

Bahiagrass. Apply **Arsenal herbicide Applicators Concentrate** at 2 fl ozs to 4 fl ozs per acre when the Bahiagrass is dormant or after the grass has initiated greenup but has not exceeded 25% greenup. Include a surfactant in the spray solution (see **Adjuvants** section for specific use directions for surfactants).

Weeds Controlled in Unimproved Bermudagrass and Bahiagrass

Common Name	Scientific Name
Bedstraw*	*Galium* spp.
Bishopweed*	*Ptilimnium capillaceum*
Buttercup*	*Ranunculus parviflorus*
Carolina geranium	*Geranium carolinianum*
Fescue	*Festuca* spp.
Foxtail	*Setaria* spp.
Little barley	*Hordeum pusillum*
Seedling Johnsongrass	*Sorghum halepense*
White clover	*Trifolium repens*
Wild carrot	*Daucus carota*
Yellow woodsorrel	*Oxalis stricta*

*Use not permitted in California unless otherwise directed by supplemental labeling.

Grass Growth and Seedhead Suppression

Arsenal herbicide Applicators Concentrate may be used to suppress growth and seedhead development of certain turfgrass in unimproved areas. When **Arsenal herbicide Applicators Concentrate** is applied to desirable turf, it may result in temporary turf damage and/or discoloration. Effects to the desirable turf may vary with environmental conditions. For optimum performance, application should be made prior to culm elongation. Applications may be made before or after mowing. If applied prior to mowing, allow at least 3 days of active growth before mowing. If applied following a mowing, allow sufficient time for the grasses to recover before applying this product or injury may be amplified.

DO NOT APPLY to turf under stress (drought, cold, insect damage, etc.) or severe injury or death may occur.

Bermudagrass. Apply **Arsenal herbicide Applicators Concentrate** at 3 fl ozs to 4 fl ozs per acre from early greenup to prior to seedhead initiation. **DO NOT** add a surfactant for this application.

Cool-season Unimproved Turf. Apply **Arsenal herbicide Applicators Concentrate** at 1 fl oz per acre plus 0.25% nonionic surfactant. For increased suppression, **Arsenal herbicide Applicators Concentrate** may be tank mixed with such products as **Campaign® herbicide** (24 ozs per acre) or **Embark® growth regulator** (8 ozs per acre). Tank mixes may increase injury to desired turf. Consult each product label for labeled turf species and other use directions and precautions. Tank mixes with 2,4-D or products containing 2,4-D may decrease the effectiveness of **Arsenal herbicide Applicators Concentrate**.

Total Vegetation Control where Bare Ground is Desired

Arsenal herbicide Applicators Concentrate is an effective herbicide for preemergence or postemergence control of many annual and perennial broadleaf and grass weeds where bare ground is desired. **Arsenal herbicide Applicators Concentrate** is particularly effective on hard-to-control perennial grasses. **Arsenal herbicide Applicators Concentrate** at 0.75 to 3 pints per acre can be used alone or in tank mix with herbicides approved for use in bare ground. The degree and duration of control are dependent on the rate of **Arsenal herbicide Applicators Concentrate** used, tank mix partner, the volume of carrier, soil texture, rainfall, and other conditions.

Consult manufacturer's labels for specific rates and weeds controlled. Always follow the more restrictive label restrictions and precautions for all products used when making an application involving tank mixes.

Applications of **Arsenal® herbicide Applicators Concentrate** may be made any time of the year. Use equipment calibrated to deliver desired gallons per acre spray volume and uniformly distribute the spray pattern over the treated area.

Postemergence Application. Always use a spray adjuvant (see **Adjuvants** section of this label) when making a postemergence application. For optimum performance on tough-to-control annual grass weeds, apply at a total volume of 100 gallons per acre or less. For quicker burndown or brownout of target weeds, **Arsenal herbicide Applicators Concentrate** may be tank mixed with **Roundup® herbicide**. Tank mixes with 2,4-D or products containing 2,4-D may reduce the performance of **Arsenal herbicide Applicators Concentrate**. Always follow the more restrictive label restrictions and precautions for all products used when tank mixing.

Spot Treatment. Arsenal herbicide Applicators Concentrate may be used as a follow-up treatment to control escapes or weed encroachment in a bareground situation. To prepare the spray solution, thoroughly mix in each gallon of water 0.25% to 2.5% **Arsenal herbicide Applicators Concentrate** plus an adjuvant. For increased burndown, include **Roundup** as a tank mixture. For added residual weed control or to increase the weed spectrum, add **Pendulum® AquaCap™ herbicide**, **Overdrive® herbicide**, or diuron. Always follow the more restrictive label restrictions and precautions for all products used when tank mixing.

Control of Undesirable Weeds under Paved Surfaces

Arsenal herbicide Applicators Concentrate can be used under asphalt, pond liners and other paved areas, **ONLY** in industrial sites or where the pavement has a suitable barrier along the perimeter that prevents encroachment of roots of desirable plants.

Use **Arsenal herbicide Applicators Concentrate** only where the area to be treated has been prepared according to good construction practices. If rhizomes, stolons, tubers or other vegetative plant parts are present in the site, remove them by scalping with a grader blade to a depth sufficient to ensure their complete removal.

Follow **Arsenal herbicide Applicators Concentrate** applications with paving as soon as possible. **DO NOT** apply where the chemical may contact the roots of desirable trees or other plants.

This product is not to be used under pavement on residential properties, such as driveways or parking lots, or for use in recreational areas, such as under bike or jogging paths, golf cart paths, or tennis courts, or where landscape plantings could be anticipated.

Injury or death of desirable plants may result if this product is applied where roots are present or where roots may extend into the treated area. Roots of trees and shrubs may extend a considerable distance beyond the branch extremities (drip line).

Apply to the soil surface only when final grade is established. **DO NOT** move soil following **Arsenal herbicide Applicators Concentrate** application.

Apply **Arsenal herbicide Applicators Concentrate** in sufficient water (at least 100 gals per acre) to ensure thorough and uniform wetting of the soil surface, including the shoulder areas. Add **Arsenal herbicide Applicators Concentrate** at a rate of 3 pints per acre (1.1 fluid ounces per 1000 square feet) to clean water in the spray tank during the filling operation. Agitate before spraying.

If the soil is not moist prior to treatment, incorporation of **Arsenal herbicide Applicators Concentrate** is needed for herbicide activation. Incorporate **Arsenal herbicide Applicators Concentrate** into the soil to a depth of 4 to 6 inches using a rototiller or disc. Rainfall or irrigation of 1 inch will also provide uniform incorporation. **DO NOT** allow treated soil to wash or move into untreated areas.

Spot Treatment and Crack-and-crevice Treatment

Use **Arsenal herbicide Applicators Concentrate** as an initial or follow-up treatment to control weed escapes or weed encroachment in a bareground situation, including cracks and crevices in paved surfaces such as roadways, runways, and parking areas.

Grass Pasture and Rangeland Spot Treatment Weed Control

For the control of undesirable vegetation in grass pasture and rangeland, **Arsenal herbicide Applicators Concentrate** may be applied as a spot treatment at a rate of 1 to 24 fluid ounces of product per treated acre using any of the described ground application methods. Spot applications to grass pasture and rangeland may not exceed more than 1/10 of the area to be grazed or cut for hay. See appropriate sections of this label for specific use directions for the application method and vegetation control desired. **DO NOT** apply more than 24 fluid ounces per acre per year.

Grazing and Haying Restrictions

- There are no grazing restrictions following **Arsenal herbicide Applicators Concentrate** application.
- **DO NOT** cut forage grass for hay for 7 days after **Arsenal herbicide Applicators Concentrate** application.

Rangeland Use Instructions

Arsenal herbicide Applicators Concentrate may be applied to rangeland for the control of undesirable vegetation to achieve one or more of the following vegetation management objectives:

- Control of undesirable (nonnative, invasive and noxious) plant species
- Control of undesirable vegetation to aid in the establishment of desirable rangeland plant species
- Control of undesirable vegetation to aid in the establishment of desirable rangeland vegetation following a fire
- Control of undesirable vegetation to reduce wildfire fuel
- Release of existing desirable rangeland plant communities from the competitive pressure of undesirable plant species
- Control of undesirable vegetation for wildlife habitat improvement

To ensure the protection of threatened and endangered plants when applying **Arsenal herbicide Applicators Concentrate** to rangeland:

- Federal agencies must follow NEPA regulations to ensure protection of threatened and endangered plants.
- State agencies must work with the Fish and Wildlife Service or the Service's designated state conservation agency to ensure protection of threatened and endangered plants.
- Other organizations or individuals must operate under a habitat conservation plan if threatened or endangered plants are known to be present on the land to be treated.

See the appropriate section(s) of this label for specific use directions for the desired rangeland vegetation management objective.

Arsenal herbicide Applicators Concentrate must only be applied to a given rangeland acre as specific weed problems arise. Long-term control of undesirable weed species ultimately depends on the successful use of land management practices that promote the growth and sustainability of desirable rangeland plant species.

Rotational Crop Instructions

Rotational crops may be planted 12 months after applying **Arsenal® herbicide Applicators Concentrate** at the specified pasture and rangeland rate. Following 12 months after an **Arsenal herbicide Applicators Concentrate** application and before planting any crop, a successful field bioassay must be completed. The field bioassay consists of a test strip of the intended rotational crop planted in the previously treated area in the grass pasture/rangeland and grown to maturity. The test strip should include low areas and knolls and include variations in soil type and pH within the treated area. If no crop injury is evident in the test strip, the intended rotational crop may be planted the following year.

Use of **Arsenal herbicide Applicators Concentrate** in accordance with label directions is expected to result in normal growth of rotational crops in most situations; however, various environmental and agronomic factors make it impossible to eliminate all risks associated with the use of this product and, therefore, rotational crop injury is always possible.

Aquatic Weed Control

Arsenal herbicide Applicators Concentrate may be applied for the control of floating and emergent undesirable vegetation (see the **Aquatic Weeds Controlled** and the **Terrestrial Weeds Controlled** section) in or near bodies of water that may be flowing, nonflowing, or transient. **Arsenal herbicide Applicators Concentrate** may be applied to aquatic sites that include lakes, rivers, streams, ponds, seeps, drainage ditches, canals, reservoirs, swamps, bogs, marshes, estuaries, bays, brackish water, transitional areas between terrestrial and aquatic sites, riparian sites, and seasonal wet areas. See **Product Use Precautions and Restrictions** section of this label for precautions, restrictions, and instructions on aquatic uses.

Read and observe the following directions if aquatic sites are present in nonagricultural lands and are part of the intended treatment area.

Arsenal herbicide Applicators Concentrate must be applied to the emergent foliage of the target vegetation and has little-to-no activity on submerged aquatic vegetation. **Arsenal herbicide Applicators Concentrate** concentrations resulting from direct application to water are not expected to be of sufficient concentration nor duration to provide control of target vegetation. Application should be made in such a way as to maximize spray interception by the target vegetation while minimizing the amount of overspray that enters the water.

Arsenal herbicide Applicators Concentrate does not control plants that are completely submerged or have a majority of their foliage under water.

Arsenal herbicide Applicators Concentrate may be applied with surface or helicopter application equipment in a minimum of 2 gallons of water per acre. When applying by helicopter, follow directions under the **Aerial Application** section of this label; otherwise, refer to the **Ground Application** section when using surface equipment.

Applications to moving bodies of water should be made while traveling upstream to prevent concentration of this herbicide in water. **DO NOT** apply to bodies of water or portions of bodies of water where emergent and/or floating weeds do not exist.

When application is to be made to target vegetation that covers a large percentage of the surface area of impounded water, treating the area in strips may avoid oxygen depletion due to decaying vegetation. Oxygen depletion may result in the suffocation of some sensitive aquatic organisms. If oxygen depletion is a concern, treat no more than 1/2 of the surface area of the water in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outward in bands to allow aquatic organisms to move into untreated areas.

Avoid washoff of sprayed foliage by spray boat or recreational boat backwash for 1 hour after application.

Apply **Arsenal herbicide Applicators Concentrate** at 1 to 3 pints per acre depending on species present and weed density. **DO NOT** exceed the maximum label rate of 3 pints per acre (1.5 lbs ae/A) per year. Use the higher labeled rates for heavy weed pressure. Consult the **Aquatic Weeds Controlled** section and the **Terrestrial Weeds Controlled** section of this label for specific rates.

Arsenal herbicide Applicators Concentrate may be applied as a drawdown treatment in areas described above. Apply **Arsenal herbicide Applicators Concentrate** to weeds after water has been drained and allow 14 days before reintroduction of water.

Permitting - Consult local state fish and game agency and water control authorities before applying this product to public water. Permits may be required to treat such water.

Private waters - Applications may be made to private waters that are still, such as ponds, lakes, and drainage ditches where there is minimal or no outflow to public waters.

In New York state, a permit is required for application to private water bodies.

Weeds Controlled

Aquatic Weeds Controlled

Arsenal herbicide Applicators Concentrate will control the following target species as specified in the **Use Rates and Application Directions** column of the table. Rates are expressed in terms of product volume for broadcast applications and as a % solution for directed applications including spot treatments. **For % solution applications, DO NOT apply more than the equivalent of 3 pints of Arsenal herbicide Applicators Concentrate per acre.**

Common Name	Scientific Name	Use Rates and Application Directions
Floating		
*Floating heart	*Nymphodes* spp.	1 to 2 pints/A (0.25 to 0.50% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Frogbit	*Limnobium spongia*	0.5 to 1.0 pint/A (0.25% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Spatterdock	*Nuphar luteum*	Apply a tank mix of 1 to 2 pints/A **Arsenal herbicide Applicators Concentrate** + 4 to 6 pints/A glyphosate (0.25% **Arsenal herbicide Applicators Concentrate** + 1.5% glyphosate) in 100 GPA water for best control. Ensure 100% coverage of actively growing emergent foliage.
*Water hyacinth	*Eichhornia crassipes*	0.5 to 1.0 pint/A (0.25% solution) applied in 100 GPA water to actively growing foliage.
*Water lettuce	*Pistia stratiotes*	0.5 to 1.0 pint/A (0.25% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.

*** Use not permitted in California unless otherwise directed by supplemental labeling.**

(continued)

Aquatic Weeds Controlled *(continued)*

Common Name	Scientific Name	Use Rates and Application Directions
Emerged		
*Alligatorweed	*Alternanthera philoxeroides*	0.5 to 2.0 pints/A (0.25% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Arrowhead, duck-potato	*Sagittaria* spp.	0.5 to 1.0 pint/A (0.25% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Bacopa, lemon	*Bacopa* spp.	0.5 to 1.0 pint/A (0.25% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Parrot feather	*Myriophyllum aquaticum*	Must be foliage above water for sufficient **Arsenal® herbicide Applicators Concentrate** uptake. Apply 1 to 2 pints/A to actively growing emergent foliage.
*Pennywort	*Hydrocotyle* spp.	0.5 to 1.0 pint/A (0.25% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Pickerelweed	*Pontederia cordata*	1.0 to 1.5 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Taro, wild Dasheen Elephant's ear Coco yam	*Colocasia esculentum*	2 to 3 pints/A (0.75% solution) applied in 100 GPA with a high quality sticker adjuvant. Ensure good coverage of actively growing emergent foliage.
*Water chestnut	*Trappa natans*	2 to 3 pints/A (0.75% solution) applied in 100 GPA with a high quality sticker adjuvant. Ensure good coverage of actively growing emergent foliage.
*Water lily	*Nymphaea odorata*	1.0 to 1.5 pints/A (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage.
*Water primrose	*Ludwigia uruguayensis*	2 to 3 pints/A (0.75% solution). Ensure 100% coverage of actively growing emergent foliage.
Terrestrial/Marginal		
*Soda apple, Aquatic nightshade	*Solanum tampicense*	1 pint/A applied to foliage
*Bamboo, Japanese	*Phyllostachys* spp.	1.5 to 2.0 pints/A applied to the foliage when plant is actively growing; before setting seedhead. More foliage will result in greater herbicide uptake, resulting in greater root kill.
Beach, vitex	*Vitex rotundifolia*	2.5% solution + 1% MSO foliar spray. 8.5% solution stem injection (hack and squirt)
Brazilian pepper Christmasberry	*Schinus terebinthifolius*	1 to 2 pints/A applied to foliage
Cattail	*Typha* spp.	1 to 2 pints/A (0.5% solution) applied to actively growing green foliage after full leaf elongation. Lower rates will control cattail in the North; higher rates are needed in the South.
Chinese tallow tree	*Sapium sebiferum*	8 to 12 fl ozs/A applied to foliage
Cogongrass	*Imperata cylindrica*	Burn foliage, till area; then fall-spray 1 quart/A **Arsenal herbicide Applicators Concentrate** + MSO applied to new growth.
Cordgrass, prairie	*Spartina* spp.	2 to 3 pints/A applied to actively growing foliage
*Cutgrass	*Zizaniopsis miliacea*	2 to 3 pints/A applied to actively growing foliage
*Elephant grass Napier grass	*Pennisetum purpureum*	1.5 pints/A applied to actively growing foliage
*Flowering rush	*Butomus umbellatus* L.	1.0 to 1.5 pints/A applied to actively growing foliage
Giant reed Wild cane	*Arundo donax*	2 to 3 pints/A applied in spring to actively growing foliage

*** Use not permitted in California unless otherwise directed by supplemental labeling.**

(continued)

Aquatic Weeds Controlled *(continued)*

Common Name	Scientific Name	Use Rates and Application Directions
Terrestrial/Marginal *(continued)*		
*Golden bamboo	*Phyllostachys aurea*	1.5 to 2.0 pints/A applied to foliage when plant is actively growing; before setting seedhead. More foliage will result in greater herbicide uptake, resulting in greater root kill.
Junglerice	*Echinochloa colonum*	1.5 to 2.0 pints/A applied to actively growing foliage
Knapweed	*Centaurea* spp.	Russian knapweed: 1.0 to 1.5 pints + 1 quart/A MSO fall-applied after senescence begins
Knotweed, Japanese	*Polygonum cuspidatum* *Fallopia japonica*	1.5 to 2.0 pints/A applied postemergence to actively growing foliage
Melaleuca Paperbark tree	*Melaleuca quinquenervia*	**For established stands**, apply 3 pints/A **Arsenal® herbicide Applicators Concentrate** + 6 pints/A glyphosate + spray adjuvant. For best results, use 4 quarts/A methylated seed oil as an adjuvant. **For ground foliar application**, uniformly apply to ensure 100% coverage. **For broadcast foliar control**, apply aerially in a minimum of 2 passes at 10 gallons/A applied cross treatment. **For spot treatment**, use a 12.5% **Arsenal herbicide Applicators Concentrate** + 25% solution of glyphosate + 1.25% MSO in water applied as a frill or stump treatment.
*Nutgrass Kili'p'opu	*Cyperus rotundus*	1 pint **Arsenal herbicide Applicators Concentrate** + 1 quart/A MSO applied early postemergence
*Nutsedge	*Cyperus* spp.	1.0 to 1.5 pints postemergence to foliage or preemergence incorporated, nonincorporated, preemergence applications will not control.
Phragmites Common reed	*Phragmites australis*	2 to 3 pints/A applied to actively growing green foliage after full leaf elongation. Ensure 100% coverage. If stand has a substantial amount of old stem tissue, mow or burn, allow to regrow to approximately 5 feet tall before treatment. Lower rates will control phragmites in the North; higher rates are needed in the South.
*Poison hemlock	*Conium maculatum*	1 pint **Arsenal herbicide Applicators Concentrate** + 1 quart/A MSO applied preemergence to early postemergence to rosette prior to flowering
Purple loosestrife	*Lythrum salicaria*	0.5 pint/A applied to actively growing foliage
Reed canarygrass	*Phalaris arundinacea*	1.5 to 2.0 pints/A applied to actively growing foliage
Rose, swamp	*Rosa palustris*	1.0 to 1.5 pints/A applied to actively growing foliage
Russian olive	*Elaeagnus angustifolia*	1 to 2 pints/A or a 0.5% solution applied to foliage
Saltcedar Tamarisk	*Tamarix* spp.	Aerial apply 1 quart **Arsenal herbicide Applicators Concentrate** + 0.25% v/v NIS to actively growing foliage during flowering. For spot spraying, use 0.5% solution of **Arsenal herbicide Applicators Concentrate** + 0.25% v/v NIS and spray to wet foliage. After application, wait at least 2 years before disturbing treated saltcedar. Earlier disturbance can reduce overall control.
Smartweed	*Polygonum* spp.	1 pint/A applied early postemergence
Sumac	*Rhus* spp.	1.0 to 1.5 pints/A applied to foliage
Swamp morningglory Water spinach Kangkong	*Ipomoea aquatica*	0.5 to 1.0 pint/A **Arsenal herbicide Applicators Concentrate** + 1 quart/A MSO applied early postemergence
Torpedo grass	*Panicum repens*	2 pints/A (0.50 to 0.75% solution); ensure good coverage to actively growing foliage
*White top Hoary cress	*Cardaria draba*	0.5 to 1.0 pint/A applied in spring to foliage during flowering
Willow	*Salix* spp.	1.0 to 1.5 pints/A **Arsenal herbicide Applicators Concentrate** applied to actively growing foliage. Ensure good coverage

*** Use not permitted in California unless otherwise directed by supplemental labeling.**

Terrestrial Weed Control

In terrestrial sites, **Arsenal® herbicide Applicators Concentrate** will provide preemergence or postemergence control with residual control of the following target vegetation species at the rates listed. Residual control refers to control of newly germinating seedlings in both annuals and perennials. In general, annual weeds may be controlled by preemergence or postemergence applications of **Arsenal herbicide Applicators Concentrate**. For established biennials and perennials, postemergence applications of **Arsenal herbicide Applicators Concentrate** will provide the best control.

The rates shown below pertain to broadcast applications and indicate the relative sensitivity of these weeds. The relative sensitivity should be referenced when preparing low-volume spray solutions (see **Low-volume Foliar Application** section of **Ground Application**); low-volume applications may provide control of the target species with less **Arsenal herbicide Applicators Concentrate** per acre than is shown for the broadcast treatments. Use **Arsenal herbicide Applicators Concentrate** only in accordance with the specific use directions on this label and the leaflet label.

The relative sensitivity of the species listed following can also be used to determine the relative risk of causing nontarget plant injury if any of the species listed following are considered to be desirable within the area to be treated.

Resistant Biotypes. Naturally occurring biotypes (a plant within a given species that has a slightly different but distinct genetic makeup from other plants of the same species) of some weeds listed on this label may not be effectively controlled. If naturally occurring, resistant biotypes are present in an area, **Arsenal herbicide Applicators Concentrate** should be tank mixed or applied sequentially with an appropriate registered herbicide having a different mode of action to ensure control.

Grass Weeds

Common Name	Scientific Name	Growth Habit[2]
Apply 1.0 to 1.5 pts/A[1]		
Annual bluegrass	*Poa annua*	A
Broadleaf signalgrass	*Brachiaria platyphylla*	A
Canada bluegrass	*Poa compressa*	P
Downy brome	*Bromus tectorum*	A
Fescue	*Festuca* spp.	A/P
Foxtail	*Setaria* spp.	A
Italian ryegrass	*Lolium multiflorum*	A
Johnsongrass[4]	*Sorghum halepense*	P
Kentucky bluegrass	*Poa pratensis*	P
Napier grass[5]	*Pennisetum purpureum*	P
Orchardgrass	*Dactylis glomerata*	P
Paragrass	*Brachiaria mutica*	P
Quackgrass	*Agropyron repens*	P
Sandbur	*Cenchrus* spp.	A
Smooth brome	*Bromus inermis*	P
Vaseygrass	*Paspalum urvillei*	P
Wild oats	*Avena fatua*	A
Witchgrass	*Panicum capillare*	A

(continued)

Grass Weeds *(continued)*

Common Name	Scientific Name	Growth Habit[2]
Apply 1.5 to 2.0 pts/A[1]		
Barnyardgrass	*Echinochloa crus-galli*	A
Beardgrass	*Andropogon* spp.	P
Bluegrass, annual	*Poa annua*	A
Bulrush[5]	*Scirpus validus*	P
Cogongrass	*Imperata cylindrica*	P
Cheat	*Bromus secalinus*	A
Crabgrass	*Digitaria* spp.	A
Crowfootgrass	*Dactyloctenium aegyptium*	A
Fall panicum	*Panicum dichotomiflorum*	A
Goosegrass	*Eleusine indica*	A
Itchgrass	*Rottboellia exaltata*	A
Lovegrass[4]	*Eragrostis* spp.	P
Maidencane[5]	*Panicum hemitomon*	A
Panicum, browntop	*Panicum fasciculatum*	A
Panicum, Texas	*Panicum texanum*	A
Prairie threeawn	*Aristida oligantha*	P
Sandbur, field	*Cenchrus incertus*	A
Signalgrass	*Brachiaria platyphylla*	A
Wild barley	*Hordeum* spp.	A
Woolly cupgrass	*Eriochloa villosa*	A
Apply 2 to 3 pts/A[1]		
Bahiagrass	*Paspalum notatum*	P
Bermudagrass[3, 4]	*Cynodon dactylon*	P
Big bluestem	*Andropogon gerardii*	P
Dallisgrass	*Paspalum dilatatum*	P
Feathertop	*Pennisetum villosum*	P
Guineagrass	*Panicum maximum*	P
Saltgrass[3]	*Distichlis stricta*	P
Sand dropseed	*Sporobolus cryptandrus*	P
Sprangletop	*Leptochloa* spp.	A
Timothy	*Phleum pratense*	P
Wirestem muhly	*Muhlenbergia frondosa*	P

[1] Use higher rates where heavy or well-established infestations occur.
[2] Growth Habit: A = Annual, B = Biennial, P = Perennial
[3] Use a minimum of 75 GPA.
[4] Use higher labeled rates.
[5] Use not permitted in California unless otherwise directed by supplemental labeling.

Broadleaf Weeds

Common Name	Scientific Name	Growth Habit[2]
Apply 1.0 to 1.5 pts/A[1]		
Burdock	*Arctium* spp.	B
Carolina geranium	*Geranium carolinianum*	A
Carpetweed	*Mollugo verticillata*	A
Clover	*Trifolium* spp.	A/P
Common chickweed	*Stellaria media*	A
Common ragweed	*Ambrosia artemisiifolia*	A
Dandelion	*Taraxacum officinale*	P
Dogfennel	*Eupatorium capillifolium*	A
Filaree	*Erodium* spp.	A
Fleabane	*Erigeron* spp.	A
Hoary vervain	*Verbena stricta*	P
Indian mustard	*Brassica juncea*	A
Kochia	*Kochia scoparia*	A
Lambsquarters	*Chenopodium album*	A
Lespedeza[3]	*Lespedeza* spp.	P
Miner's lettuce	*Montia perfoliata*	A
Mullein	*Verbascum* spp.	B
Nettleleaf goosefoot	*Chenopodium murale*	A
Oxeye daisy	*Chrysanthemum leucanthemum*	P
Pepperweed	*Lepidium* spp.	A
Pigweed	*Amaranthus* spp.	A
Puncturevine	*Tribulus terrestris*	A
Russian thistle	*Salsola kali*	A
Smartweed	*Polygonum* spp.	A/P
Sorrell	*Rumex* spp.	P
Sunflower	*Helianthus* spp.	A
Sweet clover	*Melilotus* spp.	A/B
Tansymustard	*Descurainia pinnata*	A
Western ragweed	*Ambrosia psilostachya*	P
Wild carrot	*Daucus carota*	B
Wild lettuce	*Lactuca* spp.	A/B
Wild parsnip	*Pastinaca sativa*	B
Wild turnip	*Brassica campestris*	B
Woollyleaf bursage	*Franseria tomentosa*	P
Yellow woodsorrel	*Oxalis stricta*	P
Apply 1.5 to 2.0 pts/A[1]		
Broom snakeweed[4]	*Gutierrezia sarothrae*	P
Bull thistle	*Cirsium vulgare*	B
Burclover	*Medicago* spp.	A
Chickweed, mouseear	*Cerastium vulgatum*	A
Clover, hop	*Trifolium procumbens*	A

(continued)

Broadleaf Weeds *(continued)*

Common Name	Scientific Name	Growth Habit[2]
Apply 1.5 to 2.0 pts/A[1] *(continued)*		
Cocklebur	*Xanthium strumarium*	A
Cudweed	*Gnaphalium* spp.	A
Desert camelthorn	*Alhagi pseudalhagi*	P
Dock	*Rumex* spp.	P
Fiddleneck	*Amsinckia intermedia*	A
Goldenrod	*Solidago* spp.	P
Henbit	*Lamium amplexicaule*	A
Knotweed, prostrate	*Polygonum aviculare*	A/P
Pokeweed	*Phytolacca americana*	P
Purslane	*Portulaca* spp.	A
Pusley, Florida	*Richardia scabra*	A
Rocket, London	*Sisymbrium irio*	A
Rush skeletonweed[4]	*Chondrilla juncea*	B
Saltbush	*Atriplex* spp.	A
Shepherdspurse	*Capsella bursa-pastoris*	A
Spurge, annual	*Euphorbia* spp.	A
Stinging nettle[4]	*Urtica dioica*	P
Velvetleaf	*Abutilon theophrasti*	A
Yellow starthistle	*Centaurea solstitialis*	A
Apply 2 to 3 pts/A[1]		
Arrowwood	*Pluchea sericea*	A
Canada thistle	*Cirsium arvense*	P
Giant ragweed	*Ambrosia trifida*	A
Gray rabbitbrush	*Chrysothamnus nauseosus*	P
Little mallow	*Malva parviflora*	B
Milkweed	*Asclepias* spp.	P
Primrose	*Oenothera kunthiana*	P
Silverleaf nightshade	*Solanum elaeagnifolium*	P
Sowthistle	*Sonchus* spp.	A
Texas thistle	*Cirsium texanum*	P

[1] Use higher rates where heavy or well-established infestations occur.
[2] Growth Habit: A = Annual, B = Biennial, P = Perennial
[3] Use not permitted in California unless otherwise directed by supplemental labeling.
[4] For best results, early postemergence applications are required.

Vines and Brambles

Common Name	Scientific Name	Growth Habit[2]
Apply 0.5 pt/A		
Field bindweed	*Convolvulus arvensis*	P
Hedge bindweed	*Calystegia sepium*	A
Apply 1.0 to 1.5 pts/A[1]		
Wild buckwheat	*Polygonum convolvulus*	P
Apply 1.5 to 2.0 pts/A[1]		
Greenbriar	*Smilax* spp.	P
Honeysuckle[3]	*Lonicera* spp.	P
Morningglory	*Ipomoea* spp.	A/P
Poison ivy	*Rhus radicans*	P
Redvine	*Brunnichia cirrhosa*	P
Wild rose[3] including:	*Rosa* spp.	P
Multiflora rose	*Rosa multiflora*	P
Macartney rose	*Rosa bracteata*	P
Apply 2 to 3 pts/A[1]		
Trumpetcreeper	*Campsis radicans*	P
Virginia creeper	*Parthenocissus quinquefolia*	P
Wild grape	*Vitis* spp.	P

[1] Use higher rate where heavy or well-established infestations occur.
[2] Growth Habit: A = Annual, B = Biennial, P = Perennial
[3] Use higher labeled rates.

Brush Species

Common Name	Scientific Name	Growth Habit[2]
Apply 1 to 2 pts/A[1]		
Brazilian peppertree	*Schinus terebinthifolius*	P
Chinese tallow tree Popcorn tree	*Sapium sebiferum*	P
Russian olive	*Elaeagnus angustifolia*	P
Sumac	*Rhus* spp.	P
Willow	*Salix* spp.	P
Apply 2 to 3 pts/A[1]		
Alder	*Alnus* spp.	P
American beech	*Fagus grandifolia*	P
Ash[3]	*Fraxinus* spp.	P
Aspen	*Populus* spp.	P
Autumn olive	*Elaeagnus umbellata*	P
Bald cypress	*Taxodium distichum*	P
Bigleaf maple	*Acer macrophyllum*	P
Birch[3]	*Betula* spp.	P
Black gum[4]	*Nyssa sylvatica*	P
Black locust[5]	*Robinia pseudoacacia*	P
Black oak	*Quercus kelloggii*	P

(continued)

Brush Species *(continued)*

Common Name	Scientific Name	Growth Habit[2]
Apply 2 to 3 pts/A[1] *(continued)*		
Boxelder	*Acer negundo*	P
Ceanothis	*Ceanothis* spp.	P
Cherry[3, 4]	*Prunus* spp.	P
Chinaberry	*Melia azedarach*	P
Chinquapin	*Castanopsis chrysophylla*	P
Cottonwood	*Populus trichocarpa* *P. deltoides*	P
Cypress	*Taxodium* spp.	P
Dogwood[3]	*Cornus* spp.	P
Elm[6]	*Ulmus* spp.	P
Eucalyptus	*Eucalyptus* spp.	P
Hawthorn	*Crataegus* spp.	P
Hickory[3]	*Carya* spp.	P
Honeylocust[5]	*Gleditsia triacanthos*	P
Huckleberry	*Gaylussacia* spp.	P
Lyonia spp. including:		
Fetterbush	*Lyonia lucida*	
Staggerbush	*Lyonia mariana*	P
Madrone	*Arbutus menziesii*	P
Maple	*Acer* spp.	P
Melaleuca	*Melaleuca quinquenervia*	P
Mulberry[3, 7]	*Morus* spp.	P
Oak[8]	Quercus spp.	P
Persimmon[4]	*Diospyros virginiana*	P
Pine[5,10]	*Pinus* spp.	P
Poison oak	*Rhus diversiloba*	P
Poplar	*Populus* spp.	P
Privet	*Ligustrum vulgare*	P
Red alder	*Alnus rubra*	P
Red maple	*Acer rubrum*	P
Saltcedar	*Tamarix pentandra*	P
Sassafras	*Sassafras albidum*	P
Sourwood[4]	*Oxydendrum arboreum*	P
Sweetgum	*Liquidambar styraciflua*	P
Sycamore	*Platanus occidentalis*	P
Tanoak[3]	*Lithocarpus densiflorus*	P
Titi[9]	*Cyrilla racemiflora*	P
Tree of heaven	*Ailanthus altissima*	P
Vaccinium spp. including:		
Blueberry	*Vaccinium* spp.	
Sparkleberry	*Vaccinium arboreum*	P
Water willow[10]	*Justicia americana*	P
Yellow poplar[3]	*Liriodendron tulipifera*	P

(continued)

Brush Species *(continued)*

[1] Use the higher rates where heavy or well-established infestations occur.
[2] Growth Habit: A = Annual, B = Biennial, P = Perennial
[3] Use higher labeled rates.
[4] Best control with applications prior to formation of fall leaf color
[5] Tank mix with glyphosate or triclopyr
[6] Tank mix with glyphosate
[7] Degree of control may be species dependent.
[8] For water oak (*Quercus nigra*), laurel oak (*Q. laurifloria*), willow oak (*Q. phellos*) and live oak (*Q. virginiana*), use higher labeled rates.
[9] Suppression only
[10] **Use not permitted in California unless otherwise directed by supplemental labeling.**

Conditions of Sale and Warranty

The **Directions For Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling, all of which are beyond the control of BASF CORPORATION ("BASF") or the Seller. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer.

BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions For Use**, subject to the inherent risks, referred to above.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BUYER'S EXCLUSIVE REMEDY AND BASF'S EXCLUSIVE LIABILITY, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, SHALL BE LIMITED TO REPAYMENT OF THE PURCHASE PRICE OF THE PRODUCT.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, EXEMPLARY, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.

BASF and the Seller offer this product, and the Buyer and User accept it, subject to the foregoing **Conditions of Sale and Warranty** which may be varied only by agreement in writing signed by a duly authorized representative of BASF. 1108

000241-00299.20170810.**NVA 2017-04-104-0177**
Based on: NVA 2017-04-104-0175
Supersedes: NVA 2011-04-104-0062

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

BASF
We create chemistry

Arsenal®

Herbicide

Applicators Concentrate

For the control of undesirable vegetation growing within specified aquatic sites, forestry sites, pasture/rangeland, and nonagricultural lands; and for the establishment and maintenance of wildlife openings, release of unimproved Bermudagrass and Bahiagrass, bareground weed control, and for use under certain paved surfaces

Active Ingredient:

isopropylamine salt of imazapyr:
(2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-3-pyridinecarboxylic acid)*..... 53.1%
Other Ingredients:..... 46.9%
Total:.....100.0%

* Equivalent to 43.3% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-3-pyridinecarboxylic acid or 4 pounds acid per gallon

EPA Reg. No. 241-299 **EPA Est. No. 241-PR-002**

KEEP OUT OF REACH OF CHILDREN

CAUTION/PRECAUCION

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.)

See attached booklet for complete **Precautionary Statements**, **Directions For Use**, **Conditions of Sale and Warranty**, and state-specific crop and/or use site restrictions.

FIRST AID: 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 by a poison control center or doctor. **DO NOT** give anything to an unconscious person. **If on skin or clothing:** 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. **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. **If in eyes:** Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after first 5 minutes; then continue rinsing eyes. Call a poison control center or doctor for treatment advice. **HOTLINE NUMBER:** Have the product container or label with you when calling a poison control center or doctor or going for treatment. In case of an emergency endangering life or property involving this product, call BASF Corporation for emergency medical treatment information, day or night 1-800-832-HELP (4357).

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

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Net Contents: 2.5 gallons

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION. Harmful if swallowed. Avoid contact with skin, eyes, or clothing. Avoid breathing spray mist.

Physical and Chemical Hazards

Spray solutions of **Arsenal® herbicide Applicators Concentrate** must be mixed, stored and applied only in stainless steel, fiberglass, plastic and plastic-lined steel containers.

Thoroughly clean application equipment, including landing gear, immediately after use of this product. Prolonged exposure of this product to uncoated steel (except stainless steel) surfaces may result in corrosion and failure of the exposed part. The maintenance of an organic coating (paint) may prevent corrosion.

Environmental Hazards

This product is toxic to plants. Drift and runoff may be hazardous to plants in water adjacent to treated areas. **DO NOT** apply to water except as specified in this label. Treatment of aquatic weeds may result in oxygen depletion or loss due to decomposition of dead plants. This oxygen loss may cause the suffocation of some aquatic organisms. **DO NOT** treat more than 1/2 of the surface area of the water in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outward in bands to allow aquatic organisms to move into untreated areas. **DO NOT** contaminate water when disposing of equipment washwaters or rinsate.

This pesticide is toxic to vascular plants and must be used strictly in accordance with the drift precautions on the label.

STORAGE AND DISPOSAL

DO NOT contaminate water, food or feed by storage or disposal.

Pesticide Storage

DO NOT store below 10° F.

Pesticide Disposal

Wastes resulting from the use of this product must be disposed of on-site or at an approved waste disposal facility.

Container Handling

Nonrefillable Container. DO NOT reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying; then offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

See attached booklet for complete container handling directions including triple rinsing and pressure rinsing instructions.

81045263 NVA 2017-05-104-0198
Product of U.S.A.

Safety Data Sheet
ARSENAL HERBICIDE APPL. CONC.

1. Identification

Product identifier used on the label

ARSENAL HERBICIDE APPL. CONC.

Recommended use of the chemical and restriction on use
Recommended use*: herbicide

* The “Recommended use” identified for this product is provided solely to comply with a US Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company:
BASF CORPORATION
100 Park Avenue
Florham Park, NJ 07932, USA

Telephone: +1 973 245-6000

Emergency telephone number

CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP (4357)

Other means of identification

Substance number:	57487
EPA Register number:	241-299
Molecular formula:	C(13) H(15) N(3) O(3). C(3) H(9) N
Chemical family:	imidazole derivative
Synonyms:	Isopropylamine salt of imazapyr

2. Hazards Identification

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Classification of the product

Aquatic Acute	1	Hazardous to the aquatic environment - acute
Aquatic Chronic	1	Hazardous to the aquatic environment - chronic

Label elements

The product does not require a hazard warning label in accordance with GHS criteria.

Hazards not otherwise classified

Labeling of special preparations (GHS):
The following percentage of the mixture consists of components(s) with unknown hazards regarding the acute toxicity: 0 - 1 % dermal
The following percentage of the mixture consists of components(s) with unknown hazards regarding the acute toxicity: 0 - 1 % oral
The following percentage of the mixture consists of components(s) with unknown hazards regarding the acute toxicity: 0 - 1 % Inhalation - vapour
The following percentage of the mixture consists of components(s) with unknown hazards regarding the acute toxicity: 0 - 1 % Inhalation - mist

According to Regulation 1994 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Emergency overview

CAUTION:
KEEP OUT OF REACH OF CHILDREN.
Avoid contact with the skin, eyes and clothing.
Avoid inhalation of mists/vapours.

3. Composition / Information on Ingredients

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

CAS Number	Content (W/W)	Chemical name
81510-83-0	53.1 %	Isopropylamine salt of imazapyr
64-19-7	0.1 - 1.0 %	Acetic acid
75-31-0	5.0 - 10.0 %	isopropylamine

According to Regulation 1994 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

CAS Number	Content (W/W)	Chemical name
81510-83-0	53.1 %	Isopropylamine salt of imazapyr
	46.9 %	Proprietary ingredients

4. First-Aid Measures

Description of first aid measures

General advice:
Remove contaminated clothing.

If inhaled:
Keep patient calm, remove to fresh air.

If on skin:
Wash thoroughly with soap and water.

If in eyes:
Wash affected eyes for at least 15 minutes under running water with eyelids held open.

If swallowed:
Rinse mouth and then drink plenty of water.

Most important symptoms and effects, both acute and delayed

Symptoms: No significant reaction of the human body to the product known.

Indication of any immediate medical attention and special treatment needed

Note to physician

Antidote:	No known specific antidote.
Treatment:	Treat symptomatically.
Treatment:	Symptomatic treatment (decontamination, vital functions).

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
foam, dry powder, carbon dioxide, water spray

Special hazards arising from the substance or mixture

Hazards during fire-fighting:
carbon monoxide, carbon dioxide, nitrogen oxide, nitrogen dioxide, Hydrocarbons,
If product is heated above decomposition temperature, toxic vapours will be released. The substances/groups of substances mentioned can be released if the product is involved in a fire.

Advice for fire-fighters

Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:
Evacuate area of all unnecessary personnel. Contain contaminated water/firefighting water. Do not allow to enter drains or waterways.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Take appropriate protective measures. Clear area. Shut off source of leak only under safe conditions. Extinguish sources of ignition nearby and downwind. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.

Environmental precautions

Do not discharge into the subsoil/soil. Do not discharge into drains/surface waters/groundwater.

Methods and material for containment and cleaning up

Dike spillage. Pick up with suitable absorbent material. Place into suitable containers for reuse or disposal in a licensed facility. Spilled substance/product should be recovered and applied according to label rates whenever possible. If application of spilled substance/product is not possible, then spills should be contained, solidified, and placed in suitable containers for disposal. After decontamination, spill area can be washed with water. Collect wash water for approved disposal.

7. Handling and Storage

Precautions for safe handling

RECOMMENDATIONS ARE FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS. PESTICIDE APPLICATORS & WORKERS must refer to the Product Label and Directions for Use attached to the product for Agricultural Use Requirements in accordance with the EPA Worker Protection Standard 40 CFR part 170. Ensure adequate ventilation. Provide good ventilation of working area (local exhaust ventilation if necessary). Keep away from sources of ignition - No smoking. Keep container tightly sealed. Protect contents from the effects of light. Protect against heat. Protect from air. Handle and open container with care. Do not open until ready to use. Once container is opened, content should be used as soon as possible. Avoid aerosol formation. Avoid dust formation. Provide means for controlling leaks and spills. Do not return residues to the storage containers. Follow label warnings even after container is emptied. The substance/ product may be handled only by appropriately trained personnel. Avoid all direct contact with the substance/product. Avoid contact with the skin, eyes and clothing. Avoid inhalation of dusts/mists/vapours. Wear suitable personal protective clothing and equipment.

Protection against fire and explosion:
The relevant fire protection measures should be noted. Fire extinguishers should be kept handy. Avoid all sources of ignition: heat, sparks, open flame. Sources of ignition should be kept well clear. Avoid extreme heat. Keep away from oxidizable substances. Electrical equipment should conform to national electric code. Ground all transfer equipment properly to prevent electrostatic discharge. Electrostatic discharge may cause ignition.

Conditions for safe storage, including any incompatibilities

Segregate from incompatible substances. Segregate from foods and animal feeds. Segregate from textiles and similar materials.

Further information on storage conditions: Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Protect containers from physical damage. Protect against contamination. The authority permits and storage regulations must be observed.

8. Exposure Controls/Personal Protection

Users of a pesticidal product should refer to the product label for personal protective equipment requirements.

Components with occupational exposure limits

isopropylamine	OSHA PEL	PEL 5 ppm 12 mg/m3 ; STEL value 10 ppm 24 mg/m3 ; TWA value 5 ppm 12 mg/m3 ;
	ACGIH TLV	TWA value 5 ppm ; STEL value 10 ppm ;

Advice on system design:
Whenever possible, engineering controls should be used to minimize the need for personal protective equipment.

Personal protective equipment

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

Respiratory protection:
Wear respiratory protection if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) TC23C Chemical/Mechanical type filter system to remove a combination of particles, gas and

vapours. For situations where the airborne concentrations may exceed the level for which an air purifying respirator is effective, or where the levels are unknown or Immediately Dangerous to Life or Health (IDLH), use NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions.

Hand protection:
Chemical resistant protective gloves, Protective glove selection must be based on the user's assessment of the workplace hazards.

Eye protection:
Safety glasses with side-shields. Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

General safety and hygiene measures:
Wear long sleeved work shirt and long work pants in addition to other stated personal protective equipment. Work place should be equipped with a shower and an eye wash. Handle in accordance with good industrial hygiene and safety practice. Personal protective equipment should be decontaminated prior to reuse. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks). Take off immediately all contaminated clothing. Store work clothing separately. Hands and/or face should be washed before breaks and at the end of the shift. No eating, drinking, smoking or tobacco use at the place of work. Keep away from food, drink and animal feeding stuffs.

9. Physical and Chemical Properties

Form:	liquid	
Odour:	strong, ammonia-like	
Odour threshold:		Not determined due to potential health hazard by inhalation.
Colour:	green	
pH value:	approx. 5 - 7	(1 %(m), 20 °C)
Freezing point:	approx. 0 °C	(1,013.3 hPa) Information applies to the solvent.
Boiling point:	approx. 100 °C	(1,013.3 hPa) Information applies to the solvent.
Flash point:		not applicable Aqueous preparation
Flammability:	not applicable	
Lower explosion limit:		As a result of our experience with this product and our knowledge of its composition we do not expect any hazard as long as the product is used appropriately and in accordance with the intended use.
Upper explosion limit:		As a result of our experience with this product and our knowledge of its composition we do not expect any hazard as long as the product is used appropriately and in accordance with the intended use.
Autoignition:		not applicable Information applies to the solvent.
Vapour pressure:	approx. 23.4 hPa	(20 °C) Information applies to the solvent.

Density:	approx. 1.11 g/cm3	(20 °C)
Vapour density:		not applicable
Partitioning coefficient n-octanol/water (log Pow):		not applicable
Thermal decomposition:	carbon monoxide, carbon dioxide, nitrogen oxide, nitrogen dioxide, Hydrocarbons Stable at ambient temperature. If product is heated above decomposition temperature toxic vapours may be released. If product is heated above decomposition temperature hazardous fumes may be released.	
Viscosity, dynamic:	approx. 46.5 mPa.s	(20 °C)
Solubility in water:		readily soluble
Molar mass:	320.4 g/mol	
Evaporation rate:		not applicable
Other Information:	If necessary, information on other physical and chemical parameters is indicated in this section.	

10. Stability and Reactivity

Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

Oxidizing properties:
not fire-propagating
Not an oxidizer.

Chemical stability
The product is stable if stored and handled as prescribed/indicated.

Possibility of hazardous reactions
The product is chemically stable.
Hazardous polymerization will not occur. No hazardous reactions if stored and handled as prescribed/indicated.

Conditions to avoid
Avoid all sources of ignition: heat, sparks, open flame. Avoid prolonged storage. Avoid electro-static discharge. Avoid contamination. Avoid prolonged exposure to extreme heat. Avoid extreme temperatures.

Incompatible materials
oxidizing agents, strong alkalies

Hazardous decomposition products

Decomposition products:
Hazardous decomposition products: No hazardous decomposition products if stored and handled as prescribed/indicated., Prolonged thermal loading can result in products of degradation being given off.

Thermal decomposition:
Possible thermal decomposition products:
carbon monoxide, carbon dioxide, nitrogen oxide, nitrogen dioxide, Hydrocarbons
Stable at ambient temperature. If product is heated above decomposition temperature toxic vapours may be released. If product is heated above decomposition temperature hazardous fumes may be released.

11. Toxicological information

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity
Assessment of acute toxicity: Relatively nontoxic after single ingestion. Slightly toxic after short-term skin contact. Relatively nontoxic after short-term inhalation.

Oral
Type of value: LD50
Species: rat
Value: > 5,000 mg/kg

Inhalation
Type of value: LC50
Species: rat (male/female)
Value: > 5.0 mg/l (OECD Guideline 403)
Exposure time: 4 h
An aerosol was tested.
No mortality was observed.

Dermal
Type of value: LD50
Species: rabbit
Value: > 5,000 mg/kg

Irritation / corrosion
Assessment of irritating effects: May cause slight but temporary irritation to the eyes. May cause slight irritation to the skin.

Skin
Species: rabbit
Result: Slightly irritating.
Method: Primary skin irritation test

Eye
Species: rabbit
Result: non-irritant

Sensitization
Assessment of sensitization: Skin sensitizing effects were not observed in animal studies.

Buehler test
Species: guinea pig
Result: Skin sensitizing effects were not observed in animal studies.
Method: OECD Guideline 406

Chronic Toxicity/Effects

Repeated dose toxicity

Assessment of repeated dose toxicity: The product has not been tested. The statement has been derived from the properties of the individual components. No substance-specific organtoxicity was observed after repeated administration to animals.

Genetic toxicity
Assessment of mutagenicity: The product has not been tested. The statement has been derived from the properties of the individual components. Mutagenicity tests revealed no genotoxic potential.

Carcinogenicity
Assessment of carcinogenicity: The product has not been tested. The statement has been derived from the properties of the individual components. The results of various animal studies gave no indication of a carcinogenic effect.

Reproductive toxicity
Assessment of reproduction toxicity: The product has not been tested. The statement has been derived from the properties of the individual components. The results of animal studies gave no indication of a fertility impairing effect.

Teratogenicity
Assessment of teratogenicity: The product has not been tested. The statement has been derived from the properties of the individual components. Animal studies gave no indication of a developmental toxic effect at doses that were not toxic to the parental animals.

Other Information
Misuse can be harmful to health.

Symptoms of Exposure

No significant reaction of the human body to the product known.

12. Ecological Information

Toxicity

Aquatic toxicity
Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to fish. There is a high probability that the product is not acutely harmful to aquatic invertebrates. Acutely harmful for aquatic plants.

Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment. The product has not been tested. The statement has been derived from the properties of the individual components.

Toxicity to fish

Information on: Imazapyr
LC50 (96 h) >100PPM, Oncorhynchus mykiss (static)
LC50 (96 h) >100 ppm, Lepomis macrochirus (static)

Aquatic invertebrates

Information on: Imazapyr
EC50 (24 h) > 100 ppm, Daphnia magna

Aquatic plants

Information on: Imazapyr
EC50 (96 h) >1 ppm, Selenastrum capricornutum (static)
EC50 (14 d) 24, Lemna gibba

Assessment of terrestrial toxicity
With high probability not acutely harmful to terrestrial organisms.

Other terrestrial non-mammals

Information on: imazapyr
LC50, Anas platyrhynchos
With high probability not acutely harmful to terrestrial organisms.
LD50 > 100 ug/bee, Apis mellifera
With high probability not acutely harmful to terrestrial organisms.

Persistence and degradability

Assessment biodegradation and elimination (H2O)

Information on: Imazapyr

Bioaccumulative potential

Assessment bioaccumulation potential
The product has not been tested. The statement has been derived from the properties of the individual components.

Bioaccumulation potential

Information on: Imazapyr

Bioconcentration factor: < 1.0, Lepomis macrochirus
Does not accumulate in organisms.

Mobility in soil

Assessment transport between environmental compartments
The product has not been tested. The statement has been derived from the properties of the individual components.

Information on: Imazapyr

The substance will not evaporate into the atmosphere from the water surface.
Following exposure to soil, the product trickles away and can - dependant on degradation - be transported to deeper soil areas with larger water loads.

Additional information

Other ecotoxicological advice:
The ecological data given are those of the active ingredient. Do not release untreated into natural waters.

13. Disposal considerations

Waste disposal of substance:
Pesticide wastes are regulated. Improper disposal of excess pesticide, spray mix or rinsate is a violation of federal law. If pesticide wastes cannot be disposed of according to label instructions, contact the State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container disposal:
Rinse thoroughly at least three times (triple rinse) in accordance with EPA recommendations. Consult state or local disposal authorities for approved alternative procedures such as container recycling. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

RCRA:
This product is not regulated by RCRA.

14. Transport Information

Land transport
USDOT

Not classified as a dangerous good under transport regulations

Sea transport
IMDG

Hazard class:	9
Packing group:	III
ID number:	UN 3082
Hazard label:	9, EHSM
Marine pollutant:	YES
Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains IMAZAPYR 43%)

Air transport
IATA/ICAO

Hazard class:	9
Packing group:	III
ID number:	UN 3082
Hazard label:	9, EHSM
Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains IMAZAPYR 43%)

15. Regulatory Information

Federal Regulations

Registration status:

Chemical	TSCA, US	blocked / not listed
Crop Protection	TSCA, US	released / listed

EPCRA 311/312 (Hazard categories): Acute; Chronic

NFPA Hazard codes:
Health : 1 Fire: 1 Reactivity: 0 Special:

Labeling requirements under FIFRA

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label.

CAUTION:
KEEP OUT OF REACH OF CHILDREN.
Avoid contact with the skin, eyes and clothing.
Avoid inhalation of mists/vapours.

16. Other Information

SDS Prepared by:
BASF NA Product Regulations
SDS Prepared on: 2014/12/23

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

Proposed Administrative Consent Agreement
Background Summary

Subject: Certified Pest Management
11 Town House Road
Chelsea, ME 04330

Date of Incident(s): December 9, 2020

Background Narrative: On December 14, 2020, the Board received a complaint relative to a pesticide application made by the Company on December 9, 2020. The person emailing the Board reported that her cat had perished on December 11, 2020, as a result of the application.

On July 28, 2019, Laurie Dutil, Company owner, called the Board's office to report that the licensed Commercial Master Applicator for the Company had resigned. Dutil further reported that the Company would cease making commercial pesticide applications until such time as they were able to replace the licensed master applicator.

A Board inspector conducted a follow-up inspection on December 16, 2020. The Company owner provided Invoice No. 1662, that indicated vacuuming and steam treatment was conducted for bedbug control on December 9, 2020.

On January 13, 2021, the inspector received a copy of Invoice No. 1662 that was provided to a City of Augusta Code Enforcement Officer on December 14, 2020, by the complainant's landlord. The invoice copy states that a "residual pesticide treatment" was conducted in the complainant's apartment on December 9. The invoice differed from the one provided by the Company owner, which was identical with the exception that the reference to the pesticide application was omitted.

Summary of Violations: Submission of a false or fraudulent record in violation of 22 M.R.S. §1471-D(8)(G).

22 M.R.S. § 1471-D(1), requires certification and licensing for commercial pesticide applications. No one from the Company was certified at the time of the application.

Rationale for Settlement: Certified Pest Management, LLC is no longer in business per the certificate of cancellation received with signed proposed consent agreement. The owner of the former Company was willing to enter into the terms of the proposed consent agreement to bring closure to the violation.

Attachments: Proposed Consent Agreement

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL

CK#1972
CK Date 11-29-23
CK Amt $1500—

In the Matter of: Certified Pest Management 11 Town House Road Chelsea, Maine 04330	ADMINISTRATIVE CONSENT AGREEMENT AND FINDINGS OF FACT

This Agreement by and between Certified Pest Management (hereinafter called the "Company") and the State of Maine Board of Pesticides Control (hereinafter called the "Board"), as approved by the Office of the Attorney General ("OAG"), is entered into pursuant to 22 M.R.S. § 1471-M(2)(D) and in accordance with the Enforcement Protocol amended by the Board on December 13, 2013.

The parties to this Agreement agree as follows:

1) That the Company provided commercial pest control services in Maine and was first licensed to do so beginning on June 27, 2016.

2) That on July 28, 2019, Laurie Dutil, Company owner, called the Board's office to report that Michael Cote, the licensed Commercial Master Applicator for the Company, had resigned. Dutil further reported that the Company would cease making commercial pesticide applications until such time as they were able to replace Cote with a licensed master applicator.

3) That on December 14, 2020, the Board received complaint relative to a pesticide application made by the Company on December 9, 2020. The person emailing the Board reported that her cat had perished on December 11, 2020, as a result of the application.

4) That a Board inspector interviewed the complainant at the complainant's residence in Augusta on December 16, 2020.

5) That on December 16, 2020, a Board inspector interviewed the property owner, Christopher Skehan, and obtained a copy of a pest a management service invoice for December 9, 2020.

6) That a Board inspector conducted a follow-up inspection with Company owner Laurie Dutil on December 16, 2020. Dutil provided Invoice No. 1662, issued to landlord Christopher Skehan regarding treatment provided at the Augusta apartment building on December 9, 2020. Said invoice indicates that vacuuming and steam treatment was conducted for bedbug control.

7) That during the follow-up inspection described in Paragraph 6, Dutil stated that there were no Commercial Applicators on staff and that the application of steam would be exempt from the Board licensing requirements.

8) That inspector received copy of Invoice No. 1662 on January 13, 2021, that landlord Christopher Skehan had provided to Code Enforcement Officer Keegan Ballard on December 14, 2020. The invoice copy states that a "residual pesticide treatment" was conducted in complainant's apartment on December 9. Said invoice differed from the one provided by Company owner Dutil, which was identical with the exception that the reference to the pesticide application was omitted.

9) That the circumstances described in Paragraphs 1 through 8 constitute submission of a false or fraudulent record in violation of 22 M.R.S. §1471-D(8)(G).

10) That the circumstances described in Paragraphs 1 through 8 constitute a commercial pesticide application pursuant to 22 M.R.S. § 1471-C(5) and (5-A).

11) That custom pesticide applications may only be properly certified applicators, pursuant to 22 M.R.S. §1471-D(1).

12) That no one from the Company was certified at the time of the application described in this Agreement.

13) That the circumstances described in Paragraphs 1 through 12 constitute a violation of 22 M.R.S. § 1471-D(1)

14) That the Company expressly waives:

A. Notice of or opportunity for hearing;

B. Any and all further procedural steps before the Board; and

C. The making of any further findings of fact before the Board.

15) That this Agreement shall not become effective unless and until the Board accepts it.

16) That in consideration for the release by the Board and the OAG of the causes of action which the Board and the OAG have against the Company resulting from the violations referred to in Paragraphs 9 and 13, the Company agrees to pay a penalty to the State of Maine in the sum of $3,000.00, with $1,500.00 of the penalty suspended provided that the Company does not commit any violations of Federal or State of Maine pesticide law over a five-year period beginning on the effective date of this Agreement. The unsuspended portion of the penalty, $1,500.00, shall be paid by December 1, 2023. (Please make checks payable to Treasurer, State of Maine).

17) That in the event the Company commits any violations of Federal or State of Maine pesticide law—as determined by Board staff in the normal course of compliance investigations—over the five-year period beginning on the effective date of this Agreement, the suspended portion of the penalty becomes immediately due and payable.

18) The Board and OAG grant a release of their causes of actions against the Company for the specific violations cited in Paragraphs 9 and 13 on the express condition that all actions listed in Paragraph 16 of this Agreement are completed in accordance with the express terms and conditions of this Agreement and to the satisfaction of the Board and the OAG. The release shall not become effective until the Company has completed its obligations pursuant to Paragraph 16.

19) Any non-compliance with any term or condition of this Agreement, as determined by the Board and OAG in their sole discretion, voids the release set forth in Paragraph 18 of this Agreement and may lead to an enforcement, suspension/revocation, equitable, and/or civil violation action pursuant to Titles 7 and 22 of the Maine Revised Statutes and/or M.R. Civ. P. 80H.

20) Nothing in this Agreement shall be construed to be a relinquishment of the Board's or OAG's powers under Titles 7 and 22 of the Maine Revised Statutes against the Company for any other violations other than those expressly listed in this Agreement.

21) This instrument contains the entire agreement between the parties, and no statements, promises, or inducements made by either party or agent of either party that are not contained in this written contract shall be valid or binding; this contract may not be enlarged, modified, or altered except in writing signed by the parties and indorsed on this Agreement.

22) The provisions of this Agreement shall apply to, and be binding on, the parties and their officers, agents, servants, employees, successors, and assigns, and upon those persons in active concert or participation with them who receive actual notice of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement of three pages.

CERTIFIED PEST MANAGEMENT

By: _____ Date: 11-29-2023

Type or Print Name: Laurie Dahl

BOARD OF PESTICIDES CONTROL

By: _____ Date: _____
John Pietroski, Acting Director

APPROVED:
By: _____ Date: _____
Carey Gustanski, Assistant Attorney General

Proposed Administrative Consent Agreement
Background Summary

Subject: Mosquito Squad of Southern Maine
28 Adams Way
Scarborough, ME 04074

Date of Incident(s): May 25, 2023 & June 28,2023

Background Narrative: On May 25, 2023, Joseph Eno, an employee of the Company, made an application of Bifen I/T, EPA Reg. No. 53883-118, and Fendona CS, EPA Reg. No. 499-570, to a residential property located at 189 Clifford Road in Phippsburg, Maine, using a motorized backpack for control of mosquitoes.

On May 25, 2023, the abutting landowner at 183 Clifford Rd. contacted the Board and stated that the wind was blowing from the application site toward the abutter's property. The abutting landowner further stated that the mist appeared to be moving toward the chicken coop.

On May 26, 2023, a Board inspector visited the site and collected residue samples from both the target site and the abutting property. The laboratory analysis report for a vegetative sample collected from the abutting property showed a concentration of bifenthrin at 0.026 parts per million. The laboratory analysis report for a vegetative sample collected from the target property showed a concentration of bifenthrin at 2.5 parts per million. The off-target residue is equal to approximately 1% of the target site residue.

On June 28, 2023, Justin Weeks, a licensed applicator employed by the Company, applied Bifen I/T, EPA Reg. No. 53883-118, Fendona CS, EPA Reg. No. 499-570 and Martins Permethrin 10%, EPA Reg. No. 53883-72 to a residential property located at 11 Monarch Drive, Kennebunk, Maine. An employee of the Board observed the application and noted that it was raining at the time of the application. The Board employee collected video evidence of the application and notified the Board inspector assigned to the geographical location.

Summary of Violations: CMR 01-026, Chapter 22, Section 4 (B) (I) states that, "Pesticide applications shall be undertaken in a manner which minimizes pesticide drift to the maximum extent practicable, having due regard for prevailing weather conditions, toxicity and propensity to drift of the pesticide, presence of Sensitive Areas in the vicinity, type of application equipment and other pertinent factors." The prima facie evidence, together with the standard of care exercised by the applicator and Company in allowing an uncertified applicator to apply pesticides using a motorized mist blower and directing the spray toward the property boundary when the wind direction favored movement toward the abutting property, is evidence that a violation of the general standard contained CMR 01-026, Chapter 22, Section 4 (B) (I).

7 U.S.C. § 136j(a)(2)(G) and 7 M.R.S. § 606(2)(B) prohibit the use or supervision of such use of a pesticide inconsistent with its label. The Fendona CS label, EPA Reg. No. 499-570, states, in part, "DO NOT make outdoor applications during rain."

The violations described are considered subsequent violations within a four-year period pursuant to 7 M.R.S. § 616-A(2)(A)(2).

Rationale for Settlement: The Company entered into an Administrative Consent Agreement and Findings of Fact with the Board on November 19, 2021, to resolve multiple violations of State pesticide law. The Company agreed to pay a fine to the State as part of the agreement and a portion of the fine—two thousand dollars—paid by the Company was suspended by the Board on the condition that the Company had no further violations of State pesticide law for a two-year period beginning on the date the agreement was fully executed. The Company committed at least two violations of State pesticide law during the two-year period. That in accordance with the agreement the Company entered into on November 19, 2021, the suspended portion of the fine is due immediately.

Mosquito Squad of Southern Maine is willing to enter into this proposed consent agreement to resolve the noted violations.

Attachments: Proposed Consent Agreement

NOV 29 2023
CK#1195
Amt $10000 —
CK Date 11-21-23

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL

In the Matter of:	)	ADMINISTRATIVE CONSENT
Mosquito Squad of Southern Maine	)	AGREEMENT
28 Adams Way	)	AND
Scarborough, Maine 04074	)	FINDINGS OF FACT

This Agreement by and between Mosquito Squad of Southern Maine (hereinafter referred to as the "Company") and the State of Maine Board of Pesticides Control (hereinafter referred to as the "Board"), as approved by the Office of the Attorney General ("OAG"), is entered into pursuant to 22 M.R.S. § 1471-M(2)(D) and in accordance with the Enforcement Protocol amended by the Board on December 13, 2013.

The parties to this Agreement agree as follows:

1. That the Company operates a Mosquito Squad franchise covering the southwestern areas of Maine. The Company provides a variety of pest management and commercial pesticide application services.

2. That on May 25, 2023, Joseph Eno, an employee of the Company, made an application of Bifen I/T, EPA Reg. No. 53883-118, and Fendona CS, EPA Reg. No. 499-570, to a residential property located at 189 Clifford Road in Phippsburg, Maine, using a motorized backpack for control of mosquitoes.

3. That at the time of the application described in Paragraph 2, Joseph Eno was neither certified nor licensed by the Board as a commercial applicator. A licensed commercial applicator was on site at the time of the application, but not within visual or voice contact when Mr. Eno was on the back side of the house.

4. That an abutting landowner located at 183 Clifford Road observed the application described in Paragraph 2 and became concerned when the applicator directed spray toward the wooded area separating the properties. The abutting landowner inquired with Mr. Eno about what was being applied. According to the landowner, Mr. Eno replied that he did not know.

5. That on May 25, 2023, the abutting landowner contacted the Board and stated that the wind was blowing from the application site toward the abutter's property. The abutting landowner further stated that the mist appeared to be moving toward the chicken coop. The landowner stated that he/she experienced symptoms including burning lips and tongue and a severe headache.

6. That on May 26, 2023, a Board inspector visited the site and collected residue samples from both the target site and the abutting property.

7. That on June 1, 2023, a Board inspector conducted a follow-up inspection with Company employees Scott Conrad, who has supervisory responsibilities, and applicators Michael and Joseph Eno.

8. That the laboratory analysis report for a vegetative sample collected from the abutting property showed a concentration of bifenthrin at 0.026 parts per million.

9. That the laboratory analysis report for a vegetative sample collected from the target property showed a concentration of bifenthrin at 2.5 parts per million.

10. That the off-target residue described in Paragraph 8 is equal to approximately 1% of the target site residue described in Paragraph 9.

11. That the circumstances described in Paragraphs 8 and 9 are considered prima facie evidence that the application was not conducted in a manner to minimize drift to the maximum extent practicable pursuant to CMR 01-026, Chapter 22, Section 4 (B) (II).

12. That CMR 01-026, Chapter 22, Section 4 (B) (I) that, "Pesticide applications shall be undertaken in a manner which minimizes pesticide drift to the maximum extent practicable, having due regard for prevailing weather conditions, toxicity and propensity to drift of the pesticide, presence of Sensitive Areas in the vicinity, type of application equipment and other pertinent factors."

13. That the prima facie evidence described in Paragraph 11 together with the standard of care exercised by the applicator and Company in allowing an uncertified applicator to apply pesticides using a motorized mist blower and directing the spray toward the property boundary when the wind direction favored movement toward the abutting property, is evidence that a violation of the general standard contained CMR 01-026, Chapter 22, Section 4 (B) (I).

14. That the circumstances described in Paragraphs 1 through 13 constitute a violation of CMR 01-026, Chapter 22, Section 4 (B) (I).

15. That on June 28, 2023, Justin Weeks, a licensed applicator employed by the Company, applied Bifen I/T, EPA Reg. No. 53883-118, Fendona CS, EPA Reg. No. 499-570 and Martins Permethrin 10%, EPA Reg. No. 53883-72 to a residential property located at 11 Monarch Drive, Kennebunk, Maine.

16. That an employee of the Board observed the application described in Paragraph 15 and noted that it was raining at the time of the application. The Board employee collected video evidence of the application and notified the Board inspector assigned to the geographical location.

17. That on June 28, 2023, the Board inspector conducted an on-site inspection with Justin Weeks upon being notified of the application described in Paragraph 15. The inspector documented pertinent details related to the application, the weather conditions and the soil saturation. The inspector also collected National Oceanic and Atmospheric Administration (NOAA) weather data arising from the Sanford Airport June 27 and 28, 2023. The NOAA weather data provided additional evidence/confirmation of the rainy conditions on the June 27 and 28.

18. That the Bifen I/T label, EPA Reg. No. 53883-118, states, in part, "This pesticide is extremely toxic to fish and aquatic invertebrates." The Bifen I/T label also states, "Applying this product in calm weather when rain is not predicted for the next 24 hours will help ensure that wind or rain does not blow or wash pesticide off the treatment area.

19. That the Fendona CS label, EPA Reg. No. 499-570, states, in part, "DO NOT make outdoor applications during rain."

20. That 7 U.S.C. § 136j(a)(2)(G) and 7 M.R.S. § 606(2)(B) prohibit the use or supervision of such use of a pesticide inconsistent with its label, and 22 M.R.S. § 1471-D(8)(F) provides for court action to seek suspension or revocation of an applicator's license and/or certification for use or supervision of such use of a pesticide inconsistent with its label.

21. That the circumstances described in Paragraphs 15, 16, 17, 19 and 20 constitute a violation of 7 U.S.C. § 136j(a)(2)(G) and 7 M.R.S. § 606(2)(B) and would permit court action to seek suspension or revocation of an applicator's license and/or certification pursuant to 22 M.R.S. § 1471-D(8)(F).

22. That the Company entered into an Administrative Consent Agreement and Findings of Fact with the Board on November 19, 2021, to resolve multiple violations of State pesticide law.

23. That the Company agreed to pay a fine to the State as part of the agreement described in Paragraph 22. A portion of the fine—two thousand dollars—paid by the Company was suspended by the Board on the condition that the Company had no further violations of State pesticide law for a two-year period beginning on the date the agreement was fully executed.

24. That the Company committed at least two violations of State pesticide law during the two-year period.

25. That in accordance with the agreement the Company entered into on November 19, 2021, the suspended portion of the fine is due immediately.

26. That the violations described in Paragraphs 14 and 21 are considered subsequent violations within a four-year period pursuant to 7 M.R.S. § 616-A(2)(A)(2).

27. That the Company expressly waives:

    A. Notice of or opportunity for hearing;

    B. Any and all further procedural steps before the Board; and

    C. The making of any further findings of fact before the Board.

28. That this Agreement shall not become effective unless and until the Board accepts it.

29. That the Company is obligated to immediately pay the suspended portion of the fine agreed upon in the Administrative Consent Agreement and Findings of Fact which the Company entered into on November 19, 2021. The suspended portion is $2,000.00, due by November 21, 2023. (Please make checks payable to Treasurer, State of Maine).

30. That in consideration for the release by the Board of the causes of action which the Board has against the Company resulting from the violations referred to in Paragraphs 14 and 21, the Company agrees to pay a penalty to the State of Maine in the sum of $8,000.00, due by November 21, 2023. (Please make checks payable to Treasurer, State of Maine).

31. The Board and OAG grant a release of their causes of actions against the Company for the specific violations cited in the immediately preceding Paragraph (Paragraphs 29 and 30) on the express condition that all actions listed in Paragraph 30 of this Agreement are completed in accordance with the express terms and conditions of this Agreement and to the satisfaction of the Board and the OAG. The release shall not become effective until the Company has completed its obligations pursuant to Paragraphs 29 and 30.

32. Any non-compliance with any term or condition of this Agreement, as determined by the Board and OAG in their sole discretion, voids the release set forth in Paragraph 31 of this Agreement and may lead to an enforcement, suspension/revocation, equitable, and/or civil violation action pursuant to Titles 7 and 22 of the Maine Revised Statutes and/or M.R. Civ. P. 80H.

33. Nothing in this Agreement shall be construed to be a relinquishment of the Board's or OAG's powers under Titles 7 and 22 of the Maine Revised Statutes against the Company for any other violations other than those expressly listed in this Agreement.

34. This instrument contains the entire agreement between the parties, and no statements, promises, or inducements made by either party or agent of either party that are not contained in this written contract shall be valid or binding; this contract may not be enlarged, modified, or altered except in writing signed by the parties and indorsed on this Agreement.

35. The provisions of this Agreement shall apply to, and be binding on, the parties and their officers, agents, servants, employees, successors, and assigns, and upon those persons in active concert or participation with them who receive actual notice of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement of four pages.

MOSQUITO SQUAD OF SOUTHERN MAINE
By: _____ mngr Date: 11-29-23

Type or Print Name: Erik Hanson

BOARD OF PESTICIDES CONTROL
By: _____ Date: _____
John Pietroski, Acting Director

APPROVED:
By: _____ Date:
Carey Gustanski, Assistant Attorney General

Proposed Administrative Consent Agreement
Background Summary

Subject: TruGreen Lawncare
2 Delta Drive
Westbrook, ME 04092

Date of Incident(s): June 25, 2020 - September 15, 2022

Background Narrative: On October 10, 2020, a licensed applicator for TruGreen Lawncare applied Talstar P Insecticide, EPA Reg. No. 279-3206, to a residential property located in Saco, Maine for control of mosquitoes and ticks. Prior to the start of the application, a TruGreen co-worker asked the applicator to hold-off applying the insecticide in the backyard so that they could complete the lawn aeration service assigned to them. The applicator ignored the request of their co-worker, and the individual was exposed to the spray solution while conducted the lawn aeration. The exposed worker sought medical attention.

On October 29 & November 5, of 2020 a licensed applicator for TruGreen Lawncare experienced exposure to Talstar P Insecticide, EPA Reg. No. 279-3206, when the powered backpack being used for the application had a leak and the applicator's clothing became saturated with the pesticide and contacted their skin. The applicator was not instructed to properly wash themselves or their clothing and was encouraged to continue working.

Prior to pesticide applications conducted on March 22, 2021, May 10, 2021, June 30, 2021, & August 22, 2022, TruGreen Lawncare failed to notify a member of the Pesticide Notification Registry in Cape Elizabeth. Failure to notify the same registrant on several occasions was settled with Board in Consent Agreement in January of 2020.

During a pesticide spray application to a lawn with powered spray equipment conducted by a licensed applicator for TruGreen Lawncare on May 26, 2021, in Westbrook, Maine a neighbor was exposed to Merit 2F Systemic Insecticide, EPA Reg. No. 432-1312, Barricade 4FL Herbicide, EPA Reg. No. 110-1139, & Escalade 2 Herbicide, EPA Reg. No. 228-442, through drift.

On June 3, 2021, a licensed applicator for TruGreen Lawncare was conducting herbicide applications with Turpower 3 Herbicide, EPA Reg. No. 228-551, to common space lawn areas in a neighborhood in Scarborough, Maine. The applicator was observed not wearing the proper PPE (Personal Protective Equipment). The ensuing inspection confirmed the failure to wear proper PPE and the application being conducted with powered spray equipment was done at higher wind speeds the label allows.

Summary of Violations: CMR 01-026, Chapter 28, Section 2 (D) requires commercial applicators to provide advance notification of outdoor pesticide applications made within 250 feet of the property of any participant on the current year Notification Registry.

The violations described above are considered a second, third, fourth and fifth offense within a four-year period pursuant to 7 M.R.S. § 616-A (2) A (2).

7 U.S.C. § 136j(a)(2)(G) and 7 M.R.S. § 606(2)(B) prohibit the use of a pesticide inconsistent with its label.

The Talstar P label contains the following statements: "Do not apply this product in a way that will contact any person or pet either directly or through spray drift." "Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing."

Barricade 4FL label contains the following statement: "Do not apply this product in a way that will contact workers or other persons, either directly or through drift."

Escalade 2 label contains the following statement: "Do not apply this product in a way that will contact workers or other persons, either directly or through drift."

CMR 01-026, Chapter 22, Section 2 (D) contains the statement: "The applicator shall cease spray activities at once upon finding evidence showing the likely presence of unprotected persons in the target area or in such proximity as to result in unconsented exposure to pesticides."

The Trupower 3 label contains the following statements: "All mixers, loaders, applicators and other handlers must wear:

a) Long-sleeved shirt and long pants
b) Shoes plus socks, and
c) Protective eyewear (Goggles or face shield or shielded safety glasses)
d) Chemical-resistant gloves (except for applicators using groundboom equipment).
e) Chemical-resistant apron when mixing or loading, cleaning up spills or equipment, or otherwise exposed to the concentrate.
f) Do not apply at wind speeds greater than 10 mph."

Rationale for Settlement: TruGreen Lawncare failed to contact a member of the Pesticide Notification Registry on four occasions. Pesticide applications conducted by applicators allowed exposure to pesticides through direct contact and drift on four separate occasions. The incidents of exposure, failure to wear proper PPE and applications during high wind speed are all violations of pesticide labeling. These violations occurred within a four-year period of a previously settled consent agreement that included failure to notify members of the Pesticide Notification Registry, applications in high winds and applications to the incorrect property.

Attachments: Proposed Consent Agreement

NOV 22 2023

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL

Ck Amount $25000—
Ck Date 11-13-23
Ck # 60533856

In the Matter of:	)	ADMINISTRATIVE CONSENT
TruGreen Lawncare	)	AGREEMENT
2 Delta Drive	)	AND
Westbrook, Maine 04092	)	FINDINGS OF FACT

This Agreement by and between TruGreen Lawncare (hereinafter referred to as the "Company") and the State of Maine Board of Pesticides Control (hereinafter referred to as the "Board"), as approved by the Office of the Attorney General ("OAG"), is entered into pursuant to 22 M.R.S. § 1471-M(2)(D) and in accordance with the Enforcement Protocol amended by the Board on December 13, 2013.

The parties to this Agreement agree as follows:

1) That the Company provides a variety of turf, landscaping and mosquito control services across the United States, including the State of Maine. Said services include pesticide applications.

2) That on October 10, 2020, Daniel Berensen, a Company employee was aerating a customer's lawn at 20 Wedgewood Drive in Saco, Maine.

3) That during the lawn aeration process described in paragraph two, Patrick O'Donnell, another Company employee arrived at the same address to make a tick and mosquito control application using Talstar P Insecticide, EPA Reg. No. 279-3206.

4) That Berensen spoke to O'Donnell explaining that he only needed to finish aerating behind the house prior to departing the location. Berenson believed that O'Donnell would therefore refrain from spraying in his immediate vicinity until he was finished.

5) That shortly thereafter, O'Donnell began spraying behind the house while Berenson was still present. Berenson was directly down wind of O'Donnell.

6) That Berenson stated that immediately he was "hit by the chemical."

7) That approximately an hour later, Berenson reported that he began to experience symptoms including a hot sensation on his face, burning eyes and nausea.

8) That Berensen's supervisor instructed him to seek a medical evaluation at a Concentra Urgent Care location in Portland. According to Berensen, the attending physician advised him to monitor his symptoms for the next few days and seek additional attention if symptoms worsened.

9) That the Talstar P label contains the following statements: "Do not apply this product in a way that will contact any person or pet either directly or through spray drift. Do not allow people or pets on treated surfaces until spray has dried. Let surfaces dry before allowing people or pets to contact surfaces."

10) That 7 U.S.C. § 136j(a)(2)(G) and 7 M.R.S. § 606(2)(B) prohibit the use or supervision of such use of a pesticide inconsistent with its label, and 22 M.R.S. § 1471-D(8)(F) provides for court action to seek suspension or revocation of an applicator's license and/or certification for use or supervision of such use of a pesticide inconsistent with its label.

11) That the circumstances described in paragraphs two through ten constitute a violation of 7 U.S.C. § 136j(a)(2)(G) and 7 M.R.S. § 606(2)(B) and would permit court action to seek suspension or revocation of an applicator's license and/or certification pursuant to 22 M.R.S. § 1471-D(8)(F).

12) That CMR 01-026, Chapter 22, Section 2 (D) contains the statement: "The applicator shall cease spray activities at once upon finding evidence showing the likely presence of unprotected persons in the target area or in such proximity as to result in unconsented exposure to pesticides."

13) That the Company applicator did not cease spray activities when in such proximity to Berensen so as to result in unconsented exposure to pesticides.

14) That the circumstances described in paragraphs two through ten and thirteen constitute a violation of CMR 01-026, Chapter 22, Section 2 (D).

15) That Brett Haynes, a Company employee, contacted the Board with concerns about a series of chemical discharges that occurred during the course of Haynes' work for the Company between October 29 and November 5, 2020.

16) That during the first chemical discharge event on October 29, Haynes' backpack, containing a spray solution of Talstar P Insecticide, EPA Reg. No 279-3206, developed a leak which quickly saturated Haynes' underpants, undershirt, pants and shirt.

17) That Haynes returned to the Westbrook branch location whereupon he was provided a clean set of pants and a replacement backpack, and he was instructed to continue spraying.

18) That two additional chemical discharge events occurred on November 3 and November 5. The November 3 event resulted in a small spill. The November 5 event resulted in the loss of 2.5 gallons of spray mix and another chemical exposure event in which Haynes' pants became saturated.

19) That the Talstar P label contains the following statement: "Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing."

20) That upon returning to the Westbrook branch following the exposure incident on October 29, Haynes was not instructed to remove all saturated clothing and to thoroughly wash exposed skin.

21) That 7 U.S.C. § 136j(a)(2)(G) and 7 M.R.S. § 606(2)(B) prohibit the use of a pesticide inconsistent with its label, and 22 M.R.S. § 1471-D(8)(F) provides for court action to seek suspension or revocation of an applicator's license and/or certification for use of a pesticide inconsistent with its label.

22) That the Company's supervision of the use of Talstar P was inconsistent with the product labeling.

23) That the circumstances described in paragraphs fifteen through twenty-two constitute a violation of 7 U.S.C. § 136j(a)(2)(G) and 7 M.R.S. § 606(2)(B) and would permit court action to seek suspension or revocation of an applicator's license and/or certification pursuant to 22 M.R.S. § 1471-D(8)(F).

24) That the Company entered into an Administrative Consent Agreement and Findings of Fact with the Maine Board of Pesticides Control ratified by the Board on January 15, 2020, in which the Company acknowledged a series of Maine pesticide law violations which occurred in calendar years 2017, 2018 and 2019.

25) That among the violations acknowledged in the Consent Agreement described in paragraph twenty-four was an August 13, 2019, turf pesticide application to 28 Wood Road in Cape Elizabeth, Maine.

26) That the violation described in paragraph twenty-five was to a property listed as an abutter to a participant in the 2019 Maine Pesticide Notification Registry, thereby requiring notification to the participant, Sarvenaz Maisak.

27) That the Company acknowledged failing to notify Maisak prior to the August 13, 2019, application in violation of CMR 01-026, Chapter 28, Section 2 (D).

28) That on March 22, 2021, a Company employee applied Omni Supreme Spray (insecticide-miticide) Liquid, EPA Reg. No. 5905-368 to dormant landscape plants at 22 Wood Road in Cape Elizabeth.

29) That 22 Wood Road is listed as an abutter to a participant in the 2021 Pesticide Notification Registry, Sarvenaz Maisak.

30) That CMR 01-026, Chapter 28, Section 2 (D) requires pesticide applicators to notify registry participants prior to making an application to properties listed as abutters on the registry.

31) That Company did not notify Maisak prior to the pesticide application described in paragraph twenty-eight.

32) That the circumstances described in paragraphs twenty-eight through thirty-one constitute a violation of CMR 01-026, Chapter 28, Section 2 (D).

33) That the violation described in paragraph thirty-two is a second violation within a four-year period pursuant to 7 M.R.S. § 616-A(2)(A)(2).

34) That on May 10, 2021, a Company employee applied Escalade 2 Herbicide, EPA Reg. No. 228-442 to the turf areas at 22 Wood Road in Cape Elizabeth.

35) That 22 Wood Road is listed as an abutter to a participant in the 2021 Pesticide Notification Registry, Sarvenaz Maisak.

36) That CMR 01-026, Chapter 28, Section 2 (D) requires pesticide applicators to notify registry participants prior to making an application to properties listed as abutters on the registry.

37) That Company did not notify Maisak prior to the pesticide application described in paragraph thirty-four.

38) That the circumstances described in paragraphs thirty-four through thirty-seven constitute a violation of CMR 01-026, Chapter 28, Section 2 (D).

39) That the violation described in paragraph thirty-eight is a third violation within a four-year period pursuant to 7 M.R.S. § 616-A(2)(A)(2).

40) That on June 30, 2021, a Company employee applied Merit 2F insecticide, EPA Reg. No. 432-1312 and Trupower 3 herbicide, EPA Reg. No. 228-551 to the turf areas at 22 Wood Road in Cape Elizabeth.

41) That 22 Wood Road is listed as an abutter to a participant in the 2021 Pesticide Notification Registry, Sarvenaz Maisak.

42) That CMR 01-026, Chapter 28, Section 2 (D) requires pesticide applicators to notify registry participants prior to making an application to properties listed as abutters on the registry.

43) That Company did not notify Maisak prior to the pesticide application described in paragraph forty.

44) That the circumstances described in paragraphs forty through forty-three constitute a violation of CMR 01-026, Chapter 28, Section 2 (D).

45) That the violation described in paragraph forty-four is a fourth violation within a four-year period pursuant to 7 M.R.S. § 616-A(2)(A)(2).

46) That on August 22, 2022, a Company employee applied Tempo SC Ultra Insecticide, EPA Reg. No. 432-1363, Eagle 20 EW Specialty Fungicide, EPA Reg. No. 62719-463 and Forbid 4F Ornamental Insecticide/Miticide, EPA Reg. No. 432-1279 to the landscape plants at 22 Wood Road in Cape Elizabeth.

47) That 22 Wood Road is listed as an abutter to a participant in the 2022 Pesticide Notification Registry, Sarvenaz Maisak.

48) That CMR 01-026, Chapter 28, Section 2 (D) requires pesticide applicators to notify registry participants prior to making an application to properties listed as abutters on the registry.

49) That Company did not notify Maisak prior to the pesticide application described in paragraph forty-six.

50) That the circumstances described in paragraphs forty-six through forty-nine constitute a violation of CMR 01-026, Chapter 28, Section 2 (D).

51) That the violation described in paragraph fifty is a fifth violation within a four-year period pursuant to 7 M.R.S. § 616-A(2)(A)(2).

52) That on May 26, 2021, John Sullivan, an employee for the Company applied Merit 2F, EPA Reg. No 432-1312, Barricade 4FL, EPA Reg. No. 100-1139 and Escalade 2, EPA Reg. No 228-442 to the turf areas located at 250 Duck Pond Road in Westbrook, Maine.

53) That during the course of the application described in paragraph fifty-two, John Stewart, an abutting neighbor, emerged from his back door onto his back lawn.

54) That Stewart immediately detected a chemical taste in his mouth and his eyes started burning.

55) That Stewart quickly identified the source of the chemical exposure as arising from the turf pesticide application taking place on the abutting lawn.

56) That Stewart stated that the wind speed was 14 miles per hours blowing from the application site toward his property.

57) That Stewart subsequently approached the Company applicator and requested that the applicator cease and desist due to the weather conditions and the proximity to him and his property.

58) That a heated exchange ensued between Stewart and the Company applicator who expressed the view that it was proper from him to continue.

59) That ultimately the applicator agreed to switch to a granular application.

60) That the Barricade 4FL label contains the following statement: "Do not apply this product in a way that will contact workers or other persons, either directly or through drift."

61) That the Escalade 2 label contains the following statement: "Do not apply this product in a way that will contact workers or other persons, either directly or through drift."

62) That the spray mists from the application described in paragraph fifty-two contacted John Stewart.

63) That 7 U.S.C. § 136j(a)(2)(G) and 7 M.R.S. § 606(2)(B) prohibit the use or supervision of such use of a pesticide inconsistent with its label, and 22 M.R.S. § 1471-D(8)(F) provides for court action to seek suspension or revocation of an applicator's license and/or certification for use or supervision of such use of a pesticide inconsistent with its label.

64) That the Company employee's use of Barricade 4FL and Escalade 2 was inconsistent with the product labeling.

65) That the circumstances described in paragraphs fifty-two through sixty-four constitute a violation of 7 U.S.C. § 136j(a)(2)(G) and 7 M.R.S. § 606(2)(B) and would permit court action to seek suspension or revocation of an applicator's license and/or certification pursuant to 22 M.R.S. § 1471-D(8)(F).

66) That CMR 01-026, Chapter 22, Section 2 (D) states that "The applicator shall cease spray activities at once upon finding evidence showing the likely presence of unprotected persons in the target area or in such proximity as to result in unconsented exposure to pesticides."

67) That the Company applicator described in paragraph fifty-two did not cease spray activities when John Stewart came into such proximity as to result in unconsented exposure.

68) That the circumstances described in paragraphs sixty-six and sixty-seven constitute a violation of CMR 01-026, Chapter 22, Section 2 (D).

69) That on June 3, 2021, Reginald Poulin, a Company employee, applied Trupower 3 herbicide, EPA Reg. No. 228-551 to the turf areas of the commonly owned property at Scottow Hill Woods, 1 Plantation Drive in Scarborough, Maine.

70) That the Board received a complaint from Deven Morrill relating to the application described in paragraph sixty-nine.

71) That Morrill alleged that the Company applicator was not wearing appropriate protective equipment.

72) That Morrill alleged that the windspeeds were high during the application described in paragraph sixty-nine.

73) That the Trupower 3 label contains the following statements: "All mixers, loaders, applicators and other handlers must wear:
   a) Long-sleeved shirt and long pants
   b) Shoes plus socks, and
   c) Protective eyewear (Goggles or face shield or shielded safety glasses)
   d) Chemical-resistant gloves (except for applicators using groundboom equipment).
   e) Chemical-resistant apron when mixing or loading, cleaning up spills or equipment, or otherwise exposed to the concentrate.
   f) Do not apply at wind speeds greater than 10 mph."

74) That the Company applicator was not wearing a long sleeve shirt or chemical resistant gloves at the time of the application described in paragraph sixty-nine.

75) That the Company applicator recorded a windspeed 11.5 miles per hour on the applicator record.

76) That 7 U.S.C. § 136j(a)(2)(G) and 7 M.R.S. § 606(2)(B) prohibit the use or supervision of such use of a pesticide inconsistent with its label, and 22 M.R.S. § 1471-D(8)(F) provides for court action to seek suspension or revocation of an applicator's license and/or certification for use or supervision of such use of a pesticide inconsistent with its label.

77) That the Company employee's use of Trupower 3 was inconsistent with the product labeling.

78) That the circumstances described in paragraphs sixty-nine through seventy-seven constitute a violation of 7 U.S.C. § 136j(a)(2)(G) and 7 M.R.S. § 606(2)(B) and would permit court action to seek suspension or revocation of an applicator's license and/or certification pursuant to 22 M.R.S. § 1471-D(8)(F).

79) That the Company expressly waives:

A. Notice of or opportunity for hearing;

B. Any and all further procedural steps before the Board; and

C. The making of any further findings of fact before the Board.

80) That this Agreement shall not become effective unless and until the Board accepts it.

81) That in consideration for the release by the Board and the OAG of the causes of action which the Board and the OAG have against the Company resulting from the violations referred to in paragraphs eleven, fourteen, twenty-three, thirty-two, thirty-eight, forty-four, fifty, sixty-five, sixty-eight and seventy-eight, the Company agrees to pay a penalty to the State of Maine in the sum of $25,000.00 by November 27, 2023. (Please make checks payable to Treasurer, State of Maine).

82) The Board and OAG grant a release of their causes of actions against the Company for the specific violations cited in the immediately preceding paragraph (Paragraph 81) on the express condition that all actions listed in Paragraph 81 of this Agreement are completed in accordance with the express terms and conditions of this Agreement and to the satisfaction of the Board and the OAG. The release shall not become effective until the Company has completed its obligations pursuant to Paragraph 81.

83) Any non-compliance with any term or condition of this Agreement, as determined by the Board and OAG in their sole discretion, voids the release set forth in Paragraph 82 of this Agreement and may lead to an enforcement, suspension/revocation, equitable, and/or civil violation action pursuant to Titles 7 and 22 of the Maine Revised Statutes and/or M.R. Civ. P. 80H.

84) Nothing in this Agreement shall be construed to be a relinquishment of the Board's or OAG's powers under Titles 7 and 22 of the Maine Revised Statutes against the Company for any other violations other than those expressly listed in this Agreement.

85) This instrument contains the entire agreement between the parties, and no statements, promises, or inducements made by either party or agent of either party that are not contained in this written contract shall be valid or binding; this contract may not be enlarged, modified, or altered except in writing signed by the parties and indorsed on this Agreement.

86) The provisions of this Agreement shall apply to, and be binding on, the parties and their officers, agents, servants, employees, successors, and assigns, and upon those persons in active concert or participation with them who receive actual notice of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement of seven pages.

TRUGREEN LAWNCARE

By: Carol J Pearson Date: November 21, 2023

Type or Print Name: Carol J. Pearson, Vice President

BOARD OF PESTICIDES CONTROL

By: _____ Date: _____
John Pietroski, Acting Director

APPROVED:
By: _____ Date: _____
Carey Gustanski, Assistant Attorney General

Proposed Administrative Consent Agreement
Background Summary

Subject: Insight Pest Solutions Maine, LLC
60 Gray Road, Building 3, Unit 13
Falmouth, ME 04105

Date of Incident(s): April 2022 – December 2022

Background Narrative: On June 17, 2022, the Board received an anonymous complaint alleging that the Company employed nine different unlicensed applicators who routinely performed commercial pesticide applications in Maine during 2022.

On June 22, 2022, following two pesticide use inspections conducted with Company, a Board Representative called Brian Brown, an employee of the Company with supervisory responsibilities, to ensure that Company management was aware that violations of Maine's pesticide licensing laws were occurring.

On August 22, 2022, the Board mailed a Notice of Warning to the Company, including the owner and Chief Executive Officer, Thomas Flaherty, stating that Board had information demonstrating that the Company was employing unlicensed applicators to make commercial pesticide applications in the State of Maine. The Notice of Warning further stated that Maine law requires all commercial applicators to be properly licensed before making commercial applications.

On August 30, 2022, a Board representative conducted an on-site pesticide use inspection with a Company applicator who was not properly licensed in conformance with Maine pesticide law.

On September 16, 2022, a Board representative emailed and mailed an "Urgent Notice of Ongoing Violations of Maine Pesticide Law." The letter reaffirmed that multiple Company applicators continued to make unlicensed pesticide applications in violation of Maine pesticide law. It went to list the potential penalties for a first and any subsequent violations.

On May 15, 2023, pursuant to the Board's statutory and regulatory authority, a Board representative emailed and mailed a letter to Brian Brown and Thomas Flaherty requesting copies of all pesticide application records for applications conducted in the State of Maine during 2022 and 2023. The Company subsequently provided copies of said records to the Board electronically.

A review of the records that the Company provided demonstrated that—during 2022—there were 95 commercial pesticide applications conducted in Maine by Company applicators who were neither certified nor licensed and 905 commercial pesticide applications conducted in Maine by Company applicators who were certified but not licensed with the Company.

Summary of Violations: CMR 01-026, Chapter 31, Section 1 (A) prohibits commercial application of pesticides by applicators who are not properly licensed.

The Company committed 1,000 violations of CMR 01-026, Chapter 31, Section 1 (A), of which 999 are considered subsequent violations pursuant to 7 M.R.S. § 616-A(2)(A)(2). That of the 1,000 violations, at least 700 occurred after a Board representative spoke on phone with the Company on June 22, 2022, to inform the Company about the unlawful applications.

Rationale for Settlement: Insight Pest Solutions Maine LLC is currently operating in compliance with Maine pesticide laws, rules and regulations concerning certification and licensure. The Company has installed a certified/licensed commercial master applicator at the Falmouth branch to oversee the day-to-day operations of the Company. Agreeing to the terms of this proposed consent agreement will keep Insight Pest Solutions Maine LLC liable for these committed violations for the next five years.

Attachments: Proposed Consent Agreement

NOV 29 2023

CK Amt: $3412.00
CK # 4313005860
Date: 11-27-23

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL

In the Matter of:	)	ADMINISTRATIVE CONSENT
Insight Pest Solutions Maine LLC	)	AGREEMENT
60 Gray Road, Building 3, Unit 13	)	AND
Falmouth, Maine 04105	)	FINDINGS OF FACT

This Agreement by and between Insight Pest Solutions Maine LLC (hereinafter referred to as the "Company") and the State of Maine Board of Pesticides Control (hereinafter referred to as the "Board"), as approved by the Office of the Attorney General ("OAG"), is entered into pursuant to 22 M.R.S. § 1471-M(2)(D) and in accordance with the Enforcement Protocol amended by the Board on December 13, 2013.

The parties to this Agreement agree as follows:

1) That the Company provides structural pest control and pesticide application services across many parts of the United States including Maine.

2) That on June 17, 2022, the Board received an anonymous complaint alleging that the Company employed nine different unlicensed applicators who routinely performed commercial pesticide applications in Maine during 2022. The caller provided a complete list of names for the nine applicators and numerous details about the pesticide applications and the operation of the Company during the spring of 2022. The caller alleged that over 300 applications had been made by unlicensed applicators by the date of complaint.

3) That, in response to the allegations, Board representatives conducted two separate on-site pesticide application inspections (pesticide use inspections) with two different Company applicators on June 22, 2022. At the time of the inspections, one of applicators was neither certified nor licensed, while the other applicator was certified but not licensed with the Company.

4) That during the course of the inspections described in paragraph three, the Board representatives informed the Company applicators that they were not properly licensed in conformance with Maine pesticide law to conduct commercial structural pesticide applications in the State of Maine.

5) That on June 22, 2022, following the two pesticide use inspections described in paragraph three, a Board Representative called Brian Brown, an employee of the Company with supervisory responsibilities, to ensure that Company management was aware that violations of Maine's pesticide licensing laws were occurring.

6) That on July 14, 2022, two Board representatives agreed to meet with one former employee of the Company and one current employee of the Company. These two individuals stated that there were a number of unlicensed Company applicators routinely conducting commercial pesticide applications in the State of Maine. They further stated that the Company was fully aware that unlicensed commercial applications were occurring in violation of Maine pesticide law. Both individuals provided written statements to the Board.

7) That on August 22, 2022, the Board mailed a Notice of Warning to the Company, including the owner and Chief Executive Officer, Thomas Flaherty, stating that Board had information demonstrating that the Company was employing unlicensed applicators to make commercial pesticide applications in the State of Maine. The Notice of Warning further stated that Maine law requires all commercial applicators to be properly licensed before making commercial applications.

8) That on August 30, 2022, a Board representative conducted an on-site pesticide use inspection with a Company applicator who was not properly licensed in conformance with Maine pesticide law. The Company applicator was informed about the Maine pesticide applicator licensing requirements and about the ongoing violations of Maine pesticide law.

9) That on September 16, 2022, a Board representative emailed and mailed an "Urgent Notice of Ongoing Violations of Maine Pesticide Law." The letter was emailed and mailed to Brian Brown and Thomas Flaherty. Brian Brown is a Company employee with supervisory responsibilities and Thomas Flaherty is the owner and Chief Executive Officer. The letter reaffirmed that multiple Company applicators continued to make unlicensed pesticide applications in violation of Maine pesticide law. It went to list the potential penalties for a first and any subsequent violations.

10) That the Company never contacted the Board as a result of the Board's repeated efforts to ensure that the Company was fully apprised about the repeated and ongoing violations on Maine's pesticide applicator licensing requirements.

11) That on December 13, 2022, two Board representatives visited the Company's Maine base of operations in Falmouth, Maine, in an effort to obtain copies of Company pesticide application records for the 2022 season. The two Company employees present at the time of inspection stated they were unable to access past records and suggested that the Board representatives return the following week when Brian Brown would be present.

12) That on January 17, 2023, a Board representative returned to Company's Maine base of operations in a second attempt to obtain copies of the Company's 2022 Maine pesticide application records. The Board representative met with Kenneth Hidenfelter, who was licensed as a Master Commercial Applicator in the State of Maine, and Thomas Flaherty, Company owner and CEO. Hidenfelter and Flaherty stated they were unable to produce any pesticide application records at that time.

13) That on May 15, 2023, pursuant to the Board's statutory and regulatory authority, a Board representative emailed and mailed a letter to Brian Brown and Thomas Flaherty requesting copies of all pesticide application records for applications conducted in the State of Maine during 2022 and 2023.

14) That the Company subsequently provided copies of said records to the Board electronically.

15) That a review of the records that the Company provided demonstrated that—during 2022—there were 95 commercial pesticide applications conducted in Maine by Company applicators who were neither certified nor licensed.

16) That a review of the records that the Company provided demonstrated that—during 2022—there were 905 commercial pesticide applications conducted in Maine by Company applicators who were certified but not licensed with the Company.

17) That CMR 01-026, Chapter 31, Section 1 (A) prohibits commercial application of pesticides by applicators who are not properly licensed.

18) That the actions described in paragraphs fifteen and sixteen constitute 1,000 violations of CMR 01-026, Chapter 31, Section 1 (A), of which 999 are considered subsequent violations pursuant to 7 M.R.S. § 616-A(2)(A)(2).

19) That of the 1,000 violations described in paragraphs fifteen and sixteen, at least 700 occurred after a Board representative spoke on phone with the Company on June 22, 2022, to inform the Company about the unlawful applications.

20) That the actions described in paragraph eighteen constitute at least 700 knowing and willful violations.

21) That the Company expressly waives:

A. Notice of or opportunity for hearing;

B. Any and all further procedural steps before the Board; and

C. The making of any further findings of fact before the Board.

22) That this Agreement shall not become effective unless and until the Board accepts it.

23) That in consideration for the release by the Board and the OAG of the causes of action which the Board and the OAG have against the Company resulting from the violations referred to in paragraphs fifteen and sixteen, the Company agrees to pay a penalty to the State of Maine in the sum of $81,880.00, with $40,940.00 of the penalty suspended provided that the Company does not commit any violations of Federal or State of Maine pesticide law over a five-year period beginning on the effective date of this Agreement. The unsuspended portion of the penalty, $40,940.00, shall be paid in monthly installments of $3,412.00. Payments are due on the first of the month starting December 1, 2023, through October 1, 2024. The final payment of $3,408.00 will be due on November 1, 2024. (Please make checks payable to Treasurer, State of Maine.)

24) That in the event the Company fails to make a payment as described in Paragraph 23 of this Agreement, the remaining unsuspended portions and suspended portions of the penalty as described in Paragraph 23 of this Agreement become immediately due and payable.

25) That in the event the Company commits any violations of Federal or State of Maine pesticide law—as determined by Board staff in the normal course of compliance investigations—over the five-year period beginning on the effective date of this Agreement, the suspended portion of the penalty becomes immediately due and payable.

26) The Board and OAG grant a release of their causes of actions against the Company for the specific violations cited in Paragraph 23 on the express condition that all actions listed in Paragraph 23 of this Agreement are completed in accordance with the express terms and conditions of this Agreement and to the satisfaction of the Board and the OAG. The release shall not become effective until the Company has completed its payment of the unsuspended portion of the penalty pursuant to Paragraph 23 and this Agreement is accepted by the Board.

27) Any non-compliance with any term or condition of this Agreement, as determined by the Board and OAG in their sole discretion, voids the release set forth in Paragraph 23 of this Agreement and may lead to an enforcement, suspension/revocation, equitable, and/or civil violation action pursuant to Titles 7 and 22 of the Maine Revised Statutes and/or M.R. Civ. P. 80H.

28) Nothing in this Agreement shall be construed to be a relinquishment of the Board's or OAG's powers under Titles 7 and 22 of the Maine Revised Statutes against the Company for any other violations other than those expressly listed in this Agreement.

29) This instrument contains the entire agreement between the parties, and no statements, promises, or inducements made by either party or agent of either party that are not contained in this written contract shall be valid or binding; this contract may not be enlarged, modified, or altered except in writing signed by the parties and indorsed on this Agreement.

30) The provisions of this Agreement shall apply to, and be binding on, the parties and their officers, agents, servants, employees, successors, and assigns, and upon those persons in active concert or participation with them who receive actual notice of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement of four pages.

INSIGHT PEST SOLUTIONS, LLC

By: _____ Date: 11/29/23

Type or Print Name: Thomas J Flaherty IV

BOARD OF PESTICIDES CONTROL

By: _____ Date: _____
John Pietroski, Acting Director

APPROVED:
By: _____ Date: _____
Carey Gustanski, Assistant Attorney General

Proposed Administrative Consent Agreement
Background Summary

Subject: Prime Cut Landscaping
201 US Route 1, PMB 223
Scarborough, ME 04074

Date of Incident(s): October 29, 2021

Background Narrative: On October 28, 2021, the Board received a call from a homeowner in Scarborough, Maine, who had a severe grub problem in the turf areas surrounding their home. The Complainant stated that their existing lawncare contractor had failed to control the grub infestation, so she had contracted with the Company in hopes of addressing the problem. Their complaint centered around conflicts and overlap between the two companies working on her property.

That during the course of the inspection, a Board inspector determined that Company employee Michael Fowler made an application of Dylox 6.2 Granular Insecticide (State Restricted Use), EPA Reg. No. 5481-641-432, to the Complainant's lawn for control of grubs on October 29, 2021. The Board inspector also determined that Company employee Michael Fowler had passed the core and biting fly exams with the Board, but was not yet licensed with the Company, and had not taken the turf exam, which is required for commercial pesticide applications made to control turf pests.

Summary of Violations: CMR 01-026, Chapter 31, Section 1 (A) prohibits commercial application of pesticides by applicators who are not properly licensed.

CMR 01-026, Chapter 31, Section 2 (A) requires all commercial applicators to carry the proper category for the type of work performed, i.e. Category 3B, Turf.

Rationale for Settlement: Prime Cut Landscaping is currently operating in compliance with Maine pesticide laws, rules and regulations concerning certification and licensure. The Company no longer employs the applicator involved in this incident. The company accepts responsibility for these violations and have made appropriate corrective actions.

Attachments: Proposed Consent Agreement

JAN 19 2024

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL

Amt: 1500 —
Ck# 3951
Date: 1-3-24

In the Matter of:	)	ADMINISTRATIVE CONSENT
Prime Cut Landscaping	)	AGREEMENT
201 US Route 1, PMB 223	)	AND
Scarborough, Maine 04074	)	FINDINGS OF FACT

This Agreement by and between Prime Cut Landscaping (hereinafter referred to as the "Board") and the State of Maine Board of Pesticides Control (hereinafter referred to as the "Board"), as approved by the Office of the Attorney General ("OAG"), is entered into pursuant to 22 M.R.S. § 1471M(2)(D) and in accordance with the Enforcement Protocol amended by the Board on December 13, 2013.

The parties to this Agreement agree as follows:

1. That on October 28, 2021, the Board received a call from a homeowner in Scarborough, Maine, who had a severe grub problem in the turf areas surrounding their home.

2. That the Complainant stated that their existing lawncare contractor had failed to control the grub infestation, so she had contracted with the Company in hopes of addressing the problem. Their complaint centered around conflicts and overlap between the two companies working on her property.

3. That on November 4, 2021, a Board inspector conducted a follow-up inspection with Company personnel at the headquarters in Buxton, Maine.

4. That during the course of the inspection described in Paragraph 3, the Board inspector determined that Company employee Michael Fowler made an application of Dylox 6.2 Granular Insecticide (State Restricted Use), EPA Reg. No. 5481-641-432, to the Complainant's lawn for control of grubs on October 29, 2021.

5. That during the course of the inspection described Paragraph 3, the Board inspector determined that Company employee Michael Fowler had passed the core and biting fly exams with the Board, but was not yet licensed with the Company, and had not taken the turf exam, which is required for commercial pesticide applications made to control turf pests.

6. That the application described in Paragraph 4 is a commercial pesticide application pursuant to 22 M.R.S § 1471-C(5).

7. That 01-026 C.M.R. ch. 31, § 1 requires that anyone performing a commercial pesticide application to either be licensed by the Board or supervised by an on-site licensed applicator at the time of the application.

8. That Michael Fowler was not licensed by the Board or supervised by an on-site licensed applicator at the time of application described in Paragraph 4.

9. That circumstances described in Paragraphs 1 through 8 constitute a violation of 01-026 C.M.R. ch. 31, § 1.

10. That while Michael Fowler was technically certified and eligible for licensing with the Board at the time of the application described in Paragraph 4, he was not eligible to be licensed to make commercial applications to turf as required under 01-026 C.M.R. ch. 31, § 2.

11. That the Company expressly waives:

A. Notice of or opportunity for hearing;

B. Any and all further procedural steps before the Board; and

C. The making of any further findings of fact before the Board.

12. That this Agreement shall not become effective unless and until the Board accepts it.

13. That in consideration for the release by the Board of the causes of action which the Board has against the Company resulting from the violations referred to in Paragraph 9, the Company agrees to pay a penalty to the State of Maine in the sum of $1,500.00, due by January 25, 2024. (Please make checks payable to Treasurer, State of Maine.)

14. The Board and OAG grant a release of their causes of actions against the Company for the specific violations cited in the immediately preceding paragraph (Paragraph 13) on the express condition that all actions listed in Paragraph 13 of this Agreement are completed in accordance with the express terms and conditions of this Agreement and to the satisfaction of the Board and the OAG. The release shall not become effective until the Company has completed its obligations pursuant to Paragraph 13.

15. Any non-compliance with any term or condition of this Agreement, as determined by the Board and OAG in their sole discretion, voids the release set forth in Paragraph 13 of this Agreement and may lead to an enforcement, suspension/revocation, equitable, and/or civil violation action pursuant to Titles 7 and 22 of the Maine Revised Statutes.

16. Nothing in this Agreement shall be construed to be a relinquishment of the Board's or OAG's powers under Titles 7 and 22 of the Maine Revised Statutes against the Company for any other violations other than those expressly listed in this Agreement.

17. This instrument contains the entire agreement between the parties, and no statements, promises, or inducements made by either party or agent of either party that are not contained in this written contract shall be valid or binding; this contract may not be enlarged, modified, or altered except in writing signed by the parties and indorsed on this Agreement.

18. The provisions of this Agreement shall apply to, and be binding on, the parties and their officers, agents, servants, employees, successors, and assigns, and upon those persons in active concert or participation with them who receive actual notice of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement of three pages.

PRIME CUT LANDSCAPING

By: _____ Date: 1/16/24

Type or Print Name: Matthew P Corbeau

BOARD OF PESTICIDES CONTROL
By: _____ Date: _____
John Pietroski, Acting Director

APPROVED:
By: _____ Date: _____
Carey Gustanski, Assistant Attorney General

EPA Takes Action to Protect People from PFAS that Leach from Plastic Containers into Pesticides and Other Products

December 1, 2023

Contact Information
EPA Press Office (press@epa.gov)

WASHINGTON – Today, the U.S. Environmental Protection Agency (EPA) issued orders <https://epa.gov/reviewing-new-chemicals-under-toxic-substances-control-act-tsca/long-chain-pfas-significant-new-use> to Inhance Technologies LLC (Inhance) directing it not to produce per- and polyfluoroalkyl substances (PFAS), chemicals that are created in the production of its fluorinated high-density polyethylene (HDPE) plastic containers. This action, taken under the authority of the Toxic Substances Control Act (TSCA), will help protect the public from exposure to dangerous PFAS chemicals in containers used for a variety of household consumer, pesticide, fuel, automotive and other industrial products.

"PFAS should not be in the plastic containers people use every day, period," said **Assistant Administrator for the Office of Chemical Safety and Pollution Prevention Michal Freedhoff**. "EPA's action today is one more way we are furthering the Biden-Harris Administration's Strategic Roadmap to combat PFAS pollution."

Long-chain PFAS chemicals build up in our bodies and the environment over time. Even small amounts can significantly contribute to people's long-term exposure and health risk. People may be exposed to these PFAS through their drinking water, fish they eat from PFAS-contaminated waters, and through groundwater that has been contaminated by PFAS. Centers for Disease Control and other data show that nearly 100% of people tested have at least one of seven of the types of PFAS that Inhance manufactures in their blood already. Even without further exposure, it would take more

than a decade for PFOA from a single exposure, one of the types of PFAS manufactured by Inhance, to leave people's bodies.

In September 2020, EPA was made aware of PFAS contamination in a mosquitocide by an environmental group. EPA scientists then determined that the PFAS found in the mosquitocide came from the fluorinated HDPE plastic container used to store the product, which was manufactured by Inhance. EPA determined that when Inhance fluorinates containers, it manufactures many types of PFAS, including perfluorooctanoic acid (PFOA). EPA announced <https://epa.gov/newsreleases/epa-releases-testing-data-showing-pfas-contamination-fluorinated-containers> in March 2021 that these PFAS can migrate into liquid products like pesticides and can continue migrating over time.[1]

In March 2022, EPA issued a Notice of Violation to Inhance for its failure to notify the Agency before it began manufacturing PFAS. Inhance had five years from the proposal of EPA's long-chain PFAS significant new use rule in 2015 to when it was finalized in 2020 to inform EPA that it was manufacturing long-chain PFAS as part of its process. Following this notice, EPA's Office of Enforcement and Compliance Assurance (OECA) engaged with Inhance to determine if Inhance had ceased manufacture of the regulated PFAS. Upon determining that Inhance was still manufacturing the regulated PFAS and intended to continue to engage in its fluorination process, OECA referred enforcement to the Department of Justice (DOJ) and DOJ filed suit on behalf of EPA against Inhance in December 2022. Only after these actions did Inhance submit significant new use notices (SNUNs) for the nine PFAS it manufactures to EPA for review on Dec. 30, 2022.

Inhance has historically fluorinated up to 200 million containers annually, which is more containers than there are households in America. The release of 2.2 Kg of these 9 PFAS could cause significant contamination of drinking water supplies leading to risks of adverse health effects in millions of people. For example, EPA recently proposed a Maximum Contaminant Level of 4 parts per trillion for PFOA in drinking water <https://epa.gov/newsreleases/biden-harris-administration-proposes-first-ever-national-standard-protect-communities>. Additionally, EPA has also proposed that there is no level of PFOA in drinking water that is without risk of adverse health effects. If 2.2 Kg of PFOA were released to drinking water sources, it would contaminate more than 145 billion gallons of water to levels that would exceed this proposed enforceable level. This corresponds to almost three years' worth of water use in the City of New Orleans.

Upon review of the SNUNs and consistent with the Framework for Addressing New

PFAS and New Uses of PFAS <https://epa.gov/reviewing-new-chemicals-under-toxic-substances-control-act-tsca/framework-addressing-new-pfas-and>, EPA has determined that three of the PFAS (PFOA, perfluorononanoic acid (PFNA) and perfluorodecanoic acid (PFDA)) are highly toxic and present unreasonable risks that cannot be prevented other than through prohibition of manufacture. Therefore, under TSCA section 5(f), EPA is prohibiting the continued manufacture of PFOA, PFNA and PFDA that are produced from the fluorination of HDPE. EPA also determined that the remaining six of the nine PFAS chemicals manufactured by Inhance may present an unreasonable risk of injury to health or the environment and, under TSCA section 5(e), is requiring the company to cease manufacture of these chemicals, and to perform additional testing if it intends to restart production. However, Inhance's current fluorination process for plastics produces all nine of the PFAS chemicals subject to these orders simultaneously, including PFOA, PFNA, and PFDA. Thus, the production of the other six PFAS could not restart so long as the fluorination process continues to produce PFOA, PFNA and PFDA. These orders become effective February 28, 2024.

Alternatives to this fluorination process exist that will allow for many sectors to continue to provide products with the necessary protective packaging. Additionally, EPA understands that Inhance is working on changes to its process with a stated goal of eliminating all PFAS production.

As always, EPA will review options for ensuring compliance with the orders, consistent with its enforcement policies, either through further litigation or an appropriate settlement. EPA also notes that TSCA provides waivers for national defense purposes.