NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Materials Management, Bureau of Pesticides Management
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February 22, 2019

VIA E-MAIL (Company # 67690)

Dr. Laurent Mezin
SePro Corporation
11550 N. Meridian Street, Suite 600
Carmel, Indiana 46032-4565

Re: **Registration of Special Local Need (SLN) Labeling for ProcellaCOR EC (EPA Reg. No. 67690-80) for Use on Aquatic Weeds. Contains the Active Ingredient: Florpyrauxifen-benzyl (chemical code: 030093).**

Dear Dr. Mezin:

The New York State Department of Environmental Conservation (Department) has reviewed the application and data package for the above-referenced product, received on July 30, 2018, along with additional data received in response to the Department's incompleteness decision letter dated September 25, 2018. The above referenced product contains the active ingredient florpyrauxifen-benzyl which has not previously been registered in New York State and is considered a new active ingredient requiring full technical review to ensure protection of human health and state environmental resources, prior to registration and use in New York State.

The active ingredient florpyrauxifen-benzyl is contained in the product ProcellaCOR EC at 2.7% and is a selective systemic herbicide for management of freshwater aquatic vegetation in slow-moving/quiescent waters with little or no continuous outflow, or to slow-moving/quiescent areas of rivers. ProcellaCOR EC is absorbed by aquatic vascular plants through emergent or floating leaves and from water surrounding submersed plant shoots and leaves. The product is best used to control plants with high uptake rates in spot or partial treatment designs in which exposure times are relatively short. ProcellaCOR EC has been determined to be efficacious in controlling invasive plants including Eurasian water milfoil while not impacting many native species.

The net contents and application information are expressed as Prescription Dose Unit or PDU. The conversion for PDU is given on the front panel of the label as 1 PDU is equal to 3.2 fluid ounces of product. However, the application directions are based on 1 PDU being equal to 3.17 fluid ounces. The registrant has been informed that at the next printing of the label, the net contents must be expressed in conventional American units of fluid ounces, pints, quarts, and gallons as required by 40 CFR 156.10(d)(2).

ProcellaCOR EC is labeled for use on selected vascular aquatic plants either as a foliar spray on emergent weeds or in-water application to submersed, emersed, or floating weeds. The maximum application rate for foliar spraying of plants either standing or floating in water, is 10 PDU (31.7 fl. oz.) per acre per treatment or 20 PDU (63.4 fl. oz.) per acre annually. The maximum in-water application rate to submersed, emersed, or floating weeds is 25 PDU (79.25 fl. oz.) per application with a limit of three applications allowed per year. Application of one PDU (3.17 fl. oz.) per acre-foot of water is approximately 1.91 ppb florpyrauxifen-benzyl and the maximum dose of 25 PDU (79.25 fl. oz.) is approximately 47.8 ppb of the active ingredient per acre-foot of treatment area.

ProcellaCOR EC was granted reduced risk status from the U.S. Environmental Protection Agency as the overall profile for ProcellaCOR EC, when compared with the registered alternatives for aquatic weed control, is more favorable as it pertains to human health. In addition, ProcellaCOR EC demonstrates an alternate mode of action from any other aquatic herbicide which when used in integrated pest management (IPM) strategies will limit weed resistance. The application rate is orders of magnitude less than many other aquatic herbicides and the maximum application rate of 25 PDU per acre-foot is less than the New York State Drinking Water Standard for non-specific organic contaminants maximum allowed concentration of 50 ppb.

The product application was determined to be complete on November 6, 2018 and fully reviewed regarding human health as well as ecosystem health. There were no objections to the registration of this product in New York State (detailed reviews are provided in the Appendix). However, the federally approved ProcellaCOR EC labeling that has been provided to the Department is not as restrictive as the state requirements to permit application in aquatic sites. Therefore, the Department will register these requirements as provided on Special Local Need (SLN) labeling which must be in the possession of the applicator when using ProcellaCOR EC. The following stated concerns will be addressed on the SLN labeling and the ProcellaCOR EC product labeling will only be used in conjunction with this SLN labeling:

- The Department's Bureau of Ecosystem Health (BEH) has expressed concerns regarding the potential of this product to impact ecosystem health if applied aerially over large areas. The BEH does not support the aerial application of this product as an appropriate method to control target weeds. The BEH recommends that requests to apply ProcellaCOR EC by aerial application be supported by adequate justification of significant localized need.

- The ProcellaCOR EC container labeling that has been provided to the Department has certain Use Restrictions that the Department finds vague and potentially unenforceable, and in need of clarification and qualification. Therefore, for the purposes of watering livestock and irrigating field crops, greenhouse, nursery, or hydroponically grown crops, treated water must be analyzed and determined to be less than 1 ppb active ingredient or determined by a Department approved model, to have degraded/diluted to below 1 ppb.

- The container net contents and Prescription Dose Unit (PDU) conversion are clarified in appropriate fluid ounces.

- The application methods for in-water applications are clarified to include the emersed weed species that are listed in Table 3 of the container label.

The Department has **registered the SLN labeling (SLN NY-190001)** for ProcellaCOR EC (EPA Reg. No. 67690-80) as a restricted use product as required by 6NYCRR Part 326.2(h) for any pesticide labeled for direct application to or in surface waters. Enclosed for your records are copies of the Certificate of Pesticide Registration and stamped "Accepted for Registration" SLN labeling for this product. The container labeling has been stamped "Accepted for Registration Only in Conjunction with New York State Specific Supplemental Labeling." Please note the "yes" under the "restriction" column on the enclosed Certificate of Pesticide Registration and the "Classified for Restricted Use in New York State" stamp on the attached SLN and product labeling. As such, this product is restricted in its purchase, distribution, sale, use and possession in New York State. Furthermore, this product may only be purchased and used by a certified applicator in New York State.

The New York State Department of Environmental Conservation Regulations 6NYCRR Part 326.3(a) state: "It shall be unlawful for any person to distribute, sell, offer for sale, purchase for the purpose of resale, or possess for the purpose of resale, any restricted pesticide unless said person shall have applied for, and been issued a commercial permit." Should you require information to obtain a commercial permit, please contact the Pesticide Reporting and Certification Section, at (518) 402-8748.

The Pesticide Reporting Law within Environmental Conservation Law Article 33 Title 12 requires all certified commercial pesticide applicators to report information annually to the Department regarding each pesticide application they make. **Commercial pesticide retailers are required to report all sales of restricted pesticide products and sales of general use pesticide products to private applicators for use in agricultural crop production.** If no sales are made within New York State, a report must be filed with the Department indicating this is the case.

If you need information relating to the Pesticide Reporting Law, or annual report forms, please visit the Department's website at: http://www.dec.ny.gov/chemical/27506.html, or call (518) 402-8748.

Please note that a proposal by SePro Corporation or any other registrant, to register a product that contains florpyrauxifen-benzyl, and whose labeled uses are likely to increase the potential for significant impact on humans, non-target organisms, or the environment, would constitute a major change in labeling. Such an application must be accompanied by a new application fee and meet the requirements listed on our website. This information, as well as forms, can be accessed at: http://www.dec.ny.gov/chemical/8528.html.

Please contact the Pesticide Product Registration Section at (518) 402-8768, if you have any questions regarding this letter.

Sincerely,

/s/

Scott Menrath, P.E.
Director
Bureau of Pesticides Management

Enclosures

APPENDIX

HUMAN HEALTH ASSESSMENT

The New York State Department of Health (DOH) reviewed the application and supporting data submitted by SePro Corporation to register the pesticide product ProcellaCOR EC (EPA Reg. No. 67690-80) in New York State. This product contains the new active ingredient florpyrauxifen-benzyl (benzyl-4-amino-3-chloro-6-(4-chloro-2-fluoro-3-methoxyphenyl)-5-fluoro-pyridine-2-carboxylate) and is labeled as a selective, systemic herbicide for the management of freshwater aquatic vegetation in slow-moving, quiescent water with minimal outflow.

Acute Toxicity

Neither florpyrauxifen-benzyl nor ProcellaCOR EC was very toxic in acute oral, dermal or inhalation exposure studies in laboratory animals. The active ingredient and formulated product were moderate eye irritants, but not skin irritants (tested on rabbits). In addition, florpyrauxifen-benzyl was a weak skin sensitizer, but ProcellaCOR EC was not (tested on guinea pigs).

Subchronic/Chronic/Developmental/Reproductive Toxicity

Florpyrauxifen-benzyl did not cause any toxic effects in neurotoxicity, immunotoxicity, subchronic, chronic, or developmental/reproductive feeding studies in laboratory animals (rats, mice and dogs) at the highest doses tested. In addition, florpyrauxifen-benzyl did not cause any carcinogenic effects in rats or mice and was negative in a number of genotoxicity studies. Based on these results, the U.S. Environmental Protection Agency (U.S. EPA) classified florpyrauxifen-benzyl as “not likely to be carcinogenic to humans.” Additionally, the U.S. EPA did not conduct dietary, occupational, or residential post-application quantitative human health risk assessments since toxicity endpoints for florpyrauxifen-benzyl were not determined from animal studies.

Drinking Water/Groundwater Standards

There are no chemical-specific federal or New York State drinking water/groundwater standards for florpyrauxifen-benzyl. Based on its chemical structure, this chemical falls under the 50 micrograms per liter (µg/L) New York State drinking water standard for “unspecified organic contaminants” (10 NYCRR Part 5, Public Water Systems).

Summary

The available information on florpyrauxifen-benzyl and the formulated product ProcellaCOR EC indicates that they are not acutely toxic and the active ingredient is not carcinogenic, genotoxic, neurotoxic, or teratogenic. Due to a complete lack of toxic

effects for florpyrauxifen-benzyl, the U.S. EPA did not conduct dietary, occupational, or post-application residential risk assessments for the labeled use of ProcellaCOR EC. Although the formulated product was a moderate eye irritant, the protective eyewear required on the product label for handlers of ProcellaCOR EC should mitigate any potential eye irritation from its use.

NYS DOH Recommendation

The risks to human health from the use of ProcellaCOR EC in slow-moving, quiescent water bodies to control undesirable or invasive freshwater aquatic vegetation appears to be minimal. Florpyrauxifen-benzyl is a systemic herbicide with a half-life range of < 1 day to 6 days, depending on the route of degradation. The major degradation products have longer half-lives than the parent, however, they are expected to have similar or lower toxicity profiles than florpyrauxifen-benzyl. The ProcellaCOR EC label contains restrictions on the use of treated water for irrigation purposes and watering livestock, due to the herbicidal activity of the product, but does not contain restrictions regarding the use of treated water for recreational purposes, including swimming and fishing. The label does not include set-back requirements for potable water intakes, however, the maximum labeled use rate does not exceed the 50 µg/L New York State generic drinking water standard for this chemical.

Given the limited risks to workers and the general public, we do not object to the registration of ProcellaCOR EC in New York State. However, we believe measures (both in terms of planning and laboratory quantification) to ensure that ProcellaCOR EC applications do not result in potable water concentrations of florpyrauxifen-benzyl in excess of 50 µg/L, as well as other site-specific considerations (e.g., public notification, provisions of alternate drinking water, etc.), should be addressed as part of the NYS DEC aquatic pesticide application permitting process.

ECOTOXICITY ASSESSMENT

Background

The Department's Division of Fish and Wildlife (DFW) Bureau of Ecosystem Health (BEH) reviewed the application and supporting data for the new active ingredient florpyrauxifen-benzyl as formulated in the aquatic herbicide ProcellaCOR EC (EPA reg. # 67690-80) developed by SePRO Corporation. The product is intended for management of freshwater aquatic vegetation with good selectivity for common invasive species in the U.S. including the Eurasian watermilfoil. The active ingredient (a.i.) florpyrauxifen-benzyl belongs to the Group 4 herbicides, which are synthetic auxins that interfere with normal plant cell growth. Florpyrauxifen-benzyl is a systemic herbicide and appears to be most active against cells in the meristem. Its selectivity against different plant species is likely dependent on the effectiveness of the translocation of the a.i. to the meristem after contact. The exact mechanism of its toxicity to target organisms is not clear but it has been shown to affect multiple molecular and cellular processes during cell division.

ProcellaCOR EC is a liquid formulation containing 2.7% florpyrauxifen-benzyl. The label allows foliar application on emergent aquatic plants and in-water treatment of submerged plants. Spot and partial treatment designs for in-water treatment are claimed to be effective. The maximum single application rate for in-water treatment is 25.0 prescription dose units (PDU, equivalent to 0.0052 lb. a.i.) per acre-foot with no more than three applications per year. Foliar applications to emergent vegetation are allowed at the maximum single application rate of 10 PDU per acre and the maximum annual application rate of 20 PDU. The minimum interval between two consecutive applications is 14 days. The label also contains instructions for ground and aerial applications, but these application methods do not appear to be consistent with the intended use of this product as a highly effective and selective systemic herbicide for aquatic vascular plant management. The chemical properties for florpyrauxifen-benzyl are listed in **Table 1** and recommended application patterns are listed in **Table 2**.

Toxicity information

Florpyrauxifen-benzyl mimics the action of auxin, a class of plant hormones that play a key role in plant growth and development. Auxins are involved in the regulation of plant cell division and elongation and their synthesis and actions are found to be most active in the apical (e.g., roots and shoots) meristem cells, and these cells are also the main targets of florpyrauxifen-benzyl. Exposure to this a.i. can stimulate the elongation and division of meristem cells, which lead to uncontrolled tissue growth and eventually death of the plant. The mode of action of this a.i. also determines effectiveness only when adequate dosage is present in the meristem, which is not usually directly exposed to the environmental media. A study conducted by the registrant showed that although rapid uptake of the a.i. through leaves occurred in all plants tested, significant inter-species differences were observed in the metabolism of the a.i. and its translocation to the meristem. It was concluded that these inter-species differences determine the relative sensitivity of a plant species to florpyrauxifen-benzyl. The registrant also demonstrated that certain invasive aquatic plant species were particularly sensitive to the a.i. while a significant number of the native species showed much higher tolerance. These findings make florpyrauxifen-benzyl a promising alternative to non-selective aquatic herbicides such as copper sulphate. Nonetheless, the information on this product's selectivity was almost exclusively empirical. Any non-target plant that has not been tested against this a.i. may still be susceptible. An effective method for reliably predicting sensitivity of untested native plants is not available. Elucidating the biochemical mechanism of transportation and metabolism of the a.i. in aquatic plants may help with the development of such a method.

Acute toxicity from florpyrauxifen-benzyl and its major metabolites to freshwater aquatic invertebrates and fish is low. The low solubility of the technical grade active ingredient (TGAI) in water, limited the concentrations tested in fresh water invertebrate and fish studies to below 60 µg a.i./L. Definitive LC/EC50s were not reported as they were above the highest concentrations tested for all species studied. Sublethal effects were observed in rainbow trout at concentrations of 12.3 µg a.i./L and above. All major

metabolites showed very low acute toxicity to aquatic organisms as well, with no definitive LC/EC50s reported. Chronic toxicity from TGAI and its metabolites were also low to freshwater aquatic invertebrates and fish. There were no statistically significant effects observed in studies with TGAI. Only one study in daphnia using the metabolite X11438848 reported statistically significant reproductive effects at 52.9 mg a.i./L.

Marine aquatic organisms did not appear to be significantly affected by acute exposure to florpyrauxifen-benzyl, with no definitive LC/EC50s identified in invertebrate and fish studies with TGAI or its major metabolites. However, concern for chronic toxicity in marine invertebrates could not be eliminated completely. Biologically significant adverse effects were observed in mysids at concentrations as low as 1.1 µg a.i./L and a NOAEC was not established. There were no indications of chronic toxicity effects in fish based on the available studies.

Information concerning toxicity to benthic invertebrates was limited. However, one 10-day sub-chronic study reported statistically significant non-lethal effects in freshwater midge at 4.32 µg a.i./L TGAI in pore-water, which was the lowest concentration tested. Chronic toxicity from two metabolites, X12300837 (hydroxy benzyl) and X11966341(hydroxy-acid), were also studied. No statistically significant effects were observed except delayed emergence in males exposed to 350 mg/kg of X11966341.

Data from studies submitted by the registrant showed no evidence of significant acute or chronic toxicity to avian and mammalian species from florpyrauxifen-benzyl. Toxicity to birds and mammals from major metabolites could not be evaluated as no relevant data were submitted.

Only acute toxicity data for honeybees were available and they appear to indicate a negligible effect from florpyrauxifen-benzyl TGAI when bees were exposed orally (LD50 > 105.4 µg a.i./bee) or by contact (LD50 > 100 µg a.i./bee). Information on chronic toxicity of the a.i. to honeybees was not available at the time of this review.

Environmental fate

Florpyrauxifen-benzyl has low solubility in water (0.015 µg/mL) and a relatively high K_{ow} (5.5 at pH=7). This suggests that the a.i., intended for use mostly in aquatic ecosystems, may have a high tendency to partition into the sediment or the biota. Nonetheless, it has been demonstrated that the a.i. degraded efficiently in aquatic and soil systems. Under laboratory conditions, aerobic and anaerobic aquatic metabolism half-lives are 5.1 days and 2.2 days, respectively. It is relatively more stable in soil, with aerobic and anaerobic metabolism half-lives at 21.5 days and 28.9 days, respectively. Field dissipation tests yielded similar results for aquatic systems, reporting a half-life of 1.4-2.3 days at the maximum single application rate of 50 ppb for in-water treatment. There is a likelihood that the a.i. may be more persistent in the sediment. However, deposition in the sediment may be manageable by using low application rates and spot treatment design. Three of the major metabolites are considered of ecological concern:

florpyrauxifen-acid (X11438848), florpyrauxifen-hydroxy benzyl (X12300837), and florpyrauxifen-hydroxy acid (X11966341). For the intended aquatic use, X11438848 appeared to be the major metabolite based on field dissipation studies. The metabolites are more persistent than the a.i. in water. The half-life for the terminal metabolite X11966341 after in-water treatment was estimated to be between 53-121 days.

Overall, florpyrauxifen-benzyl and its major metabolites are not expected to be persistent in the environment at typical application rates. Spot and partial treatment design may further reduce the likelihood of their accumulation at high levels in the sediment and soil.

Ecological toxicity risk modeling

Potential toxicity risk to non-target fish and wildlife species under labeled use were identified using the Pesticide Screening System (PSS) tool. This model estimates possible exposure levels of various representative species to the active ingredient when the product is used at application rates recommended in the label. A likely adverse effect to an exposed organism is suggested when the estimated exposure level exceeds the toxicity threshold(s) reported by the registrant.

The maximum seasonal application rates listed on the label were not used to calculate pesticide residue levels after a series of applications within a season. Instead, the maximum single application rate, maximum number of repeat applications, minimum re-application intervals, and field dissipation rates were used to predict the equivalent maximum seasonal application rate of pesticide after the last application. This method takes into account the degradation that would occur between applications. The calculation is accomplished by the PSS Max Application Rate Calculator operation of the PSS. It takes the single application rate in lbs. AI/acre, and using the field dissipation rate half-life, estimates the percentage of AI applied that will remain after the dissipation that will occur during the interval between consecutive applications. This quantity of a.i. is added to the amount applied in subsequent applications.

The label for ProcellaCOR EC allows up to three in-water treatments per year at 0.13 lb a.i./acre-foot (approx. 50 ppb) and no more than two treatments per year for foliar treatment at the maximum single application rate of 0.052 lb a.i./acre. The minimum interval between two consecutive treatments is 14 days.

The risk assessment models calculate risk quotients (RQs) for different organisms by dividing potential exposure levels by toxicity thresholds extracted from the USEPA Data Evaluation Record (DER) or study reports. For terrestrial risk assessment, the model estimates the residues likely to be present on treated vegetation for any given application scenario. For aquatic risk assessment, the model calculates the concentration of florpyrauxifen-benzyl likely to occur in the water column in test ponds of different volumes, using different runoff scenarios. RQs are calculated for both the upper toxicity threshold (LC50, EC50, LOEC, or LOEL) and the lower toxicity threshold (NOEC or NOEL). The one exception is the chronic mammalian dose-based model,

which uses the maximum acceptable toxicity concentration (MATC) as the toxicity threshold. The MATC is the geometric mean of the LOEL and NOEL. If the RQ is greater than 1.0, the organism would be exposed to levels higher than the toxicity threshold and adverse effects would be likely to occur. If the RQ is less than 1.0, then the likely exposure level is below the toxicity threshold, and severe toxicity is not anticipated. Results from the toxicity modeling are listed in Appendix II and discussed below.

Avian and mammalian toxicity modeling

The product is intended for aquatic use only. High residue levels in plants located in areas away from target waterbodies are not expected. Exposure to florpyrauxifen-benzyl through consumption of aquatic organisms from treated waterbodies is possible but studies submitted by the registrant indicated quick metabolism and excretion of the a.i. from freshwater species, thus bioaccumulation is not expected. Another likely exposure route for terrestrial vertebrates like birds and mammals is through drinking treated water. However, the most sensitive NOED for avian species was reported in Bobwhite quail at 398 mg/kg bw/day. At the maximum single application rate of 50 ppb, an adult quail with a bodyweight of 0.15 kg would need to consume 1194 L of water to reach that dosage, which is highly unrealistic. Toxicity data for mammals also suggested environmental exposure to florpyrauxifen-benzyl was unlikely to exceed the most sensitive NOED.

Aquatic toxicity modeling

For aquatic organisms, only the direct application scenario was modeled. However, definitive results were not acquired for most freshwater fish and invertebrate species because toxicity effects were not observed below the a.i. solubility limit. Exceedance of non-definitive endpoints were not considered reliable indicators of toxicity risk. The modeling results indicated no realistic toxicity concern for freshwater fish and invertebrate species. For algae and cyanobacteria, only acute NOECs were exceeded.

Pollinators

The intended use pattern of this product would indicate that direct contact or oral exposure at toxic levels is not likely if only spot or partial in-water treatment designs are used.

Risk assessment

The results from toxicity studies indicated overall low toxicity from florpyrauxifen-benzyl to most of the non-target animal species except benthic invertebrates and marine aquatic invertebrates. However, environmental fate studies showed no evidence of long term accumulation of the a.i. in the sediment and the product is intended to be used in freshwater systems only. The risk assessment modeling only detected

exceedance of acute NOECs for algae and cyanobacteria and no definitive acute LC/IC50s were reported for these organisms. If the treatment method is limited to spot and partial treatment and considering that florpyrauxifen-benzyl would dissipate quickly after application, effects to these organisms may be sufficiently reduced to levels of minimum ecological impact.

Toxicity data would suggest that there may be a higher risk to non-target aquatic and terrestrial vascular plants from environmental exposure to florpyrauxifen-benzyl. However, additional information from the registrant demonstrated apparent selective toxicity to invasive aquatic vascular plants. Tolerance of the a.i. was confirmed in a few common native plant species, but not all non-target plants were tested. All sensitivity data currently available is empirical. According to one study of the effects on aquatic macrophytes reviewed by OECD, the sensitivity of a plant was most likely determined by the ability of the a.i. to penetrate the meristem rapidly to achieve the biologically active dosage. The study also showed different species exhibit a gradience in tolerance, indicating that species categorized as “selective plants” may not be completely protected from the toxicity of the a.i. As a matter of fact, there has been reported incidences where the use of Rinskor, another herbicide product containing florpyrauxifien-benzyl and intended to be used for weed control in rice fields, damaged rice plants.

Therefore, caution must be taken if the areas to be treated host non-target plant species with no tolerance information available. Moreover, the well-demonstrated selectivity of florpyrauxifen-benzyl towards invasive species at relatively low application rates make it a promising tool for the management and restoration of the local aquatic flora. However, its effectiveness in esthetic use against native species is questionable. When used in invasive species management, an appropriate management plan should be developed. Aerial and ground applications, allowed by the label, over large areas should be avoided. Destruction of vegetation on a large scale, regardless of native or invasive species, can have disastrous ecological consequences, such as fish kills due to oxygen deprivation or loss of food and shelter. Spot and partial treatment designs should be recommended for most cases to allow effective management of invasive aquatic plants as well as maintaining healthy ecosystems.

Conclusion

Based on the information available, the BEH did not identify significant risk for ecotoxicological impacts from the labeled use of ProcellaCOR EC. BEH is concerned about allowing large scale aerial and ground applications of this product over much of the water body and surrounding riparian areas. These methods may not be more effective than spot and partial treatment designs but could have more indirect impact on the biota of these waterbodies. BEH does not object to the registration of the product but recommends additional site-specific review of treatment plans that specify aerial or large-scale ground application, for example treatment of one-third or more of the water body, to limit impact to native plants, fish and invertebrates.

Table 1. Physical/chemical characteristics of florpyrauxifen-benzyl

Parameter	Florpyrauxifen-benzyl
Empirical formula:	$C_{20}H_{14}C_{l2}F_2N_2O_3$
Molecular weight:	439.24 g/mol
Density (20°C):	0.202 g/mL
Water solubility (20°C):	0.015 µg/mL
Log K_{ow} (20°C):	5.5±0.04

Table 2. Active ingredients and application rates for product proposed for registration in New York State.

Treatment method*	Max single app. rate	Max # of apps/season*	Max seasonal app. rate	Min # of days between repeat apps
In-water treatment (lbs.AI/acre-ft)	0.13	3	0.39	14
Foliar applications (lbs.AI/acre)	0.052	2	0.104	14

*If not given on the label, the maximum number of applications was estimated by dividing the seasonal application rate by the smallest single application rate for each crop on the label.

Table 3. Summary of the ecotoxicological testing conducted with florpyrauxifen-benzyl. When multiple tests of the same type were conducted, only the most sensitive test result is reported here. These are the toxicity data utilized in risk assessment modeling.

Organism	Test/Study Type	LC50/EC50/ or LOEL/LOEC	NOEL/NOEC
Mammalian			
Rat	Acute oral	>5000 mg/kg bw	
Rat	90 day feeding	>1000 mg/kg/day	1000 mg/kg/day
Rat	2 generation reproduction	>300 mg/kg/day	300 mg/kg/day
Mouse	78 week chronic/ carcinogenicity	>800 mg/kg/day	800 mg/kg/day
Avian			
Bobwhite quail	Acute oral	>2500 mg/kg/day	2500 mg/kg/day
Zebra finch	Acute oral	>2250 mg/kg/day	2250 mg/kg/day
Bobwhite quail	5 day dietary	>5640 mg/kg/day	5640 mg/kg/day
Mallard duck	5 day dietary	>5640 mg/kg/day	5640 mg/kg/day
Bobwhite quail	Avian reproduction	999 mg/kg/day	398 mg/kg/day
Mallard duck	Avian reproduction	>999 mg/kg/day	999 mg/kg/day
Aquatic – freshwater fish			
Rainbow trout (*Oncorhynchus mykiss*)	96 hour acute	>0.049 mg/L	0.049 mg/L

Organism	Test/Study Type	LC50/EC50/ or LOEL/LOEC	NOEL/NOEC
Carp (Cyprinus carpio)	96 hour acute	>0.0414 mg/L	0.0414 mg/L
Fathead minnow (Pimephales promelas)	32 day early life stage	>0.0518 mg/L	0.0518 mg/L
Aquatic – freshwater invertebrates			
Daphnia magna	96 hour acute	>0.0626 mg/L	0.0626 mg/L
	21 day life cycle	>0.0385 mg/L	0.0385 mg/L
Marine/Estuarine			
Sheepshead minnow (*Cyprinodon variegatus*)	96 hour acute	>0.0403 mg/L	0.0403 mg/L
Mysid shrimp (*Americamysis bahia*)	96 hour acute	>0.026 mg/L	0.026 mg/L
	Chronic toxicity test	0.0518 mg/L	<0.0518 mg/L
Oyster larvae (*Crassostrea virginica*)	96 hour shell deposition	>0.0251 mg/L	0.0251 mg/L
Aquatic Plants			
Aquatic macrophyte – *Lemna gibba*	7 day EC_{50}	>0.0414 mg/L	0.0414 mg/L
Green algae – *Pseudokirchneriella subcapitata*	72 hour EC_{50}	>0.0612 mg/L	0.0298 mg/L
Blue-green algae *Anabaena flos-aquae*	96 hour EC_{50}	>0.0513 mg/L	0.0285 mg/L
FW diatom – *Navicula pelliculosa*	96 hour EC_{50}	>0.0565 mg/L	0.0124 mg/L
Marine diatom – *Skeletonema costatum*	96 hour EC_{50}, cell density	>0.0389 mg/L	0.0124 mg/L
Terrestrial invertebrates			
Honeybee	Acute contact	>0.100 mg a.i./bee	0.100 mg a.i./bee
	Oral	>0.1054 mg a.i./bee	0.1054 mg a.i./bee
Aquatic – sediment			
Chironomus tentans	whole sediment 10-day toxicity test	>0.0346 mg a.i./L	0.0346 mg a.i./L

Appendix II
Fish Direct Application Toxicity Assessment for
Florpyrauxifen-benzyl

This program evaluates the toxicity of a direct application of Florpyrauxifen-benzyl to biota in a pond with a surface area of one acre and a depth of either 0.5 feet or one foot.
If the concentration of Florpyrauxifen-benzyl in the water exceeds a toxicity threshold, the model prints EXCEEDED next to the corresponding aquatic organism. If a toxicity threshold is not exceeded, the model prints SAFE.

Depth of pond = 1 ft.

Application rate = 0.13 lbs AI/acre

The water column concentration of Florpyrauxifen-benzyl = 4.780507E-02 mg/L; **Module not solubility limited**.

Florpyrauxifen-benzyl solubility limit = 0.015 mg/l

SPECIES	EC/LC50 mg/L	NOEC mg/L
Common carp	> 0.0414	0.0414
Rainbow trout >	> 0.049	0.490
Daphnia magna >	> 0.0626	0.0626
Sheepshead minnow >	> 0.0403	0.0403
Mysid shrimp >	> 0.026	0.026
Oyster >	> 0.0251	0.0251
Lemna gibba>	> 0.0414	0.0414
P. subcapitata	> 0.0612	EXCEEDED
Anabaena flos-aquae>	> 0.0513	EXCEEDED
Navicula pelliculosa>	> 0.0565	EXCEEDED
Skeletonema costatum>	> 0.0389	EXCEEDED