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PUBLIC REPORT IN SUPPORT OF PROPOSED DECISION
(New Active Ingredient Master Label)

Description of the Project

Tracking ID No.:	298513
Product Name:	Tolpyralate 400SC Herbicide
Applicant:	ISK Biosciences Corporation
EPA Reg. No.:	71512-29
Active Ingredient (with Percent):	Tolpyralate (35.7%)
DPR Chemical Code:	6171

Proposed Uses (see master label below for full description):
Master label with directions for use as an herbicide to control or suppress broadleaf and grass weeds such as smooth pigweed, waterhemp, common lambsquarters, common sunflower, carpetweed, hairy nightshade, common cocklebur, and green foxtail in corn (all types including field corn, sweet corn, and popcorn) and fallow areas.

ISK Biosciences Corporation submitted an application to the Department of Pesticide Regulation (DPR) to register a master label containing a new active ingredient not found in any currently registered end-use products in California (the project). Pesticides bearing a master label cannot be sold or distributed in California. A master label is a pesticide product label submitted by a registrant that does not intend to market that pesticide label for sale or use in California but bears most or all uses accepted by the United States Environmental Protection Agency (U.S. EPA) for that pesticide product. Submitting a master label for DPR acceptance is an option for a basic registrant to streamline the registration process for a product with an end-use label based off the master label with some or all of the master label use sites. Any end-use product based off a master label must be separately accepted by DPR before it is sold or used in California. DPR only uses a master label for reference in connection with acceptance of end-use products based on the master label. DPR reviews California master labels under the same rigorous scientific standards as other pesticide product registrations. This is a proposed decision to register this master label containing a new active ingredient in California (registration action). The proposed master label can be viewed below.

Overview of DPR's Pesticide Registration Program and Scientific Evaluation Process

Before a substance is registered as a pesticide for the first time in California, DPR is required to perform a thorough evaluation and to have a program to continuously evaluate registered pesticides to eliminate from use in the state any pesticide that endangers the agricultural or non-agricultural environment. (Food & Agr. Code (FAC), § 12824.) DPR requires the registrant to submit all data required by U.S. EPA regulations governing pesticide registration, reregistration, and classification adopted in Title 40, Code of Federal Regulations (40 CFR) under the authority contained in the Federal Insecticide Fungicide and Rodenticide Act (FIFRA).

Data Requirements by Pesticide Product Type

1. Conventional

Human Health Toxicology	40 CFR Part 158.500-158.510; FAC §§13121-13135
Human Exposure *(if applicable)*	40 CFR Part 158.1000-158.1070; 3 CCR §6176, §6177, §6183
Product Chemistry	40 CFR Part 158.300-158.355; 3 CCR §6188
Environmental Fate *(if applicable)*	40 CFR Part 158.1300; FAC §13143
Spray Drift *(if applicable)*	40 CFR Part 158.1100; 3 CCR §6192
Product Performance	40 CFR Part 158.400; 3 CCR §6186
Phytotoxicity *(if applicable)*	40 CFR Part 158.660; 3 CCR §6192
Ecotoxicology *(if applicable)*	40 CFR Part 158.630; 3 CCR §6187, §6192

2. Antimicrobial Products

Human Health Toxicology	40 CFR Part 158.2230; FAC §§13121-13135
Human Exposure *(if applicable)*	40 CFR Part 158.2260-158.2270; 3 CCR §6176, §6177, §6183
Product Chemistry	40 CFR Part 158.300-158.355
Environmental Fate *(if applicable)*	40 CFR Part 158.2280; FAC §§13141-13152
Product Performance	40 CFR Part 158.2220; 3 CCR §6186
Phytotoxicity *(if applicable)*	40 CFR Part 158.2250; 3 CCR §6192
Ecotoxicology *(if applicable)*	40 CFR Part 158.2240; 3 CCR §6187, §6192

3. Biochemical Products

Human Health Toxicology	40 CFR Part 158.2050; FAC §§13121-13135
Human Exposure *(if applicable)*	40 CFR Part 158.2050; 3 CCR §6176, §6177, §6183
Product Chemistry	40 CFR Part 158.2030
Environmental Fate *(if applicable)*	40 CFR Part 158.2060; FAC §§13141-13152
Product Performance	40 CFR Part 158.2070; 3 CCR §6186
Phytotoxicity *(if applicable)*	40 CFR Part 158.2060; 3 CCR §6192
Ecotoxicology *(if applicable)*	40 CFR Part 158.2060; 3 CCR §6187, §6192

4. Microbial Products

Human Health Toxicology	40 CFR Part 158.2140; FAC §§13121-13135
Product Chemistry	40 CFR Part 158.2120
Environmental Fate *(if applicable)*	40 CFR Part 158.2150; FAC §13143
Product Performance	40 CFR Part 158.2160; 3 CCR §6186
Phytotoxicity *(if applicable)*	40 CFR Part 158.2150; 3 CCR §6192
Ecotoxicology *(if applicable)*	40 CFR Part 158.2150; 3 CCR §6187, §6192

Applicants/registrants must also comply with California specific data requirements contained in Title 3 California Code of Regulations (3 CCR) sections 6159 through 6192, when applicable. Pursuant to 3 CCR section 6200, DPR may waive certain required data for a specified period and conditionally register a product while the data are being developed. However, DPR will not waive human health toxicology data. In addition to the data requirements found in regulation, two statutes—the Birth Defects Prevention Act (BDPA) and the Pesticide Contamination Prevention Act (PCPA)—require the submission of additional data in California. BDPA requires a group of mandatory health effects studies designed to assess the risk of pesticide induced abortions, birth defects, and infertility. PCPA requires the submission of certain information about agricultural use pesticides to allow for the assessment of the potential risk of the pesticide to pollute groundwater.

Pesticide product data requirements, both federally and in California, change over time. Prior to registration, each pesticide product is required to meet all applicable U.S. EPA and DPR data requirements for the pesticide product type. California data requirements are set forth in the Food and Agricultural Code and DPR's governing regulations. Applicants/registrants have the option of submitting the data themselves, or referencing appropriate data previously submitted to DPR or a similar pesticide product(s) previously registered by DPR subject to the same data requirements. In reaching a proposed decision to register or deny registration of a pesticide product, DPR evaluates the proposed registration action and relevant supporting data.

If DPR's review and evaluation of the proposed pesticide labeling and data supports a conclusion that a significant adverse impact cannot be avoided or adequately mitigated, DPR cannot register the product unless the Director makes a written statement of overriding conditions—stating that the anticipated benefits of the product registration clearly outweigh the risks. (3 CCR § 6158.)

DPR scientists evaluate scientific data and label statements for a proposed registration action based on their area of expertise. Pesticide Evaluation Branch scientists evaluate label statements and the areas of chemistry, phytotoxicity (flora/plants), efficacy, and ecotoxicology (fauna/fish and wildlife). Environmental Monitoring Branch scientists evaluate label statements and potential environmental impacts of applicable pesticide products on air and water. This evaluation may include the assessment of volatile organic compounds (VOCs), air monitoring data, and products intended to be applied to water. Human Health Assessment Branch scientists evaluate toxicology data and label statements pertaining to human health (e.g., first aid, precautionary statements, personal protective equipment, restricted entry interval).

As part of its certified regulatory program, DPR consults with other public agencies regarding proposed pesticide registrations and more broadly on regulatory policies through its Pesticide Registration and Evaluation Committee (PREC). The PREC advises DPR on regulatory development, policy and implementation, and scientific issues associated with evaluating and reducing risks from pesticide use. The PREC brings together public agencies whose activities or resources may be affected by the use of pesticides. The PREC includes representatives of the state Departments of Public Health, Food and Agriculture, Industrial Relations, Fish and Wildlife, and the Structural Pest Control Board; CalEPA's Office of Environmental Health Hazard Assessment, CalRecycle, State Water Resources Control Board, Air Resources Board, and Department of Toxic Substances Control; the University of California IR-4 Project and Department of Environmental Toxicology; U.S. EPA, Region 9; U.S. Department of Agriculture/Agricultural Research Service; and the California Agricultural Commissioners and

Sealers Association. More information regarding the PREC is available on DPR's website at: <https://www.cdpr.ca.gov/docs/dept/prec/precmenu.htm>.

Environmental and Human Health Checklist:

In accordance with its certified regulatory program, DPR evaluates each proposed project for its potential to create a significant adverse impact on human health or the environment. Before a pesticide product containing a new active ingredient is registered in California, DPR performs a comprehensive review of data submitted on the active ingredient and pesticide product and reviews the proposed label to determine how the product may affect human health or the environment. DPR scientists reviewed the proposed project, data submitted, and the master label for the project's potential to cause a significant adverse impact on the following areas relevant to human health or the environment:

- ☒ Human Health
- ☒ Flora (Plants)
- ☒ Fauna (Fish & Wildlife)
- ☒ Water
- ☒ Air

Discussion of Feasible Alternatives and Mitigation

DPR's certified regulatory program regulations require DPR to issue a statement of any reasonable mitigation measures that are available to minimize significant adverse environmental impacts, and a statement and discussion of reasonable alternatives which would reduce any significant adverse environmental impact. (3 CCR § 6254.)

Alternatives. CEQA does not require DPR to consider every conceivable alternative to a project. Rather, DPR must consider only a reasonable range of feasible alternatives to the project that would foster informed decision making and public participation. This public report analyzes four alternatives to the project of registering a master label containing a new active ingredient not found in any currently registered end-use product in California and recommends a preferred alternative action.

Alternative # 1: Accept the proposed master label containing a new active ingredient. The project submitted to DPR for review and consideration is the acceptance of the proposed master label containing a new active ingredient in California. The availability of new products containing new active ingredients or formulations can help prevent pest resistance. Although it is speculative to determine whether accepting this proposed master label containing a new active ingredient would cause end-use products based off this master label to be used at all or increase or decrease the use of other similar products, end-use products based off this master label will provide another pest control option for specific pests or use sites, allowing the selection of the optimal pest control tool for each unique situation. Pesticide products bearing a master label cannot be sold or distributed in California. Before any end-use product can be sold or used in California using any portion of the master label, that end-use label must be separately reviewed and accepted by DPR for consistency with the corresponding master label on file. DPR reviews proposed master labels under the same rigorous scientific standards as other pesticide product

registration actions. During its evaluation of a project, DPR may identify potential human health or environmental concerns that are not adequately mitigated by the originally proposed master label. In those cases, the applicant may choose to voluntarily amend the master label or propose a master label specific to California to mitigate the identified concerns and submit the updated label to U.S. EPA and DPR for consideration. DPR initially identified the environmental hazards statement on the proposed master label did not sufficiently inform users of the toxicity to aquatic invertebrates. Based on the reviewed toxicity data, DPR determined the statement, "This pesticide is toxic to aquatic invertebrates" must be included in the environmental hazards statement. In this case, the registrant subsequently submitted a revised master label with an updated environmental hazards statement to include the required statement. In addition, DPR initially identified insufficient target crop phytotoxicity data and insufficient weed control efficacy data. To address the deficiencies identified in DPR's initial review, the registrant submitted additional target crop phytotoxicity data, efficacy data, and a revised label denoting certain weeds (blue mustard, Canada thistle, horseweed, ivyleaf moringglory, tall morningglory, buffalobur annual sowthistle, goosegrass, fall panicum, and broadleaf signalgrass) as "Not registered for use in California." However, while the submitted data provide compelling evidence supporting the proposed uses of end-use products based off this master label, additional confirmatory phytotoxicity data and efficacy data must be received by DPR within 18 months (see below for more details).

Furthermore, according to U.S. EPA's 2017 Registration Decision of the New Active Ingredient Tolpyralate An Herbicide for Use on Corn, "Many weeds are resistant to one or more herbicides and tolpyralate can be used as a tool for management of herbicide-resistant weeds. Tolpyralate should be used as part of an integrated weed control program with herbicides of other modes of action because there is evidence of cross resistance among some HPPD [4-hydroxyphenylpyruvate dioxygenase] herbicides. Corn is a high dollar value crop which is grown widely across the U.S. and has had various resistant weed problems. Tolpyralate represents an additional option for growers to consider for use on these types of corn: field, pop, seed, and sweet."

As demonstrated below, DPR's scientific evaluation of this project has not identified a significant adverse environmental or human health impact that is reasonably expected to occur from this proposed registration action based on the master label attached below.

Alternative # 2: Require revision of the proposed master label. This project alternative is not feasible at the state level under federal law. Under FIFRA, U.S. EPA must first accept the proposed master label before DPR can accept it. (7 U.S.C. § 136a.) Further, federal law prohibits California from imposing any requirements for labeling or packaging in addition to, or different from, those required under FIFRA. (7 U.S.C. § 136v(b).) However, during the scientific evaluation process, DPR may identify potential human health or environmental concerns that are not adequately mitigated by the originally proposed master label. In those cases, an applicant may choose to voluntarily amend the master label or propose a master label specific to California to mitigate the identified concerns and submit the updated label to U.S. EPA and DPR for consideration. The master label accepted by DPR must be essentially the same (or contain a subset of uses) as the label accepted by U.S. EPA. As part of its application for this project, the applicant submitted documentation demonstrating that U.S. EPA accepted the proposed master label. Therefore, federal preemption prohibits DPR from requiring label revisions that are in

addition to, or different from, U.S. EPA's registered master label and proceeding with this alternative is not feasible under federal law.

Alternative # 3: Adopt a regulation. The California Legislature has given DPR the authority to adopt regulations that are reasonably necessary to implement its pesticide regulatory program. The rulemaking process is a time-consuming process that requires extensive staff research, meetings with interested parties, public workshops and hearings for public comment, and formal notices through the Office of Administrative Law. The rulemaking process places the burden of developing mitigation by way of regulation on DPR rather than requiring the applicant or registrant, who will benefit from the registration, to develop label requirements to address mitigation and seek U.S. EPA approval. DPR typically goes through the rigorous process of adopting a regulation when it determines that existing use has resulted in adverse effects and additional restrictions beyond the label requirements and current regulations are necessary to carry out its statutory mandate to protect human health and the environment. As demonstrated below, DPR's scientific evaluation of this project has not identified a significant adverse environmental or human health impact that is reasonably expected to occur from this proposed registration action. Therefore, at this point in time, it is both premature and speculative that the need for a regulation exists.

Alternative # 4: No Action (Decision to Deny the Proposed Master Label Containing a New Active Ingredient). The no action alternative means that DPR would not accept the proposed master label containing a new active ingredient. Products bearing master labels cannot be sold or distributed in California. The impact of taking no action on the proposed project would result in not allowing this master label to be referenced by registrants of end-use labels during a subsequent registration action. This is not a preferred alternative action because it eliminates the benefit of streamlining the registration process for the registrant or supplemental distributors for an end-use label with some or all of the master label use sites. Further, DPR's review of this project has determined that this registration action is not expected to have any significant or potentially significant adverse effect on human health or the environment.

Preferred Alternative: DPR determined that accepting the proposed master label containing a new active ingredient will not have any reasonably expected significant adverse impacts on human health or the environment. Due to the lack of feasibility and speculative nature of Alternatives #2, #3, and #4, the preferred alternative is Alternative #1 (i.e., accept the proposed master label containing a new active ingredient).

Mitigation. After reviewing this project, DPR determined that accepting the proposed master label containing a new active ingredient is not expected to have any direct or indirect significant adverse human health or environmental impact. Therefore, there is no need to propose additional mitigation measures beyond those already incorporated into the project (proposed master label) and within the regulatory framework already in place to avoid or reduce any significant effects on the environment by end-use products. After registration, DPR continuously evaluates pesticides registered for use in California to determine if a pesticide has caused or is likely to cause a significant adverse impact on human health or the environment. In the event DPR's continuous evaluation determines additional mitigation is necessary, DPR will investigate and may initiate further evaluation of the master label or active ingredient to address the identified or potential concern.

Existing Environmental Conditions and Cumulative Impacts

DPR currently registers approximately 12,500 different pesticide products containing approximately 1,040 different active ingredients for use in California.

California has a comprehensive pesticide use reporting (PUR) program. In 1990, California became the first state to require full reporting of agricultural pesticide use. Under the program, all agricultural pesticide use must be reported to county agricultural commissioners, who in turn, report the data to DPR. It should be noted that California has a broad legal definition of "agricultural use" so the reporting requirements include pesticide applications to parks, golf courses, cemeteries, rangeland, pastures, and along roadside right-of-way. In addition, postharvest pesticide treatments of agricultural commodities must be reported along with all pesticide treatments in poultry and fish production as well as some livestock applications. The PUR also includes non-agricultural uses applied by certified applicators such as structural applications and any applications by businesses performing pest control for hire. The primary exceptions to the reporting requirements are home-and-garden use by homeowners and most industrial and institutional uses. (3 CCR §§ 6624-6628.) DPR checks the accuracy of PUR data between the initial data entry and before it is publicly available, and makes adjustments after publication if necessary. More information regarding DPR's PUR program is available on DPR's website at: <https://www.cdpr.ca.gov/docs/pur/purmain.htm>.

Since this master label contains an active ingredient not found in any currently registered product in California and there are no registered end-use products containing this active ingredient in California, there is no available pesticide use data for the past three years. Any future use of this active ingredient in subsequently registered end-use products will be tracked by DPR's pesticide use reporting program.

Pesticides bearing a master label cannot be sold or distributed in California. DPR only uses a master label for reference in connection with acceptance of end-use products based on the master label. Any end-use product based off a master label must be separately accepted by DPR before it is sold or used in California. In general, the availability of a master label for reference does not necessarily mean that there will be an influx of end-use pesticide product registrations. Moreover, DPR's registration of a particular end-use pesticide product is only a general license to sell the product in California and is not an indicator of certain future use or the extent of such use. As pesticides bearing a master label cannot be sold or distributed in California, any future registrations and use of end-use products is speculative, and since there are currently no registered end-use products containing this new active ingredient, this registration action is not expected to be cumulatively significant.

Pesticide use patterns can vary from year to year based on a number of factors, including changes in planted acreage, crop plantings, pest pressures, weather conditions, supply of raw ingredients, or regulations. Product loyalty, marketing techniques, company takeovers, pricing and sales promotions can also affect the amount of specific pesticide products sold in a particular year due to commercial trends that appeal to the consumer. In addition, there are over a thousand different active ingredients in products currently registered for use in California with thousands of different use sites. Assessing which specific chemical may be used at a particular point in time in the future and what other active ingredient(s) may or may not be used in the same vicinity, their amounts and frequency of use, and by what application method cannot be predicted at the

time of this statewide registration action and is wholly speculative. Based on unknown factors on specific use, it is too speculative for DPR to predict whether the availability of this master label containing a new active ingredient, as proposed in this registration decision, will increase or decrease the use of other active ingredients with similar use patterns. In addition to the fact that precise parameters of future pesticide use cannot be predicted, at this time, DPR is not aware of a scientifically valid methodology to evaluate potential cumulative interactions between the active ingredient contained in this master label with other active ingredients to support a proposed regulatory decision. However, DPR's scientific evaluation of this proposed decision to accept this master label containing a new active ingredient has not identified direct or indirect significant adverse human health or environmental impacts from the use of potential end-use pesticide products based off this master label that might subsequently lead to a cumulative impact. According to U.S. EPA's April 2017 Tolpyralate – New Active Ingredient Human Health Risk Assessment for Proposed Uses on Sweet Corn, Field Corn, and Popcorn, "unlike other pesticides for which EPA has followed a cumulative risk approach based on a common mechanism of toxicity, EPA has not made a common mechanism of toxicity finding as to tolpyralate and any other substances and tolpyralate does not appear to produce a toxic metabolite produced by other substances." Therefore, DPR does not expect that this registration action will result in a direct or cumulative significant adverse impact to human health or the environment.

DPR's certified regulatory program incorporates the real-time consideration of cumulative impacts by requiring DPR to continuously evaluate pesticides registered for use in California and take necessary action if a potential concern is identified. (FAC § 12824.) DPR accomplishes its mandate to continuously evaluate pesticides by conducting a number of activities including, but not limited to: ongoing DPR registration reviews that involve conducting human health risk assessments on individual active ingredients to comply with its statutory obligations to protect human health (FAC §§ 14021-14025; FAC § 13129); investigating reports of adverse environmental or human health effects from pesticide use submitted by the applicant/registrant as required (3 CCR § 6210) or received from the public; investigating reports of pesticide illness; sampling for pesticide residue on produce; monitoring the environment (air/water); and evaluating information submitted by other entities, including state and federal agencies, or contained in studies conducted by public or private research entities according to established scientific standards. In addition, pesticide use reporting aids DPR in evaluating cumulative impacts from specific pesticide use. DPR must also investigate all reported episodes and information received that indicate a pesticide may have caused or is likely to cause a significant adverse impact. If the Director finds from the investigation that a significant adverse effect has occurred or is likely to occur, DPR must reevaluate the pesticide involved. (3 CCR §§ 6220-6226).

Conclusion

Tolpyralate 400SC Herbicide is a master label for an herbicide containing the new active ingredient tolpyralate.

End-use products based off this master label would be suspension concentrates applied as a ground spray for the following end uses:

- On corn (all types including field corn, sweet corn, and popcorn) and fallow areas.
- To control or suppress broadleaf and grass weeds such as smooth pigweed, waterhemp common lambsquarters, common sunflower, carpetweed, hairy nightshade, common cocklebur, and green foxtail.

Human Health

The human health toxicology data reviewed to support this proposed master label are adequate for a complete acute toxicological evaluation. Based on the data reviewed, the master label adequately identifies the acute toxicity hazards. The first aid and precautionary statements, personal protective equipment, and restricted entry interval are consistent with the acute toxicity profile. Applicators and other handlers must wear a long-sleeved shirt, long pants, shoes, socks, and waterproof gloves. Furthermore, according to U.S. EPA's April 2017 Tolpyralate – New Active Ingredient Human Health Risk Assessment for Proposed Uses on Sweet Corn, Field Corn, and Popcorn, occupational handler risk estimates are not of concern for the proposed uses of tolpyralate when using baseline clothing and no personal protective equipment. Additionally, dermal post-application risk estimates are not of concern. Based on the available data to support the registration of this master label, DPR does not expect a significant adverse effect to human health when a registered end-use product based off this master label is used according to the label and any applicable use restrictions in regulation.

Environment (flora, fauna, water, and air)

End-use products based off this master label are herbicides intended for use on corn (all types) and fallow areas to control or suppress listed broadleaf and grass weeds. The phytotoxicity data reviewed by DPR to support the registration of this master label indicates end-use products based off this master label will not result in significant phytotoxic effects to the tested corn varieties. The submitted data provides compelling evidence to support the proposed uses on the master label. However, because popcorn is known to be sensitive to some herbicides, DPR is recommending this master label be conditionally registered for a period of 18 months to allow the registrant time to submit additional confirmatory phytotoxicity data developed from a minimum of two popcorn varieties. These trials must be conducted in a minimum of two representative regions in California, or under similar environmental conditions. Any registered end-use products based off this master label during this conditional period will also be subject to this condition. Additionally, the master label warns that crop injury may be observed when applications are made during stressful environmental conditions. To reduce potential spray drift, the master label prohibits aerial applications and contains mandatory spray drift management and spray drift advisory sections with restrictions and precautions for ground applications. Specifically, the master label requires applications to be made with a nozzle class that ensures medium or coarser spray (according to ASABE S572) using the minimum boom height based upon the nozzle manufacturer's specifications but no more than three feet above the ground or crop canopy. The master label also prohibits users from applying end-use products based off this master label when wind speeds exceed 10 miles per hour at the application site and during temperature inversions.

Although the master label does not require buffer zones between treated sites and adjacent crops, DPR identified the potential for adverse effects on multiple nontarget crops via drift from the application of end-use products based off this master label. As a result, DPR's Air Program conducted spray drift modeling to evaluate whether buffer zones should be required between fields treated with end-use products based off this master label and sensitive nontarget crops. Ground applications were modeled using the AgDRIFT (version 2.1.1) Tier I model. According to U.S. EPA, the AgDRIFT model has the capability to assess a variety of spray drift conditions from agricultural applications and offsite deposition of liquid formulation of pesticides. This model can be used in estimating downwind deposition of spray drift from aerial, ground boom, and orchard/vineyard airblast applications. Model inputs were derived from requirements listed on the master label and internal modeling recommendations. The model results indicated that when label instructions are followed, there is marginal potential for drift from either ground or aerial applications. Based on the factors above, DPR does not expect use of registered end-use products based off this master label, when used in accordance with the label directions and any applicable use restrictions in regulation, will have a significant adverse effect on nontarget flora.

Based on the ecotoxicology data reviewed by DPR to support the registration of this master label, the environmental hazards statement is appropriate. According to the environmental hazards statement, end-use products based off this master label are toxic to aquatic invertebrates. Users are prohibited from applying end-use products based off this master label directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. The master label also prohibits making applications where/when conditions favor runoff or contaminate water when disposing of equipment rinse water. Additionally, the master label specifies a level, well-maintained vegetative buffer strip between areas to which end-use products based off this master label are applied and surface water features (including ponds, streams, and springs) will reduce the potential loading of tolpyralate from runoff water and sediment. The master label also prohibits making applications through any type of irrigation system. Furthermore, as stated above, the proposed master label contains several use restrictions and precautions, mandatory spray drift directions, and spray drift advisories intended to reduce the likelihood of end-use products based off this master label from moving offsite and adversely impacting nontarget terrestrial and aquatic organisms.

Based on the reviewed data, tolpyralate is practically non-toxic to upland and wetland birds, passerine (perching) species, and small mammals based on acute oral exposure. Birds and mammals may be exposed to tolpyralate while foraging in treated areas. DPR used the Terrestrial Residue Exposure Model (T-REX) version 1.5.2 to model the proposed uses of this product to assess the potential risks to birds and mammals. T-REX considers product application directions and environmental fate data to generate estimated environmental concentrations (EECs). DPR uses both EECs and toxicity values to generate risk quotients (RQs). Based on the modeling results, all acute and chronic RQs for birds and mammals were below the level of concern (LOC). Therefore, end-use products based off this master label are not expected to pose unmitigated risks to birds or wild mammals. Tolpyralate is also classified as being practically non-toxic to adult and larval honey bees based on acute exposure. Corn pollen is attractive to honey bees; therefore, bees may be exposed to tolpyralate while foraging for pollen. To assess the potential risks to honey bees, DPR used the Bee Residue Exposure (BeeREX) model version 1.0. The model assumes a conservative exposure scenario using the maximum application rate allowed by the proposed master label and incorporates values for adult acute contact toxicity,

adult acute oral toxicity, adult chronic toxicity, larval acute toxicity, and larval chronic toxicity. Modeling results in BeeREX indicated that acute and chronic risks to adult and larval bees are minimal. All RQs were below the acute and chronic LOCs. As a result, end-use products based off this master label are not expected to pose unmitigated risks to honey bees. Furthermore, the major metabolite of tolpyralate, MT-2153, is less toxic to nontarget organisms than technical grade tolpyralate and, therefore, was not further evaluated. Based on the factors above, DPR does not expect registered end-use products based off this master label, when used in accordance with the label directions and any applicable use restrictions in regulation, will have a significant adverse effect on terrestrial fauna.

According to the reviewed ecotoxicology data, tolpyralate is slightly toxic to fish and slightly toxic to highly toxic to aquatic invertebrates based on acute exposure. To evaluate the potential risks to aquatic organisms, DPR used the Pesticide in Water Calculator (PWC version 2.001). The PWC simulates pesticide applications to land surfaces and the pesticide's subsequent transport to and fate in water bodies, including surface water bodies and simple groundwater aquifers. DPR calculates RQs using toxicity values of an active ingredient from the most sensitive fish and aquatic invertebrate species. Modeling results in PWC indicated that acute and chronic risks to aquatic organisms are minimal. Specifically, all RQs (acute and chronic) for both fish and aquatic invertebrates were below the LOC.

Additionally, as part of the environmental hazards statement, the proposed master label contains a surface water advisory. According to the surface water advisory, "This product may impact surface water due to runoff of rain water. This is especially true for poorly draining soils and soils with shallow groundwater. This product is classified as having high potential for reaching surface water via runoff for several months or more after application. A level, well-maintained vegetative buffer strip between areas to which this product is applied and surface water features including ponds, streams, and springs will reduce the potential loading of Tolpyralate from runoff water and sediment. Runoff of this product will be reduced by avoiding applications when rainfall or irrigation is expected to occur within 48 hours." DPR's Surface Water Protection Program (SWPP) used the Pesticide Registration Evaluation Model (PREM) version 5.0 to evaluate potential risks to California's aquatic environments associated with the agricultural uses of end-use products based off this master label. The model utilizes physicochemical properties of the active ingredient and the product's use patterns to simulate environmental fate and transport of an applied pesticide. Furthermore, the model considers acute toxicity data to evaluate risks of irrigated runoff to aquatic organisms. The model also accounted for the specific use patterns on the master label. Use on fallow areas is not considered to be of high runoff potential (i.e., high-risk application) to surface water. Thus, model-based evaluation was not required for this proposed use. According to the PREM modeling scenario for corn, application of end-use products based off this master label is considered to be a "high-risk" use pattern. The date of first application was set to April 2nd using model-provided reference dates to simulate application in the post-emergence growth phase. Based on the modeling results, the generated RQs from the PREM modeling scenarios were below the LOC. The submitted data and modeling results did not identify any unacceptable risks to surface water and aquatic organisms or the need for DPR to further evaluate any pesticide degradates of this product. As a result, end-use products based off this master label are not expected to pose unmitigated risks to aquatic organisms or surface water quality.

The groundwater advisory on the master label states, “Tolpyralate has properties and characteristics associated with chemicals detected in groundwater. Tolpyralate may leach into groundwater if used in areas where soils are permeable, particularly where the water table is shallow.” To evaluate the potential of tolpyralate and its major degradate, MT-2153, to threaten groundwater, DPR’s Groundwater Protection Program (GWPP) used the Leaching Estimation and Chemistry Model (LEACHM). LEACHM refers to several versions of a simulation model that describe the water regime (the prevailing pattern of water flow over a given time) and the chemistry and transport of solutes in unsaturated or partially saturated soils to a depth of two meters. These versions utilize similar numerical solution schemes to simulate water and chemical movement. DPR conducted the simulations using the most conservative scenarios with the highest of two crop water inputs producing relatively high amounts of drainage water, the highest application rate of tolpyralate, the longest derived soil dissipation half-life, lowest soil adsorption potential, and longest degradation half-life in groundwater. Estimated well water concentrations from modeling tolpyralate and MT-2153 were either zero because they were too low to be resolved because of model resolution limits of LEACHM or otherwise at concentrations many orders of magnitude below method detection limits for the chemicals. Despite the low soil adsorption potential for tolpyralate and MT-2153, these well water estimates were the result of rapid dissipation of the chemicals in the soil environment as evident from the TFD studies and their corresponding relatively short half-lives. The modeling results were generally supported by residue sampling data from the eight submitted TFD studies conducted at four locations in the United States where residue movement was seldom observed below the soil surface layer. In these studies, observed residue dissipation was rapid for both test chemicals indicating their low accumulation potential in the soil and unlikely movement to groundwater. Based on currently available data and the most conservative modeling scenarios, DPR does not expect tolpyralate and its only major degradate, MT-2153, to contaminate California groundwater at any measurable concentration when used under directions proposed on the product label. Therefore, DPR does not expect registered end-use products based off this master label, when used in accordance with its label directions and any applicable use restrictions in regulation, will have a significant adverse effect on groundwater quality.

Tolpyralate is not currently designated as a toxic air contaminant or regulated as a potential source of volatile organic compounds that may adversely impact the attainment of health-based air quality standards. In addition, the master label prohibits aerial applications. The master label also contains several use restrictions and precautions, mandatory spray drift directions, and spray drift advisories intended to reduce potential drift. As stated above, DPR’s Air Program used the AgDRIFT (version 2.1.1) Tier 1 model to evaluate the need for buffer zones between treated fields and sensitive nontarget crops. Modeling results indicated there is marginal potential for drift from ground applications from the use of end-use products based off this master label when applied in accordance with their labels. Therefore, DPR does not expect registered end-use products based off this master label, when used in accordance with its label directions and any applicable use restrictions in regulation, will have a significant adverse effect on air quality.

This master label is proposed for conditional registration under 3 CCR section 6200 for a period of 18 months to allow for the development of additional confirmatory phytotoxicity data developed from trials on a minimum of two popcorn varieties and the development of additional confirmatory efficacy data developed from trials on velvetleaf, common ragweed, venice mallow, henbit, common cocklebur, giant foxtail, yellow foxtail, and sorghum. These trials must

be conducted in a minimum of two representative regions in California, or under similar environmental conditions. Any registered end-use products based off this master label during this conditional period will also be subject to this condition. Based on DPR's review of this master label, the director finds that use of registered end-use products based off this master label during the period while these additional phytotoxicity and efficacy data are being developed is not expected to cause a significant adverse effect on human health or the environment when used in a manner consistent with their label. Accepting this master label on a conditional basis provides an additional pest control option for the specific pests and/or use sites listed on the label. Because DPR has not identified a significant adverse effect on human health or the environment from its review of this proposed master label, the benefits of using products based off this master label while additional phytotoxicity and efficacy data are being developed outweigh the potential risks. If the applicant does not agree to these conditions, DPR will deny the project.

In summary, DPR evaluated the project (new master label containing a new active ingredient) and scientific data supporting this registration action. DPR's scientific evaluation of this proposed project has not identified direct or indirect significant adverse human health or environmental impacts from use of end-use products based off this master label in a manner consistent with its label and any applicable use restrictions in regulation. As a result, DPR has determined that the acceptance of this proposed master label containing a new active ingredient is not expected to have any significant adverse effect that can reasonably be expected to occur, directly or indirectly, to human health or the environment.

Proposed Master Label Below

The following pages contain the proposed master label for this submission. DPR is unable to modify the label because it was created by a third party. If you need assistance viewing the label, please contact the Pesticide Registration Branch at (916) 445-4400.

TOLPYRALATE	GROUP	27	HERBICIDE

TOLPYRALATE 400SC HERBICIDE

For broadleaf and grass weed control in wheat*, barley*, fallow areas, field corn, sweet corn, and popcorn.
*Not for use in the state of California.

ACTIVE INGREDIENT: TOLPYRALATE*	35.7 %
OTHER INGREDIENTS:	64.3 %
TOTAL:	100.0 %

*1-[[1-Ethyl-4-[3-(2-methoxyethoxy)-2-methyl-4-(methylsulfonyl)benzoyl]-1*H*-pyrazol-5-yl]oxy]ethyl methyl carbonate

Tolpyralate 400SC Herbicide is formulated as a suspension concentrate (SC) and contains 3.33 pounds of active ingredient per gallon of formulated product (400 grams per liter).

KEEP OUT OF REACH OF CHILDREN

CAUTION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle (If you do not understand this 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 do so by the poison control center or doctor. • **DO NOT** give anything by mouth to an unconscious person.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.

HOT LINE NUMBER

For information on this pesticide product (including general health concerns or pesticide incidents), call the National Pesticide Information Center at 1-800-858-7378, Monday through Friday, 8:00 AM to 12:00 PM Pacific Standard Time.

In the event of a medical emergency, call your poison control center at 1-800-222-1222.

[For **Chemical Emergency**, Spill, Leak, Fire or Accident, call **CHEMTREC 1-800-424-9300**.]

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

See inside pages for complete precautionary statements.
Read entire label carefully and use only as directed.

EPA Registration No. 71512-29
EPA Establishment No.
Net Contents: xx gallons

ISK Biosciences Corporation
7470 Auburn Road, Suite A
Concord, Ohio 44077

PRECAUTIONARY STATEMENTS

Hazard to Humans and Domestic Animals

CAUTION

Harmful if swallowed or absorbed through skin. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before reuse.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants,
- Shoes plus socks,
- Chemical resistant gloves,
- Waterproof gloves.

Engineering Controls

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR 170.240(d)(4-6)), the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Requirements

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. **DO NOT** reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

User Safety Recommendations

USERS SHOULD:

- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to aquatic invertebrates. **DO NOT** apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. **DO NOT** contaminate water when disposing of equipment rinse water. **DO NOT** apply where/when conditions could favor runoff.

Ground Water Advisory

Tolpyralate has properties and characteristics associated with chemicals detected in groundwater. Tolpyralate may leach into groundwater if used in areas where soils are permeable, particularly where the water table is shallow.

Surface Water Advisory

This product may impact surface water due to runoff of rain water. This is especially true for poorly draining soils and soils with shallow groundwater. This product is classified as having high potential for reaching surface

water via runoff for several months or more after application. A level, well-maintained vegetative buffer strip between areas to which this product is applied and surface water features including ponds, streams, and springs will reduce the potential loading of Tolpyralate from runoff water and sediment. Runoff of this product will be reduced by avoiding applications when rainfall or irrigation is expected to occur within 48 hours.

DIRECTIONS FOR USE

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

DO NOT apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (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 12 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, including plants, soil, or water, is:

- Coveralls,
- Chemical-resistant gloves made of any waterproof materials,
- Shoes plus socks.

Sod and seed farms are within the scope of the Worker Protection Standard.

Tolpyralate 400SC Herbicide must be used only in accordance with directions on this label. To the extent consistent with applicable law, ISK Biosciences Corporation will not be responsible for losses or damage resulting from use of this product in any manner not specifically directed by ISK Biosciences.

PRODUCT INFORMATION

Mode of Action

Tolpyralate 400SC Herbicide is a Group 27 (WSSA) or Group F_2 (HRAC) herbicide. Following the absorption of Tolpyralate 400SC Herbicide by actively growing plant tissue, inhibition of p-hydroxyphenyl pyruvate dioxygenase (HPPD) occurs in susceptible weeds and growth ceases. Inhibition of HPPD typically results in bleaching symptomology observed in the growing points.

Efficacy

Tolpyralate 400SC Herbicide applied at 1.0 to 1.35 fl oz per acre (0.026 to 0.035 lb ai per acre) can control or suppress the growth of many young and actively growing broadleaf and grass weeds in wheat, barley, corn and fallow areas (Table 1).

Table 1. Broadleaf and grass weeds controlled (C) or suppressed (S) in wheat, barley, corn and fallow areas by applications of Tolpyralate 400SC Herbicide applied to actively growing weeds at 1.0 to 1.35 fl oz per acre (0.026 to 0.035 lb ai per acre).

	Scientific Name	Common Name	Tolpyralate 400SC Herbicide	Tolpyralate 400SC Herbicide + Atrazine[1] or Bromoxynil
Broadleaf Weeds	*Abutilon theophrasti*	Velvetleaf	C	C
	Amaranthus hybridus	Pigweed, smooth	C	C
	Amaranthus palmeri	Amaranth, Palmer	C	C
	Amaranthus powellii	Amaranth, Powell	C	C
	Amaranthus retroflexus	Pigweed, redroot	C	C
	Amaranthus tuberculatus	Waterhemp	C	C
	Ambrosia artemisiifolia	Ragweed, common	C	C
	Ambrosia trifida	Ragweed, giant	C	C
	Bassia scoparia	Kochia	S	C
	Chenopodium album	Lambsquarters, common	C	C
	Chorispora tenella	Mustard, blue*	C	C
	Cirsium arvense	Thistle, Canada*	S	S
	Erigeron canadensis	Horseweed*	C	C
	Helianthus annuus	Sunflower, Volunteer	C	C
	Helianthus annuus	Sunflower, Common	C	C
	Hibiscus trionum	Mallow, Venice	S	S
	Ipomoea hederacea	Morningglory, ivyleaf*	S	S
	Ipomoea purpurea	Morningglory, tall*	S	S
	Lamium amplexicaule	Henbit	C	C
	Mollugo verticillata	Carpetweed	C	C
	~~*Persicaria*~~ *Polygonum pensylvanica*	Smartweed, Pennsylvania	S	S
	Solanum nigrum	Nightshade, black	S	C
	Solanum physalifolium	Nightshade, hairy	C	C
	Solanum ptychanthum	Nightshade, eastern black	S	S
	Solanum rostratum	Buffalobur*	C	C
	Sonchus oleraceus	Sowthistle, annual*	C	C
	Xanthium strumarium	Cocklebur, common	S	C
Grass Weeds	*Digitaria sanguinalis*	Crabgrass, large	C	C
	Echinochloa crus-galli	Barnyardgrass	S	C[2]
	Eleusine indica	Goosegrass*	S	C
	Panicum dichotomiflorum	Panicum, fall*	S	C
	Panicum miliaceum	Millet, wild proso	S	C
	Setaria faberi	Foxtail, giant	C	C
	Setaria pumila	Foxtail, yellow	C	C
	Setaria viridis	Foxtail, green	C	C
	Sorghum bicolor	Sorghum	S	C[2]
	Urochloa platyphylla	Signalgrass, broadleaf*	S	S

[1]Refer to tank mixture section for details.

[2]Apply Tolpyralate 400SC Herbicide at 1.35 fl oz per acre (0.035 lb ai per acre) for control.

*Not registered for use in California.

Crop Sensitivity

Corn has exhibited little to no sensitivity to Tolpyralate 400SC Herbicide, however, crop injury may be observed when applications are made during stressful environmental conditions.

Many crops have high sensitivity to Tolpyralate 400SC Herbicide. Avoid all direct and/or indirect contact of Tolpyralate 400SC Herbicide with crops other than corn (see spray drift management and spray drift advisory sections for more information).

Tolpyralate 400SC Herbicide has not been screened on all inbred corn lines for sensitivity. Contact your seed corn supplier for more information. To the extent consistent with applicable law, ISK Biosciences is not responsible for any crop injury following the use of Tolpyralate 400SC Herbicide in inbred corn lines grown for seed.

Rotational Crop Information

The following rotational crops may be planted after applying Tolpyralate 400SC Herbicide. If Tolpyralate 400SC Herbicide is applied in a tank mixture, review the crop rotational intervals of all tank mixture partners and follow the most restrictive rotational crop interval.

Table 2. Replant and rotational crop restrictions following applications of Tolpyralate 400SC Herbicide.

Crop	Replant and Rotational Intervals (Months)
Corn (field corn, sweet corn, and popcorn), wheat, and barley	Immediate
Oats and rye	3
Alfalfa, bean (dry), bean (green; including seed production), bean (snap), cabbage, canola, cotton, pea (field and edible), peanut, potato, rice, sorghum, soybean, cucurbits, sunflower, and tomato	9
All other crops	12
Sugarbeets	18

PRODUCT CROP USE & APPLICATION INSTRUCTIONS

Tolpyralate 400SC Herbicide is registered for weed control in fallow areas, wheat, barley, field corn, sweet corn, and popcorn. Apply using ground spray equipment or by air*.
*Not permitted for aerial applications in California.

Use Restrictions

- **DO NOT** apply this product through any type of irrigation system.
- **DO NOT** exceed the single maximum application rate of 1.35 fl oz per acre (0.035 lb ai per acre).
- **DO NOT** apply more than two applications of Tolpyralate 400SC Herbicide per year.
- **DO NOT** apply more than a total of 2.70 fl oz per acre per year (0.07 lb ai/acre/year).
- Allow at least 14 days between applications of Tolpyralate 400SC Herbicide.
- **DO NOT** apply Tolpyralate 400SC Herbicide within 45 days of field corn and popcorn grain harvest.
- **DO NOT** apply Tolpyralate 400SC Herbicide within 35 days of fresh market sweet corn harvest.
- **DO NOT** graze or feed treated corn forage or silage for 21 days after application of Tolpyralate 400SC Herbicide.
- **DO NOT** tank mix Tolpyralate 400SC Herbicide with atrazine when applying to wheat or barley.

- **DO NOT** apply more than one application of Tolpyralate 400SC Herbicide to wheat or barley in one growing year.
- **DO NOT** apply Tolpyralate 400SC Herbicide within 50 days of wheat or barley grain harvest.
- **DO NOT** feed straw from treated wheat or barley to livestock for a minimum of 50 days following application.
- **DO NOT** graze livestock or harvest forage for hay from treated wheat or barley for a minimum of 21 days following application.

Corn (All types including field corn, sweet corn, and popcorn)

Apply Tolpyralate 400SC Herbicide to corn at the application rate range and timing shown in the table below.

Application Timing	Rate Range (fl oz/A)	Additional Information & Restrictions
Postemergence	1.0 to 1.35 (0.026 to 0.035 lb ai per acre)	• Apply Tolpyralate 400SC Herbicide up to the 6 leaf collar (V6) stage or up to 20 inches tall, whichever is more restrictive. • The use of drop nozzles is advised if the crop canopy prevents adequate weed coverage using ground broadcast application methods. • Refer to weed efficacy information to cross-reference the timing for Tolpyralate 400SC Herbicide applications in corn for control of target weed species. • Apply Tolpyralate 400SC Herbicide with an adjuvant for optimum activity (refer to adjuvant section for details).

Fallow

Apply Tolpyralate 400SC Herbicide to fallow areas at the application rate range and timing shown in the table below.

Application Timing	Rate Range (fl oz/A)	Additional Information & Restrictions
Postemergence	1.0 to 1.35 (0.026 to 0.035 lb ai per acre)	• Apply Tolpyralate 400SC Herbicide prior to weeds exceeding 5 inches in diameter and/or height. • Refer to weed efficacy information to cross-reference the timing for Tolpyralate 400SC Herbicide applications for control of target weed species. • Apply Tolpyralate 400SC Herbicide with an adjuvant for optimum activity (refer to adjuvant section for details).

Wheat (including Spring, Durum, and Winter Wheat) and Barley*

*Not for use in the state of California.

Apply Tolpyralate 400SC Herbicide to wheat and barley at the application rate range and timing shown in the table below.

Application Timing	Rate Range (fl oz/A)	Additional Information & Restrictions
Postemergence	1.0 to 1.35 (0.026 to 0.035 lb ai per acre)	• Apply Tolpyralate 400SC Herbicide from one leaf to flag leaf emergence.

		• Refer to weed efficacy information to cross-reference the timing for Tolpyralate 400SC Herbicide applications in wheat for control of target weed species. • Apply Tolpyralate 400SC Herbicide with an adjuvant for optimum activity (refer to adjuvant section for details). • **DO NOT** apply more than 1 application per year. • **DO NOT** apply more than 1.35 fl oz (0.035 lbs ai) per acre per year. • **DO NOT** tank mix with atrazine

Spray Carrier

Use clean water (free of mud or clay) when applying Tolpyralate 400SC Herbicide.

Spray Volume – Ground Application

Tolpyralate 400SC Herbicide can be mixed into a final spray solution that will be applied at a volume between 10 and 50 gallons per acre.

Spray Volume – Aerial Application*:

The minimum spray volume for aerial applications of Tolpyralate 400SC Herbicide is 3 gallons of final spray solution per acre. Adequate spray coverage is essential for optimal weed control. When applying for targeting dense weed populations and/or larger weeds, use a minimum of 5 gallons of final spray solution per acre.
*Not permitted for aerial applications in California.

Nozzle Selection

Tolpyralate 400SC Herbicide can be applied through various nozzle types and sizes. Review and follow restrictions from the spray drift management section before making a nozzle selection.

Adjuvants

Always use a methylated seed oil (MSO), crop oil concentrate (COC), or a nonionic surfactant (NIS) when applying Tolpyralate 400SC Herbicide to avoid reduced performance. MSO has been observed to provide the most consistent performance over a wide range of environmental conditions. MSO and COC can be applied at a concentration of 0.5 and 1% v/v (0.5 and 1 gallon per 100 gallon of spray volume), respectively, of the final spray volume. NIS can be applied at a concentration equal to 0.25% v/v (2 pints per 100 gallon of spray volume) of the final spray volume.

The addition of an ammonium nitrogen fertilizer, either a 28% or 32% N urea ammonium nitrate (UAN) or a spray grade ammonium sulfate (AMS), to the final spray solution is allowed. If UAN or AMS is added to the spray mixture, add UAN (or a liquid formulation of AMS) at a concentration of 2.5% v/v (2.5 gallons per 100 gallons or spray volume) and add AMS at a concentration of 8.5 lbs product per 100 gallons of the final spray volume.

Adjuvant Mixtures – Combinations of adjuvant products may be used at doses that are relative to the adjuvant specifications above. It is the user's responsibility to understand whether the adjuvant mixture quality is equal to or better than the addition of MSO, COC, NIS, and/or fertilizer at the rates specified above.

Tank Mixtures

Tolpyralate 400SC Herbicide may be tank mixed with other herbicides registered for weed control on Corn (All types including field corn, sweet corn, and popcorn), fallow, wheat (including Spring, Durum, and Winter Wheat) and barley. Read and follow all label directions for each product. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions, limitations, and directions for use on all product labels involved in the tank mixture. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

For tank mixtures, add individual components to the spray tank in the following sequence: water, dry formulated products, liquid formulated products, fertilizer (dry and/or liquid), and then adjuvants. Be sure to reference the product labels for each tank mixture partner to determine if exceptions apply, including the addition of the tank mixture products after the addition and dispersal of fertilizer.

Tolpyralate 400SC Herbicide is compatible with fertilizers and micronutrient products, provided sufficient free water is available for dispersion of all the products in the tank mixture. Use tank mixture combinations only when applicator experience indicates that the tank mixture will not result in objectionable crop injury.

The physical compatibility of Tolpyralate 400SC Herbicide with tank mix partners needs to be evaluated before use (see compatibility test instructions).

Compatibility Test:

Additives and tank mixtures need to be tested for compatibility by mixing in a small container prior to mixing in spray tank.

In a glass jar (~1 quart), add all mix partners, in their relative proportions. Invert, shake or mix the jar thoroughly. If mixture forms precipitates (flakes or sludge), gels, balls up or forms oily films or layers, this indicates incompatibility. Though signs of incompatibility will typically be seen within 5 minutes of mixing, mixture needs to be observed for approximately 30 minutes.

Compatibility agents can be used to facilitate mixing. Add ¼ teaspoon of the compatibility agent to the mix (assuming a mixing rate of 2 pints compatibility agent per 100 gallons spray mix). If compatibility agents to do not facilitate mixing, the mixture is incompatible and must not be used.

Tolpyralate 400SC Herbicide plus Atrazine

To improve burndown and broaden the postemergence efficacy, particularly the grass control, as well as increase the preemergence weed spectrum, add atrazine to the tank mixture with Tolpyralate 400SC Herbicide. Tolpyralate 400SC Herbicide can be applied at 1 to 1.35 fl oz per acre (0.026 to 0.035 lb ai per acre) in combination with atrazine. Refer to the atrazine label for appropriate rates.

Tolpyralate 400SC Herbicide plus Bromoxynil

To improve burndown and broaden the postemergence efficacy add bromoxynil to the tank mixture with Tolpyralate 400SC Herbicide. Tolpyralate 400SC Herbicide can be applied at 1 to 1.35 fl oz per acre (0.026 to 0.035 lb ai per acre) in combination with bromoxynil. Refer to the bromoxynil label for appropriate rates.

Tolpyralate 400SC Herbicide plus Insecticides

Tolpyralate 400SC Herbicide has no restrictions for use with registered insecticides.

Sprayer Mixing

Mixing and Loading Instructions

Prepare no more spray mixture than is needed for the immediate application and avoid overnight storage of Tolpyralate 400SC Herbicide in spray mixtures.

1. Ensure the spray system is free of residues from previous applications.
2. Fill the tank 1/2 full of clean water.
3. Turn on the tank agitation system.
4. Add the required amount of Tolpyralate 400SC Herbicide and continue agitation until the Tolpyralate 400SC Herbicide is completely dispersed.
5. As the tank is filling, add the required spray adjuvants.

Maintain agitation during mixing and application.

MANDATORY SPRAY DRIFT DIRECTIONS

Aerial Applications*

- **DO NOT** release spray at a height greater than 10 ft above the vegetative canopy, unless a greater application height is necessary for pilot safety.
- Applicators are required to use a medium or coarser droplets as indicated in nozzle manufacturers' catalogues and in accordance with American Society of Agricultural & Biological Engineers Standard (ASABE S641).
- The boom length must not exceed 65% of the wingspan for airplanes or 75% of the rotor blade diameter for helicopters.
- if the windspeed is 10 miles per hour or less, applicators must use ½ swath displacement upwind at the downwind edge of the field. When the windspeed is between 11-15 miles per hour, applicators must use ¾ swath displacement upwind at the downwind edge of the field.
- Nozzles must be oriented so the spray is directed toward the back of the aircraft.
- **DO NOT**apply when wind speeds exceed 10 miles per hour at the application site.
- **DO NOT** apply during temperature inversions.

*Not permitted for aerial applications in California.

Ground Boom Applications

- Apply with the nozzle height directed by the manufacturer, but no more than 3 feet above the ground or crop canopy.
- For all applications, applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- **DO NOT** apply when wind speeds exceed 10 miles per hour at the application site.
- **DO NOT** apply during temperature inversions.

Boom-less Ground Applications

- Applicators are required to use a Medium or coarser droplet size (ASABE S572.1) for all applications.
- **DO NOT** apply when wind speeds exceed 10 miles per hour at the application site.
- **DO NOT** apply during temperature inversions.

Spray Drift Advisories

- THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT.

- BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.
- IMPORTANCE OF DROPLET SIZE
  An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

  Controlling Droplet Size – Aircraft*
  - Adjust Nozzles - Follow nozzle manufacturer's directions for setting up nozzles. Generally, to reduce fine droplets, nozzles should be oriented parallel with the airflow in flight.

  *Not permitted for aerial applications in California.

  Controlling Droplet Size – Ground Boom
  - Volume - Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
  - Pressure - Use the lowest spray pressure directed for the nozzle to produce the target spray volume and droplet size.
  - Spray Nozzle - Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

- BOOM HEIGHT – Ground Boom
  Use the lowest boom height that is compatible with the spray nozzles that will provide uniform coverage. For ground equipment, the boom should remain level with the crop and have minimal bounce.

- SHIELDED SPRAYERS
  Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

- TEMPERATURE AND HUMIDITY
  When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

- TEMPERATURE INVERSIONS
  Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing. Avoid applications during temperature inversions.

- WIND
  Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS. Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

- BOOM-LESS GROUND APPLICATIONS
  Setting nozzles at the lowest effective height will help to reduce the potential for spray drift.

- HANDHELD TECHNOLOGY APPLICATIONS
  Take precautions to minimize spray drift.

Calibration
Equipment must be calibrated regularly according to manufacturer's specifications.

Spray Tank Cleaning
Clean application equipment thoroughly by using a strong detergent or commercial spray cleaner according to the manufacture's direction, followed by triple rinsing the equipment before and after applying this product.

PRODUCT STEWARDSHIP INFORMATION
Resistance Management
For resistance management, Tolpyralate 400SC herbicide is a Group 27 (WSSA) or Group F2 (HRAC) herbicide which inhibits carotenoid biosynthesis in plants. Any weed population may contain or develop plants naturally resistant to Tolpyralate 400SC herbicide or several other herbicide modes of action (triazine (Group 5), ALS (Group 2), PPO (Group 14), glyphosate (Group 9), auxin (Group 4), HPPD (Group 27) and etc.). The resistance biotypes may dominate the weed population if these herbicides are used repeatedly in the same field. To manage the development and spread of herbicide resistant weed species, it is important to use herbicides with different modes of action either as tank mixes or in sequential applications and in rotations along with altering cultural practices.

To delay herbicide resistance, take one or more of the following steps:

- Rotate the use of Tolpyralate 400SC or other Group 27 herbicides within a growing season sequence or among growing seasons with different herbicide groups that control the same weeds in a field.
- Use tank mixtures with herbicides from a different group if such use is permitted; where information on resistance in target weed species is available, use the less resistance-prone partner at a rate that will control the target weed(s) equally as well as the more resistance-prone partner. Consult your local extension service or certified crop advisor if you are unsure as to which active ingredient is currently less prone to resistance.
- Adopt an integrated weed-management program for herbicide use that includes scouting and uses historical information related to herbicide use and crop rotation, and that considers tillage (or other mechanical control methods), cultural (e.g., higher crop seeding rates; precision fertilizer application method and timing to favor the crop and not the weeds), biological (weed-competitive crops or varieties) and other management practices.
- Fields should be scouted prior to application to identify the weed species present and their growth stage to determine if the intended application will be effective.
- Scout after herbicide application to monitor weed populations for early signs of resistance development. Indicators of possible herbicide resistance include: (1) failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds; (2) a spreading patch of non-controlled plants of a particular weed species; (3) surviving plants mixed with controlled individuals of the same species.

- If resistance is suspected, treat weed escapes with an herbicide having a different mechanism of action and/or use non-chemical means to remove escapes, as practical, with the goal of preventing further seed production.
- If a weed population continues to progress after treatment with this product, discontinue use of this product, and switch to another management strategy or herbicide with a different mode of action, if available.
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- Contact your local extension specialist or certified crop advisors for additional pesticide resistance-management and/or integrated weed-management recommendations for specific crops and weed biotypes.
- For further information or to report suspected resistance, contact [ISK Biosciences at 1-877-706-4640].

To help reduce the development of resistance to HPPD inhibitors (Group 27), always apply the full labeled rate and at the specified application timing listed on the label. Contact your local sales representative, crop advisor, or extension agent to determine if there is suspected HPPD resistant weeds in your region. If HPPD resistant biotypes of target weeds have been reported, use the specified application rates of this product specified for your conditions and add tank mix products so that there are multiple effective mechanisms of actions for each target weed.

To manage a known herbicide resistant weed population, it is important to use herbicides with varying effective modes of action as tank mix partners, in sequential applications within a growing year, and/or in a multi-year weed management plan.

Integrated Pest Management (IPM)

Tolpyralate 400SC herbicide must be used as part of an integrated pest management strategy. Consult with local university extension and agricultural professional's for IPM strategies specific for your area.

STORAGE AND DISPOSAL

Pesticide Storage: Store product in original container only. **DO NOT** contaminate water, other pesticides, fertilizer, food or feed in storage. Store in a cool, dry place.

Pesticide Disposal: DO NOT contaminate water, food, or feed by disposal. Waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Handling: Non-refillable plastic container (equal to or less than 5 gallons). **DO NOT** reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Nonrefillable plastic container (greater than 5 gallons). **DO NOT** reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Recap 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 rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

LIMITATION OF WARRANTY AND DAMAGES

Seller warrants to those persons lawfully acquiring title to this product that at the time of first sale of this product by Seller that this product conformed to its chemical description and was reasonably fit for the express purposes stated on the label when used in accordance with Seller's directions under normal conditions of use as described on the label. To the extent consistent with applicable law, Buyers and users of this product assume the risk of any use contrary to such directions. **TO THE FULLEST EXTENT PERMITTED BY LAW, EXCEPT AS PROVIDED ELSEWHERE IN WRITING CONTAINING AN EXPRESS REFERENCE TO THIS LIMITATION OF WARRANTY AND LIMITATION OF DAMAGES, SELLER MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OR GUARANTY, AND SELLER EXPRESSLY DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTIES OF MERCHANTIBILITY OR OF FITNESS FOR A PARTICULAR PURPOSE AND EXPRESSLY DISCLAIMS ALL OTHER EXPRESS OR IMPLIED WARRANTIES THAT MAY EXIST UNDER APPLICABLE LAW, COURSE OF DEALING OR USAGE OF TRADE. NO AGENT OF SELLER IS AUTHORIZED TO GRANT ANY WARRANTY IN EXCESS OF THAT GRANTED IN THIS LIMITATION OF WARRANTY AND LIMITATION OF DAMAGES. TO THE FULLEST EXTENT PERMITTED BY LAW, IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM THE HANDLING OR USE OF THIS PRODUCT. TO THE FULLEST EXTENT PERMITTED BY LAW, SELLER'S LIABILITY FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE HANDLING OR USE OF THIS PRODUCT SHALL NOT EXCEED THE PURCHASE PRICE OF THE PRODUCT AS TO WHICH A CLAIM IS MADE.** To the fullest extent permitted by law, Buyers and users of this product are responsible for all loss or damage from use or handling of this product that results from conditions beyond the control of Seller, including, but not limited to, incompatibility with other products (unless otherwise expressly provided for in the Directions for Use of this product), weather conditions, cultural practices, moisture conditions or other environmental conditions outside of the ranges that are commonly recognized as being conducive to good agricultural and/or horticultural practices.