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OFFICE OF CHEMICAL SAFETY
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MEMORANDUM

SUBJECT: **Dicamba:** Draft Ecological Risk Assessment for Registration Review

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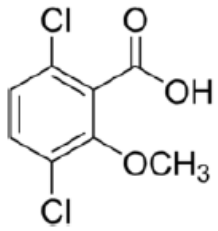
The Environmental Fate and Effects Division (EFED) has completed the draft environmental fate and ecological risk assessment in support of the registration review (RR) of dicamba.

Draft Ecological Risk Assessment for the Registration Review of Dicamba



3,6-dichloro-o-anisic acid (CAS No 1918-00-9) and associated dicamba salts
USEPA PC Codes: 029801, 029802, 029803, 029806, 100094, 128931, 128944, 129043

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1 Executive Summary

1.1 Overview

This Draft Risk Assessment (DRA) examines the potential ecological risks associated with currently registered uses of dicamba (*3,6-dichloro-o-anisic acid*) on non-target non-listed species. Risks to Federally-listed threatened and endangered species ("listed") are not evaluated in this assessment. EFED recently conducted a risk assessment for listed species specifically for registered use on genetically modified organism (GMO) dicamba tolerant (DT)-soybean and DT-cotton plants (USEPA, 2020a).[1]

Dicamba is a systemic (*i.e.*, absorbed through plant leaves and roots) benzoic acid used primarily to control annual, biennial, and perennial broadleaf weeds by mimicking auxins (a type of plant hormone) and causing abnormal cell growth. Dicamba is available in acid form as well as several salts (seven salts have currently registered products[2]) which disassociate to the acid.[3] It was first registered in the United States (US) in 1967 and is currently registered for use on a wide variety of agricultural crops (*e.g.*, soybean, cotton, corn, grains, and sorghum) as well as non-agricultural uses (*e.g.*, residential premises, rangeland, fallow fields, and turf). The residues of concern (ROC) for ecological risk include dicamba and two of its degradates (*3,6-dichlorosalicylic acid* [DCSA] and *2-chloro-6-hydroxybenzoic acid* [6-CSA]) depending on the taxonomic group and exposure pathway.

This DRA focuses on areas where there have been updates since the most recent national-level risk assessments of dicamba by the Environmental Protection Agency (EPA; USEPA, 2005 and USEPA, 2020a) to examine if the risk picture has changed based on these updates.[4] Key changes since the last major assessment of dicamba use on non-dicamba-tolerant (non-DT) plants (USEPA, 2005) include the submission of numerous toxicity studies with dicamba acid, various salts of dicamba, and DCSA (*e.g.*, fish, aquatic invertebrates, birds, honey bees, aquatic plants, and terrestrial plants) and fate and exposure studies (*e.g.*, aerobic soil and aquatic metabolism). Studies with more sensitive endpoints were incorporated into the 2020 risk assessment, but those that showed less toxicity than other existing studies are being integrated into this DRA for

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[1] The products used on DT-soybean and DT-cotton are Xtendimax (registration number 100-1623), Engenia (registration number 7969-472), and Tavium (registration number 264-1210).

[2] Dicamba dimethylamine salt (**DMA**; PC 029802), dicamba diethanolamine salt (**DEA**; PC 029803), dicamba sodium salt (PC 029806), dicamba N,N-Bis-(3-aminopropyl) methylamine salt (**BAPMA**; PC 100094), dicamba diglycoamine salt (**DGA**; PC 128931), dicamba isopropylamine salt (**IPA**; PC 128944), and dicamba potassium salt (PC 129043)

[3] **Dicamba** is used throughout the document to collectively refer to the acid and all salts, unless otherwise specified.

[4] The 2005 risk assessment was for dicamba's Registration Eligibility Decision (RED) and was based on use patterns registered at that time, which were all applications to non-dicamba-tolerant plants. The 2020 risk assessment was exclusively to evaluate risk associated with relatively recent new uses of applications to DT-plants (*i.e.*, soybean and cotton).

the first time. The key change impacting risk conclusions since the last major DT-plant assessment (USEPA, 2020a) is the addition of a chronic endpoint for toxicity of DCSA to birds.

1.2 Risk Conclusions Summary

In general, the risk conclusions of this DRA are consistent with those identified in past national-level risk assessments for dicamba (*e.g.*, USEPA, 2005 and USEPA, 2020a) with a few notable exceptions. First, this risk assessment incorporates recently submitted toxicity data (chronic toxicity of DCSA to birds) that obviates the previously identified chronic risk concern for birds exposed to DCSA in DT-soybean plants, which was based on an assumed toxicity value derived from mammalian data. Second, recently submitted toxicity data indicate a previously unidentified potential chronic risk concern for adult honey bees from all uses on non-DT plants with application rates higher than those EPA evaluated in its 2020 assessment of DT-plant uses. Finally, updated exposure estimates accounting for the combined residues of DCSA and 6-CSA indicate a previously unidentified potential chronic risk concern for non-listed fish from one use scenario.

Terrestrial Vertebrates

There is a potential risk concern for non-listed terrestrial vertebrate species limited to acute dietary exposure of dicamba to birds and chronic dietary exposure of dicamba (non-DT plants) and DCSA (DT-plants) to mammals.

The potential acute risk concern for birds is for all registered uses of dicamba with annual application rates ≥ 0.38 lb acid equivalent (ae)/A based on level of concern (LOC) exceedances for all assessed weight classes of birds and all food item categories except fruits, pod, and seeds. On-field exposure estimates are high enough to be of concern for up to 39 days after application based on upper bound residue estimates (Kenaga values) and up to 16 days based on mean estimates; however, the temporal exposure potential of an individual plant may be less depending on its sensitivity to dicamba and the foraging palatability of dead or dying plant material to an individual bird. Modeling suggests that off-field LOC exceedances due to spray drift may extend up to 67 ft (aerial applications; 24 ft for ground applications) from the edge of the treatment field depending on the droplet size range and boom height. Off-field risk concerns are limited to uses on non-DT plants because DT-plant label restrictions reduce off-field movement of dicamba below toxicity thresholds.

The potential chronic risk concern for mammals is for all registered uses of dicamba on non-DT plants with annual application rates ≥ 1.94 lb ae/A based on LOC exceedances for small and medium weight classes of mammals (15 and 35g animals) foraging on food items represented by the short grass category. There is also a potential risk concern for use on DT-soybean (DCSA exposure only) based on LOC exceedances for all assessed weight classes of mammals consuming DCSA in DT-soybean forage/hay or arthropods that had consumed the DT-soybean plants. On-field exposure estimates for non-DT plants (dicamba) are high enough to be of concern for up to six days after application whereas the duration of concern has not been

determined for DT-plants (DCSA). Modeling suggests that off-field LOC exceedances due to spray drift (non-DT plants uses) are limited to 2 ft beyond the edge of the treatment field. Exposure to DCSA is limited to DT-soybean plants located on the treatment field. Although the LOC is not exceeded for use on DT-cotton, it is unclear if measured residues in available field studies captured peak residues in cotton plants. This uncertainty can be addressed with DT-cotton plant metabolism studies that track DCSA residues over time in all parts of DT-cotton plants following post-emergent application.

Terrestrial Invertebrates

There is not a risk concern for acute exposure to bees from any uses of dicamba. However, there is a potential chronic risk concern for bees (adult and larval stages) limited to nectar attractive plants on or near the treatment field (*non-DT plants uses*: within 16 ft for ground applications and 36 ft for aerial applications depending on the droplet size spectrum and spray height) for all uses with maximum single application rates ≥ 0.44 lb ae/A. Potential risk from use on DT-plants is expected to be limited to the treatment field due to label restrictions that reduce off-field movement of dicamba below toxicity thresholds. Exposure levels may be high enough for some uses to elicit reduced survival in larvae and reduced food consumption by adults, which could have impacts on growth. The uses with the greatest potential risk on the treatment field are asparagus (post-emergent applications)[5], soybean (DT-plant post-emergent applications and non-DT plant pre-harvest applications), DT-cotton (post-emergent applications), and any registered uses on unmaintained non-agricultural areas. Uncertainty remains about risk potential from exposure to DCSA in DT-plants due to a lack of toxicity data and the possibility for DCSA to be more toxic than dicamba (most likely on a chronic basis) to some taxa; however, there is no impact on the overall risk conclusions given the potential risk concern based on exposure to dicamba.

Plants

There is a potential risk concern for non-listed aquatic non-vascular plants for a small number of uses (various grains, non-DT cotton, and sugarcane) and no risk concern for non-listed aquatic vascular plants, consistent with the findings of past risk assessments.

There is a risk concern for terrestrial plants for all currently labeled uses of dicamba. This is based on LOC exceedances from exposure to dicamba, which are not unexpected given the high toxicity of dicamba to sensitive species of plants (dicots generally appear to be more at risk than monocots) and numerous incident reports linked to dicamba use. There is not a risk concern for exposure to DCSA, which is the less phytotoxic transformation product rapidly formed in DT-plants to reduce their sensitivity to dicamba exposure. There are thousands of reported incidents allegedly caused by dicamba exposure occurring at or near a wide variety of agricultural and non-agricultural use sites and affecting a wide variety of plant species ranging

[5] Only requires bee pollination and managed pollinators for seed production. Small % of acreage is grown for seed.

from grasses to woody shrubs and trees. Overall, incidents are mostly associated with wide area (10's to 100's of acres per incident) damage to non-DT soybean plants and localized small-scale damage to lawns (*e.g.*, from use of lawn care products at residential use sites). A pronounced increase in the overall number of reported dicamba incidents allegedly associated with damage to non-target plants started around 2016 and appears to be linked to the introduction of DT-plants and over-the-top (OTT) applications to those crops (*i.e.*, an application to emerged DT-plants). The combined evidence from field studies and incident data indicates that there may be off-site movement of dicamba via run-off, spray drift, and volatility from the use of dicamba, particularly for OTT use on DT-plants. In terms of spray drift, modeling suggests that off-field LOC exceedances can extend > 1000 ft from the downwind edge of the treatment field after ground application (> 2600 ft for aerial applications). EPA's 2020 analysis (*see* USEPA, 2020a for details) of spray drift and volatility for OTT products indicates that potential risk from spray drift alone accounts for potential risk from volatility for near-field off-site non-target plants located downwind from the edge of the treatment field. Specifically, field studies with OTT products indicate that the off-site distance to toxic effects thresholds from volatility alone was significantly less than the off-site distance to effect from spray drift + volatility. On the other hand, off-field vapor exposure can be omnidirectional when dicamba volatilizes from the treated field, meaning that additional considerations are needed beyond those for spray drift alone to mitigate effects of volatilization. Restrictions on product labels may reduce the impact of run-off, spray drift, or volatility; however, products registered for use on non-DT crops generally do not include label restrictions like those on labels of products intended for use on DT-plants (*see* USEPA, 2020a for details).

In 2020, EPA concluded that its 2020 label restrictions on DT-plants would (1) reduce run-off potential and risk but not eliminate it, (2) eliminate off-site exposure from spray drift with 90% certainty of protection of non-listed plants, and (3) eliminate off-site exposure from volatility with > 95% certainty of protection of non-listed plants when considering the combined impact of all mandatory volatile emission control measures (volatility reducing adjuvant [VRA], application cut-off dates, and in-field 57-ft omnidirectional application setbacks[6]). Despite the new control measures, EPA received nearly 3,500 incident reports for the 2021 growing season of damage to non-DT soybean, numerous other crops, and a wide variety of non-target plants in non-crop areas including residences, parks, and wildlife refuges (USEPA, 2021).[7,8] These incidents were reported by various stakeholders including states, academic researchers, media, impacted individuals, and companies. EPA continues to monitor and evaluate new incident report submissions and the analysis will be updated as new information becomes available.

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[6] The omnidirectional buffer is mandatory in locations with listed-species concerns. The certainty of protection for non-listed plants is 89% in counties that do not have federally listed species.

[7] https://www.epa.gov/pesticides/epa-releases-summary-dicamba-related-incident-reports-2021-growing-season

[8] USEPA, 2021 available in the docket EPA-HQ-OPP-2020-0492-0021 at www.regulations.gov

Aquatic Animals

There is no risk concern for non-listed fish or aquatic-phase amphibians except for a potential chronic risk concern from exposure to the combined residues of DCSA and 6-CSA under a single use scenario (sugarcane in Florida).

There is no risk concern for non-listed aquatic invertebrates from the assessed uses of dicamba.

1.3 Environmental Fate and Exposure Summary

Dicamba is soluble (6,100 mg/L) and mobile (K_{oc} = 13.4 L/mg OC) in the laboratory. It is an anion at environmental pHs (pKa = 1.9); therefore, it is not expected to bioaccumulate in aquatic organisms. Dicamba is unstable to aerobic metabolism with half-lives on the order of days to weeks, while it is generally stable to abiotic processes and generally more persistent under anaerobic conditions. Dicamba may reach surface water via run-off, by spray drift during application, and by vapor drift due to volatilization based on the findings of multiple academic and registrant submitted studies, incident data, and the potential for increased volatility associated with applications during warmer temperatures and in later season applications. Dicamba is less likely to be available to leach to groundwater because it is so susceptible to aerobic degradation. However, any dicamba reaching groundwater would be somewhat persistent (due to its relative stability to hydrolysis).

The DCSA degradate is soluble and slightly to moderately mobile. Based on a log K_{OW} of -0.53, bioconcentration of DCSA is not a primary concern. DCSA may be transported to surface water via run-off or to groundwater via leaching. DCSA tends to be more stable to aerobic metabolism than dicamba with most half-lives ranging from 2 to 6 weeks. Data are not available to assess DCSA's stability to abiotic processes or anaerobic conditions. Based on structural modeling, DCSA is classified as being intermediately volatile from dry non-adsorbing surfaces. DCSA may be transported to surface water via run-off or to groundwater via leaching. DCSA is less likely to be available to leach to groundwater because it is susceptible to aerobic degradation. Fate data are not available for the 6-CSA degradate which adds an uncertainty to the assessment. However, EFED used conservative assumptions when modeling (*i.e.*, DCSA + 6-CSA) to estimate exposure to 6-CSA.

1.4 Ecological Effects Summary

The available toxicity data are sufficient for assessing risk. Although there are some data gaps (*e.g.*, chronic toxicity of dicamba acid technical grade active ingredient (TGAI) to a freshwater invertebrate), the only toxicity data that may meaningfully improve the understanding of risk are Tier II data for assessing risk to honey bees and formation/decline data for DCSA in DT-cotton and DT-soybean. EPA is currently reviewing existing data for DT-soybean that may be suitable. Furthermore, terrestrial plant (vegetative vigor) data for several of the salts (DEA, Na, K, IPA) are needed for bridging and better understanding the magnitude and scope of risk to

plants; however, it would not change the overall risk concern for terrestrial plants at a national screening-level. Finally, submission of 6-CSA toxicity data could reduce uncertainty associated with risk from exposure to this degradate.

On an acute exposure basis, dicamba is slightly toxic to practically non-toxic to fish and mammals, moderately toxic to practically non-toxic to aquatic invertebrates and birds, and practically non-toxic to honey bees. The salts quickly disassociate to the acid, and there is no evidence of them being more toxic than the acid; however, one salt-formulation (Na-salt) has shown greater acute toxicity to aquatic invertebrates.

Chronic effects from dicamba exposure have been shown in mammals (reduced weight and delayed sexual maturation), birds (reduced number of offspring), and honey bees (reduced weight, survival, and adult emergence). No effects have been observed for fish or aquatic invertebrates (up to the highest concentration tested in those studies).

In plants, dicamba acts by mimicking auxins (type of plant growth hormone) and causing abnormal cell growth, generally showing greater toxicity to the tested dicot terrestrial plant species (up to an order of magnitude or more comparing the most sensitive dicots and monocots) and widely varying toxicity to the tested aquatic vascular and non-vascular plant species.

DCSA, a major transformation product, shows greater chronic toxicity than dicamba to some taxa, but there is no evidence that it is more toxic than dicamba on an acute basis. DCSA is more toxic than dicamba on a chronic basis to mammals and fish. The relative chronic toxicity to birds (DCSA vs dicamba) is inconclusive but sufficient to conclude that DCSA could be no more than 1.8X more toxic than dicamba. DCSA and dicamba acid are of similar acute toxicity to mammals, although a DMA-salt formulation is more acutely toxic to mammals than DCSA. Available information suggests that DCSA is acutely less toxic than dicamba to fish whereas the relative acute and chronic toxicity of DCSA and dicamba is less clear for aquatic invertebrates. Available information also suggests that DCSA is less toxic than dicamba to aquatic plants, which is expected given that DT plants are able to quickly break down dicamba to DCSA to allow direct application to those crops. Toxicity of DCSA to terrestrial plants is assumed low for the same reason. No DCSA data are available for toxicity to honey bees or acute toxicity to birds.

Toxicity data are not available for 6-CSA, a major degradation product which is proposed to form from DCSA in aquatic environments. 6-CSA is similar in structure to DCSA; therefore, EPA assumed that it is similar in toxicity to DCSA. Ecological Structure Activity Relationship (ECOSAR) estimates were also used as a line of evidence of the relative toxicity of DCSA and 6-CSA. The ECOSAR results are consistent with the assumption of equal toxicity.

1.5 Identification of Data Needs

The following list of studies are those most likely to improve the understanding of risk from use of dicamba.

- Field volatility (OCSPP 835.8100) for products registered for post-emergent uses on corn and small grains

    - Dicamba has intermediate volatility and applications during warmer periods of the year have been associated with off-site plant damage. These types of studies have been required for products applied as OTT applications to DT-soybeans and DT-cotton. The submission of these studies for post-emergent applications to corn would characterize the potential volatility of these types of applications.

- Non-guideline Tier II: Field trial of residues in pollen and nectar (dicamba acid typical end-use product [TEP][9])

- Non-guideline Tier II: Semi-field testing for pollinators (dicamba acid TGAI/TEP[10])

    - Dicamba is systemic and can be absorbed through plant leaves and roots. Most uses are potentially pollinator attractive, but none require bees or managed pollinators except for asparagus seed production (small acreage) and uses that may be associated with honey production. There is a potential chronic risk concern for bees (adult risk quotients [RQs] ≤ 3 and larval RQs ≤ 5) limited to nectar-attractive plants on or near the treatment field. Given the potential chronic risk concern identified at the Tier I level, EFED recommends submission of Tier II exposure and/or colony-level effects data (dicamba) to further characterize risk to bees.

- Vegetative vigor (OCSPP 850.4150; Tier II) (DEA salt: PC 029803; Na salt: PC 029806; K salt: PC 129043; and IPA salt: PC 128944) with 7 terrestrial plant species (onion + 6 dicot species).

    - EPA anticipates that the risk conclusions are the same for all the salts; however, there is uncertainty about the magnitude of the risk estimates and potential for off-site movement without toxicity data to bridge among the salts. Available data indicate that the salt formulations can be more toxic than the acid formulations. Dicamba salts are anticipated to rapidly disassociate to the acid; therefore, it is unclear if the observed differences in toxicity are due to the salts and acid only or if other ingredients in the tested formulations increase or decrease the toxicity of the salt or the acid.

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[9] Testing with specific salts could be recommended in the future.
[10] Testing with dicamba acid (TGAI for a colony feeding study or TEP for a tunnel/enclosure study). Testing with specific salts could be recommended in the future.

- Foliar Dislodgeable Residue Dissipation Studies (DT-soybean and DT-cotton)

    - The RR data call in (DCI) erroneously identified guideline OPPTS 875.2100. The DCI should have identified non-guideline or magnitude of residue (MOR)-type (Guideline OPPTS 860.1500) studies with multiple time-point measurements of DCSA to meet this data need. EPA is reviewing existing DT-soybean studies (MRID 48644205 and 48219901), which appear to sufficiently meet the data need for DCSA formation and decline data to establish a half-life for DCSA in DT-soybean plants. However, the data need for DT-cotton remains.

In addition, submission of fate and ecological effects data for 6-CSA (*e.g.*, guideline studies as covered under 40 CFR 158) would reduce uncertainty associated with risk from exposure to this degradate.

Finally, the following study was identified in the data call in; however, EFED has determined that it has low value-added for risk assessment.

- Chronic toxicity to freshwater invertebrate (OCSPP 850.1300; Water Flea; *Daphnia magna*) (dicamba acid; PC 029801)

    - EFED considers the lack of this data to add minimal uncertainty to the risk assessment because dicamba acid TGAI would need to be at least 700X more toxic than the BAPMA-salt TEP to change risk conclusions.

Table 1-1. Summary of Risk Quotients for Taxonomic Groups from Current Uses of Dicamba

Taxa	Exposure Duration	RQ Range[1]	RQ Exceeding the LOC for Non-listed Species	Additional Information/ Lines of Evidence
Freshwater fish	Acute	< 0.01 (dicamba)	No	*Acute* Risk is assumed to be low. RQs were not calculated for estuarine/marine fish because of a non-definitive LC_{50} value. No effects were observed, and the highest concentration tested is at least three orders of magnitude higher than estimated exposure concentrations (EECs). Data indicate that DCSA is less toxic than dicamba acid. *Chronic* No LOC exceedance for dicamba. Potential chronic risk concern for a single scenario (Florida sugarcane) from the combined exposure to DCSA (DCSA is more toxic on a chronic basis than dicamba) and 6-CSA (assumed same toxicity as DCSA). It is unclear if effects observed in the DCSA toxicity study at the LOAEC (5.5% ↓ weight) would be observed because exposure values are below concentrations eliciting those effects No DCSA data for estuarine/marine fish; however low risk is assumed given that the tested estuarine-marine species showed no toxicity to dicamba (acute or chronic exposure) at concentrations higher than tested on the freshwater fish species tested with both dicamba and DCSA. *Acute and Chronic* 6-CSA is assumed to be similar toxicity as DCSA.[2] Four incidents of fish kills were reported but not clearly caused by dicamba.[3] Incidents other than mortality are unlikely to be reported.
	Chronic	< 0.01 (dicamba) 0.1 - **1.24** (DCSA + 6-CSA)	Yes	
Estuarine/marine fish	Acute	NA	NA	
	Chronic	< 0.01 (dicamba) ND (DCSA + 6-CSA)	No	

Taxa	Exposure Duration	RQ Range[1]	RQ Exceeding the LOC for Non-listed Species	Additional Information/ Lines of Evidence
Freshwater invertebrates	Acute	NA	NA	*Acute* Risk is assumed to be low. RQs were not calculated because of non-definitive LC_{50} values. Although one mortality occurred in one dicamba acid study, the highest concentration tested for all species is at least three orders of magnitude higher than EECs. The Na-salt TEP is ≥ 10X more toxic than dicamba acid; however, RQs are ≤ 0.01 for Na-salt. Relative toxicity is unclear between dicamba acid TGAI and DCSA; however, the reported DCSA toxicity (IC_{50} value) is at least three orders of magnitude higher than DCSA + 6-CSA EECs. *Chronic* There are no DCSA data for estuarine/marine invertebrates, but risk is assumed to be low because they would need to be at least 200X more sensitive to DCSA than the tested freshwater species to exceed the LOC. *Acute and Chronic* 6-CSA is assumed to be similar toxicity as DCSA.[2] No reported incidents; however, this does not indicate either a lack of exposure, mortalities of small-sized invertebrates (these would likely go unnoticed), or chronic effects.
	Chronic	< 0.01 (dicamba) < 0.01 (DCSA + 6-CSA)	No	
Estuarine/ marine invertebrates	Acute	NA	NA	
	Chronic	< 0.01 (dicamba) ND (DCSA + 6-CSA)	No	

Taxa	Exposure Duration	RQ Range[1]	RQ Exceeding the LOC for Non-listed Species	Additional Information/ Lines of Evidence
Mammals	Acute	≤ 0.24	No	Risk is assumed to be low. Acute LOC was not exceeded for dietary exposure. Screening for inhalation risk indicates exposure is unlikely to be significant. Data indicate that DCSA is of equivalent toxicity as dicamba acid and less toxic than DMA-salt. Negligible exposure to 6-CSA.[4] Limited number of potential incidents.[5]
	Chronic	< 0.1 - **1.53*** (dicamba) < 0.1 - **3.3** (DCSA – *only DT-plants*[6])	Yes	*Dicamba* The chronic LOC is exceeded for all uses with annual application rates ≥ 1.94 lb ae/A except uses on DT-soybean and DT-cotton (mammalian weight classes from 15g-35g foraging on short grass) based on dose-based toxicity estimates and on upper-bound Kenaga EECs (*RQs presented in column to the left). LOC is not exceeded based on mean Kenaga EECs (RQs <0.1-0.5). It is unclear if effects observed in the toxicity study at the LOAEL (6% to 30% ↓pup weight in F1 and F2 and 2-day delayed F1 maturation of males) would be observed because exposure values are below concentrations eliciting those effects. Potential exposure window of concern is 6 days for a given treated field.[7] Off-field LOC exceedances extend up to 2 ft from the edge of treatment field. Limited potential incidents.[5] *DCSA* Chronic LOC exceeded only for DT-soybean. Potential concern limited to DT-soybean plants on the treatment field. Exposure estimates are below the LOAEL (9%↓ pup body). *6-CSA* Negligible exposure[4]

Taxa	Exposure Duration	RQ Range[1]	RQ Exceeding the LOC for Non-listed Species	Additional Information/ Lines of Evidence
Birds	Acute	< 0.1 - **4***	Yes	The acute LOC is exceeded for all uses with annual application rates ≥ 0.38 lb ae/A (all assessed weight classes and all feeding strategies except for birds consuming fruits, pods, or seeds) based on dose-based toxicity estimates and on upper-bound Kenaga EECs (*RQs presented in column to the left). LOC is also exceeded based on mean Kenaga EECs (RQs <0.1-1.4). DCSA's acute toxicity is unknown; however, the lack of data has little impact on the risk conclusions because there is already a potential risk concern for exposure to dicamba. Negligible exposure to 6-CSA.[4] Acute LOC not exceeded for sub-acute dietary-based exposure estimates. Screening for inhalation risk indicates exposure is unlikely to be significant. Potential exposure window of concern is 39 days for a given treated field.[7] Off-field LOC exceedances may extend to 67 ft (aerial applications; 24 ft for ground applications) from the edge of the treatment field. Off-field risk concerns are limited to uses on non-DT plants because DT-plant label restrictions reduce off-field movement of dicamba below toxicity thresholds (as concluded in 2020). Limited potential incidents.[8]
	Chronic	≤ 0.69 (dicamba) ≤ 0.08 (DCSA – *only DT-plants*[6])	No	Limited potential incidents.[8] *6-CSA* Negligible exposure.[4]
Terrestrial invertebrates	Acute Adult Bee	NA	NA	Risk (contact and oral exposure) is assumed to be low. RQs were not calculated because of non-definitive LD_{50} values. No treatment-related effects were observed in available studies (contact and oral), and the highest dose tested is > EECs. DCSA acute toxicity is unknown (only dietary is relevant); however, DCSA would need to be more toxic than dicamba acid to change risk conclusions for DT-plants. Negligible exposure to 6-CSA.[4] No evidence of incidents from direct exposure.[9]

Taxa	Exposure Duration	RQ Range[1]	RQ Exceeding the LOC for Non-listed Species	Additional Information/ Lines of Evidence
Terrestrial invertebrates	Chronic Adult Bee	< 0.2 - **3**	Yes	The LOC is exceeded for uses of dicamba with maximum single application rates of ≥0.74 lb ae/A. Greatest risk potential on the treatment field for use on asparagus (post-emergent applications)[10], soybean (non-DT plant pre-harvest applications), and any unmaintained non-agricultural area uses. Other uses have lower on-field exposure potential despite the LOC exceedance. No risk concern for DT-plants; however, risk conclusions would change if DCSA is at least 1.2X more toxic than dicamba. Negligible exposure to 6-CSA.[4] Potential to elicit at least the effects observed at the LOAEL (24% ↓ food consumption). Post-emergent applications to pollinator attractive crops are assumed to have a greater risk potential than pre-emergent applications to the same crops because there may be more nectar and pollen sources on the treatment field. However, off-field risk potential from spray drift is likely the same. Off-field LOC exceedances (all uses with maximum single application rates ≥0.74 lb ae/A) extend up to 3 ft from the edge of treatment field for all ground applications except those applied by high boom and a very fine to fine droplet size, which result in exceedances up to 10 ft from the edge of the treatment field. Aerial applications result in off-field LOC exceedances up to 16 ft from the edge of the treatment field. No evidence of incidents from direct exposure.[9]

Taxa	Exposure Duration	RQ Range[1]	RQ Exceeding the LOC for Non-listed Species	Additional Information/ Lines of Evidence
Terrestrial invertebrates	Acute Larval Bee	≤ 0.23	No	DCSA acute toxicity is unknown; however, DCSA would need to be ≥7X more toxic than dicamba acid to change risk conclusions for DT-plants. Negligible exposure to 6-CSA.[4] No evidence of incidents from direct exposure.[9]
	Chronic Larval Bee	< 0.2 - **5**	Yes	LOC is exceeded for uses of dicamba with maximum single application rates of ≥0.44 lb ae/A. Greatest risk potential on the treatment field for use on asparagus (post-emergent application)[10], soybean (DT-plant post-emergent applications and non-DT plant pre-harvest applications), DT-cotton (post-emergent applications), and any unmaintained non-agricultural areas. Other uses have lower on-field exposure potential despite the LOC exceedance. Label restrictions on the timing of application to DT-soybean relative to bloom may reduce but not eliminate on-field exposure potential. Risk from DCSA exposure is unknown; however, there is already a risk concern for exposure to dicamba for DT-plants. Negligible exposure to 6-CSA.[4] Potential to elicit at least the effects observed at the LOAEL (28% ↓ survival of larvae and emergence of adults). Post-emergent applications to pollinator attractive crops are assumed to have a greater risk potential than pre-emergent applications to the same crops because there may be more nectar and pollen sources on the treatment field. However, off-field risk potential from spray drift is likely the same. Off-field LOC exceedances (all non-DT plant uses with maximum single application rates ≥0.44 lb ae/A) extend up to 7 ft from the edge of treatment field for all ground applications except those applied by high boom and a very fine to fine droplet size at single application rates of 1.94 lb ae/A and higher, which result in exceedances up to 16 ft from the edge of the treatment field. Aerial applications result in off-field LOC exceedances up to 39 ft from the edge of the treatment field. As concluded in 2020, DT-plant label restrictions reduce off-field movement of dicamba below toxicity thresholds. No evidence of incidents from direct exposure.[9]

Taxa	Exposure Duration	RQ Range[1]	RQ Exceeding the LOC for Non-listed Species	Additional Information/ Lines of Evidence
Aquatic plants	N/A	0.01 - **1.2** (non-vascular) ≤ 0.06 (vascular)	Yes (non-vascular) No (vascular)	Data indicate that DCSA is less toxic than dicamba acid. 6-CSA is assumed to be less toxic than dicamba acid.[11] *Non-vascular plants*: Potential risk concern is most likely for use on grains (*i.e.*, barley, oat, small grains, and wheat), cotton (non-DT plants), and sugarcane. The risk concern for grains is based on the use rate permitting applications up to 2 lb ae/A annually to the treated field, which can be all pre-emergent or a combination of pre- and post-emergent applications. *Vascular plants*: No LOC exceedances based on available toxicity data that can be used for RQ calculation or based on data that can be used for characterization purposes. There are no reported incidents; however, incidents with aquatic plants, particularly non-vascular plants are unlikely to be reported.

Terrestrial plants	N/A	< 0.1 - **195** (dicot) < 0.1 - **3** (monocot)	Yes	Dicamba is converted to the less phytotoxic DCSA in DT-plants. 6-CSA is assumed to be less toxic than dicamba acid.[11] *Non-DT plant uses* Spray-drift related off-field LOC exceedances > 1000 ft (dicots) from the downwind edge of treatment field for ground applications and > 2600 ft (dicots) for aerial applications. Omnidirectional off-field LOC exceedances anticipated from volatilization of dicamba from the treatment field for OTT applications. Off-site distances are not quantified, but an analysis based on products used for OTT applications to DT-plants indicates volatility distances are less than from spray drift alone. *DT-cotton and DT-soybean plant uses* Refined analysis based on label restrictions intended to reduce run-off, spray drift, and volatility and field studies simulating those restrictions (USEPA, 2020a). In 2020, EPA concluded that label restrictions on DT-plants (1) reduce run-off potential and risk but does not eliminate it, (2) eliminate off-site exposure from spray drift with 90% certainty of protection of non-listed plants, and (3) eliminate off-site exposure from volatility with > 95% certainty of protection of non-listed plants when considering the combined impact of all mandatory volatile emission control measures (VRA, application cut-off dates, and in-field 57-ft omnidirectional application setback[12]). *Incidents* Local small-scale residential uses (*e.g.*, lawn care products) comprise most of the alleged incidents occurring prior to the registered OTT use of dicamba on DT-plants. A pronounced increase in wide area incidents (10's to 100's of acres per incident, mostly damage to off-site non-DT soybean) started in 2016 shortly after DT-plant seeds became commercially available and those incidents appear to be linked to OTT use on DT-cotton and DT-soybeans (registered use and misuse) or in some cases OTT use on non-DT plants. Incidents have been reported occurring at or near a wide range of agricultural and non-agricultural use sites and affecting a wide variety of plant species ranging from grasses to woody shrubs and trees. Wide area incidents allegedly associated with dicamba use continued in the 2021 growing season (3,500 incident reports involving damage to non-DT soybean, a variety of agricultural crops, and non-agricultural use sites) despite the label control measures put in place with the 2020 OTT registration decision.

LOC definitions: Terrestrial vertebrates: Acute=0.5; Chronic=1.0; Terrestrial invertebrates=0.4; Aquatic Animals: Acute=0.5; Chronic=1.0; Plants: 1.0
Bolded values exceed LOC.
NA = not applicable
ND = not determined due to a lack of toxicity data
[1] RQ range for exposure to dicamba unless specified otherwise.
[2] 6-CSA is structurally similar to DCSA (potential for equivalent toxicities) and ECOSAR toxicity estimates suggest similar toxicity of DCSA and 6-CSA. Exposure estimates are based on the combined residues of DCSA and 6-CSA and toxicity estimates are based on available DCSA data.
[3] Four reported incidents of fish kills. One of the fish incidents is considered unlikely to have been caused by dicamba exposure, and three are considered possible; however, all those incidents report multiple active ingredients potentially applied in the vicinity of the fish kills; therefore, it is unclear if dicamba was the cause of any of the incidents. Furthermore, two of those incidents were followed up with analytical sampling for pesticide residues in water and sediment samples taken in the vicinity of the fish kills. None of the pesticides allegedly associated with those incident reports were detected (dicamba was not specifically tested for one of those incidents; however, there was no detection of the other pesticide that was allegedly in the reported tank mix with dicamba), further calling into question the link with dicamba exposure.
[4] Although DCSA is considered a ROC for terrestrial animals foraging on DT-plants or consuming arthropods that foraged on DT-plants, 6-CSA was not observed forming in available plant metabolism studies for DT-soybean and DT-cotton (MRID 48644205, 48219901, and 48728703). Therefore, 6-CSA is not a ROC for terrestrial animals because EPA considers 6-CSA residues to be negligible in plants and arthropods.
[5] One incident with mammals (4 rabbits, possible causality of dicamba exposure); however, incidents with chronic effects are less likely to be observed or reported. Incident reports for wild animals are typically observations of mortalities. Numerous incidents (22) with unspecified wildlife and otherwise lacking details.
[6] Available data indicate that DCSA residues are expected to be negligible in non-DT plants; however, DCSA residues are expected at higher concentrations in DT-plants because they contain the modified gene that confers dicamba tolerance on DT-plants allowing the DT-plants to convert dicamba residues to form the less phytotoxic DCSA. Therefore, it is assumed that there is negligible exposure to DCSA in non-DT plants and potential exposure in DT-plants.
[7] Plant sensitivity to dicamba will vary; thus, some foraging items may be palatable for a shorter period of time.
[8] There is only one incident specifically associated with birds and it is unlikely to have been caused by exposure to dicamba. Numerous incidents (22) with unspecified wildlife and otherwise lacking details. Incidents with chronic effects are less likely to be observed or reported.
[9] There are two reported incidents with bees; however, one is considered unlikely to have been caused by dicamba exposure and the other was attributed to indirect effects (*i.e.*, alleged dicamba-caused loss of habitat).
[10] Only requires bee pollination and managed pollinators for seed production. Small % of acreage is grown for seed.
[11] 6-CSA is structurally similar to and a proposed breakdown product of DCSA, which is considered non-toxic to plants.
[12] The omnidirectional buffer is mandatory in locations with listed-species concerns. The certainty of protection for non-listed plants is 89% in counties that do not have federally listed species.

2 Introduction

This DRA examines the potential ecological risks associated with labeled uses of dicamba on non-listed non-target organisms. Listed species are not evaluated in this document; however, EFED recently conducted a risk assessment for listed species specifically for registered use on DT-soybean and DT-cotton plants (USEPA, 2020a). The DRA uses the best available scientific information on the use, environmental fate and transport, and ecological effects of dicamba. The general risk assessment methodology is described in the *Overview of the Ecological Risk Assessment Process in the Office of Pesticide Programs* ("Overview Document") (USEPA, 2004). Additionally, the process is consistent with other guidance produced by EFED as appropriate. When necessary, risks identified through standard risk assessment methods are further refined using available models and data. This risk assessment incorporates the available exposure and effects data and the most current modeling and methodologies.

3 Problem Formulation Update

The purpose of problem formulation (PF) is to provide the foundation for the environmental fate and ecological risk assessment being conducted for the labeled uses of dicamba. The PF identifies the objectives for the risk assessment and provides a plan for analyzing the data and characterizing the risk. As part of the RR process, a detailed PF for this DRA was published to the docket[11] in July 2016 (USEPA, 2016a). Past dicamba assessments covering a range of use patterns and application rates (*e.g.*, USEPA, 2005 and USEPA, 2020a) identified potential risk to birds (acute and chronic), mammals (chronic), bees (chronic; larvae), aquatic plants, and non-target terrestrial plants.

Substantive updates since the PF include the submission of toxicity, environmental fate, and exposure data.

In addition, EPA has conducted substantial revisions and refinements to the assessment of risk from DT-soybean and DT-cotton uses. In support of that registration, a number of laboratory and field volatility and plant effects studies have been submitted to the Agency. Those data are summarized in the most recent risk assessment (USEPA, 2020a).

Since the PF was completed, the following additional data have been submitted and reviewed (some not associated with the RR DCI]:

[11] The dicamba RR public docket (ID number EPA-HQ-OPP-2016-0223) is available at www.regulations.gov.

Environmental Fate and Exposure Data

- Aerobic aquatic metabolism study (radiolabeled dicamba technical; PC 029801) (MRID 50931307)
- Aerobic soil metabolism study (radiolabeled dicamba technical; PC 029801) (MRID 50931306)
- Environmental chemistry methods in soil (ECM) (dicamba acid; PC 029801 and DCSA) (MRID 50914301)
- Environmental chemistry methods in soil (Independent laboratory validation [ILV]) (dicamba acid; PC 029801 and DCSA technical) (MRID 50931309)
- Environmental chemistry methods in soil (ECM & ILV) (dicamba; PC 029801 and DCSA) (MRID 50784607)
- Environmental chemistry methods in water (ECM) (dicamba acid; PC 029801 and DCSA) (MRID 50914302)
- Environmental chemistry methods in water (ILV) (dicamba technical; PC 029801 and DCSA) (MRID 50931310)
- Environmental chemistry methods in water (ECM) (DCSA) (MRID 51052502)
- Environmental chemistry methods in water (ILV) (DCSA) (MRID 51052501)
- Environmental chemistry methods in water (ECM) (dicamba acid; PC 029801) (MRID 51052504)
- Environmental chemistry methods in water (ILV) (dicamba acid; PC 029801) (MRID 51052503)

More specific information on these new data is described in **Section 5** and **8.1**. The additional data are used to update aquatic modeling input values.

Ecotoxicity Data

- Acute toxicity to freshwater fish (Fathead minnow; *Pimephales promelas*) (BAPMA salt; PC 100094) (MRID 48718008)
- Chronic toxicity to freshwater fish (early life stage; ELS) (Fathead minnow; *Pimephales promelas*) (dicamba acid; PC 029801) (MRID 48718010)
- Chronic toxicity to freshwater fish (early life stage; ELS) (Fathead minnow; *Pimephales promelas*) (DCSA) (MRID 50944101)
- Chronic toxicity to estuarine-marine fish (early life stage; ELS) (Sheepshead minnow (*Cyprinodon variegates*) (dicamba acid; PC 029801) (MRID 48718011)
- Acute toxicity to mollusk (Eastern Oyster; *Crassostrea virginica*) (dicamba acid; PC 029801) (MRID 50784605)
- Acute toxicity to mollusk (Eastern Oyster; *Crassostrea virginica*) (dicamba acid; PC 029801) (MRID 50881003)
- Chronic toxicity to freshwater invertebrate (Water Flea; *Daphnia magna*) (BAPMA salt; PC 100094) (MRID 48718007)
- Chronic toxicity to freshwater invertebrates (Water Flea; *Daphnia magna*) (DCSA) (MRID 50944102)

- Chronic toxicity to estuarine-marine invertebrates (Mysid; *Americamysis bahia*) (dicamba acid; PC 029801) (MRID 48718012)
- Toxicity to aquatic vascular plant (Duckweed; *Lemna gibba*) (dicamba acid; PC 029801) (MRID 50881002)
- Toxicity to aquatic non-vascular plant (Green algae; *Pseudokirchneriella subcapitata*) (BAPMA salt; PC 100094) (MRID 48718009)
- Acute oral toxicity to birds (Zebra finch; *Taeniopygia guttata*) (dicamba acid; PC 029801) (MRID 48718013)
- Acute oral toxicity to birds (Bobwhite quail; *Colinus virginianus*) (BAPMA salt; PC 100094) (MRID 48718006)
- Chronic toxicity to birds (Mallard duck; *Anas platyrhynchos*) (DCSA) (MRID 50944103)
- Acute contact toxicity to adult honey bees (Honey bees; *Apis mellifera* L.) (dicamba acid; PC 029801) (MRID 50784601)
- Acute oral toxicity to adult honey bees (Honey bees; *Apis mellifera* L.) (dicamba acid; PC 029801) (MRID 50818801)
- Acute oral toxicity to adult honey bees (Honey bees; *Apis mellifera* L.) (dicamba acid; PC 029801) (MRID 50784601)
- Chronic oral toxicity to adult honey bees (Honey bees; *Apis mellifera* L.) (dicamba acid; PC 029801) (MRID 50784603)
- Chronic oral toxicity to adult honey bees (Honey bees; *Apis mellifera* L.) (dicamba acid; PC 029801) (MRID 50931304)
- Acute oral toxicity to larval honey bees (repeat-dose) (Honey bees; *Apis mellifera* L.) (dicamba acid; PC 029801) (MRID 50931302)
- Chronic oral toxicity to larval honey bees (Honey bees; *Apis mellifera* L.) (dicamba acid; PC 029801) (MRID 50784602)
- Chronic oral toxicity to larval honey bees (Honey bees; *Apis mellifera* L.) (dicamba acid; PC 029801) (MRID 50931303)
- Seedling Emergence (Tier II) (dicamba acid; PC 029801) (MRID 50931308)
- Seedling Emergence (Tier II) (DGA salt; PC 128931 + s-metolachlor) (MRID 50102115)
- Seedling Emergence (Tier II) (BAPMA salt; PC 100094) (MRID 48718014)
- Vegetative vigor (Tier II) (dicamba acid; PC 029801) (MRID 50914303)
- Vegetative vigor (Tier II) (DGA salt; PC 128931) (MRID 50888101)
- Vegetative vigor (Tier II) (DGA salt; PC 128931) (MRID 50784604)
- Vegetative vigor (Tier II) (DGA salt; PC 128931 + Induce surfactant) (MRID 51068202)
- Vegetative vigor (Tier II) (DGA salt; PC 128931 + s-metolachlor) (MRID 50102116)
- Vegetative vigor (Tier II) (DGA salt; PC 128931 + glyphosate ethanolamine salt) (MRID 49953901)
- Vegetative vigor (Tier II) (DGA salt; PC 128931 + glyphosate ethanolamine salt) (MRID 50103801)
- Vegetative vigor (Tier II) (DMA salt; PC 029802) (MRID 50931305)
- Vegetative vigor (Tier II) (BAPMA salt; PC 100094) (MRID 48718015)
- Vegetative vigor (Tier II; vapor exposure) (dicamba acid: PC 029801; DGA: PC 128931; DMA: PC 029802) (MRID 49925703)

- Vegetative vigor (Tier II; vapor exposure) (dicamba acid: PC 029801; DGA: PC 128931; DMA: PC 029802) (MRID 50578901)

These data are sufficient for risk assessment and are described in **Section 6** and **Appendix A.**

3.1 Mode of Action for Target Pests

Dicamba is a systemic (*i.e.*, absorbed through plant leaves and roots) herbicide in the benzoic acid chemical class, similar in structure and mode of action to phenoxy herbicides. It acts on sensitive target plants by mimicking auxins (a type of plant hormone) and causing abnormal cell growth. Target plants are primarily annual, biennial, and perennial broadleaf weeds.

3.2 Label and Use Characterization

3.2.1 Label Summary

Dicamba is used as an herbicide registered for use on a wide variety of agricultural use sites for the following crops: asparagus, barley, corn, cotton, grasses grown for seed/forage/fodder/hay, oats, proso/millet, sorghum, soybeans, sugarcane, triticale, wheat, pasture/rangeland, and forestry. The uses are primarily pre-emergent or fallow-field applications, but some (*i.e.*, corn, small grains, soybeans, and cotton) may also be made as post-emergent applications. Dicamba is also registered for use on non-agricultural use sites including farm and domestic premises, conservation reserve program land, commercial/industrial lawns, recreational/residential lawns, golf course turf, rights-of-way, fencerows and hedgerows, ornamental herbaceous plants, ornamental woody shrubs and vines, ornamental lawns and turf, ornamental sod (turf), paved areas, and paths/patios. Registered use with soybean and cotton is only for pre-emergent applications with non-DT plants, whereas both pre-emergent and post-emergent applications can be made with DT-soybean and DT-cotton plants. Applications to DT-soybean and DT-cotton plants are only permitted with specific DGA-salt and BAMPA-salt products (Xtendimax, registration number 100-1623; Engenia, registration number 7969-472; and Tavium, registration number 264-1210). The maximum labeled use patterns for dicamba are summarized in **Appendix B**.

The use information presented in this DRA was obtained from the tables in the EFED Label Data Report dated 6/22/2015, from the Biological and Economic Analysis Divisions (BEAD) Chemical Profile for RR (USEPA, 2015). Various labels were consulted to clarify information in the BEAD report, as needed. Additionally, EPA considered the recent (2020) new use registration for OTT applications to DT-soybeans and DT-cotton.

Dicamba end-use products are formulated as emulsifiable concentrate, soluble concentrate, granule, wetted powder, and ready-to-use solution. Dicamba can be applied by broadcast spray (aerial and ground), spot treatment, banded, wipe on/wipe off treatment, cut-stem treatments, forestry injection, and basal bark treatment. EPA performed the risk assessment based on

broadcast spray applications because the application rates are the same across these different application methods and spray drift estimates for broadcast sprays are conservative for the other application types. The one exception is that granule exposure was also considered for risk to birds and mammals because the exposure pathway differs from that of spray applications.

The maximum single and annual application rate is 2 lb ae/A for non-DT plants, which includes use on pastures, rangeland, and hay. The maximum single application rate for DT-plants (cotton and soybean) is 0.5 lb ae/A with a minimum reapplication interval of 7 days. The acid equivalent is the portion of the applied formulation that theoretically could be converted back to the parent acid. It is estimated by multiplying the application rate by the ratio of the molecular weight of the acid minus 1 and the molecular weight of the salt. Converting the active ingredient (ai) to acid equivalent allows for a comparison, in common units, across application rates for the various dicamba salts.

3.2.2 Usage Summary

Historically, dicamba has been an important herbicide used on many crops including corn, fallow, pasture, sorghum, soybeans, sugarcane, and wheat crops, where it is used primarily as a burndown treatment prior to planting. With the addition of OTT applications of specific dicamba products to DT-cotton and DT-soybean in 2016, dicamba usage for these crops is increasingly prevalent, leading to an overall increase in total dicamba usage. In 2017 and 2018, on average 10.5 million pounds of dicamba were applied in soybeans each year, and on average 3.4 million pounds of dicamba were applied in cotton each year; these numbers may underestimate current usage (Orlowski and Kells 2020a, Orlowski and Kells 2020b).

3.2.3 Label Uncertainties

There is a lack of clarity in some dicamba labels because they do not specify the number of applications or the minimum retreatment interval between applications. However, most labels were amended after the 2006 RED (USEPA, 2006) to limit the maximum annual application rate of dicamba to 2 lb ae/A; therefore, the number of applications is limited by the annual application rate of dicamba. In cases where multiple applications are possible and a minimum retreatment interval is not specified, a retreatment interval of 7 days was used for modeling. EFED assumed this was a reasonable duration of time after an initial application to identify if a subsequent application would be necessary.

After the approval of OTT applications of specific dicamba products to DT-cotton and DT-soybean in 2016, there has been an increase in reported incidents of visual damage to non-target plants allegedly from off-site dicamba movement. It is uncertain what caused the damage reported in individual incidents; however, it was most likely the result of spray drift, volatility, or some combination of the two. However, these incidents primarily occurred during hot Summer months when dicamba products could be applied to post-emergent DT-plants, and the potential for volatilization of dicamba was higher due to higher environmental

temperatures. In contrast, products not used for OTT applications are typically applied as pre-emergent, post-harvest, or fallow-field applications when temperatures are typically not elevated (*e.g.*, in Spring or Fall), reducing the potential for significant off-site exposure due to volatility. That said, there are some non-DT plant uses, particularly applications to grains (*i.e.*, oats, sorghum, triticale, wheat) and corn, which can occur as post-emergent applications and may occur during times when temperatures are high enough to cause off-site exposure due to volatility. For these uses, it is uncertain how much dicamba volatilizes after these post-emergent applications because field volatility studies have not been conducted for these products or use sites. In response to the increased number of reported incidents beginning in 2016, label modifications for DT-cotton and DT-soybean products were made, including the use of nozzles that produced ultra-coarse droplets, a 240-foot in-field spray drift buffer, the mandatory addition of a volatility reducing agent in the tank, and cut-off dates to restrict final applications. Those changes were intended to reduce off-site damage to non-target plants and were considered by EFED in the 2020 dicamba risk assessment (USEPA, 2020a). It should be noted that these label restrictions are limited to dicamba products applied OTT to DT-soybean and DT-cotton.

4 Residues of Concern

Dicamba (acid and salt forms), DCSA, and 6-CSA are the residues of concern for the ecological risk assessment based on exposure potential for each compound (**Section 5**) and available toxicity data (**Section 6**). Dicamba is a ROC for all exposure pathways and taxonomic groups whereas DCSA and 6-CSA (the two major degradation products) are ROCs depending on the exposure pathway and taxonomic group. Dicamba and DCSA were considered separately given that chronic toxicity of DCSA is greater than dicamba, and the two compounds may differ in terms of mode of action. Risk from 6-CSA is considered with that of DCSA given the structural similarity and assumed comparable toxicities of the two compounds. Furthermore, 6-CSA is proposed to be a breakdown product of DCSA.

DCSA is a ROC for fish given that it is more toxic than dicamba on a chronic exposure basis, it forms up to 62% of applied dicamba in an anaerobic aquatic metabolism study (MRID 43245208), up to 38% in aerobic aquatic metabolism studies (MRID 43758509), and up to 36% in aerobic soil metabolism studies (MRID 50931306, *see* **Appendix C**). Although DCSA is a ROC based on chronic toxicity, it is at least 3.5X less acutely toxic than dicamba to the tested fish.

EFED considered DCSA a ROC for aquatic invertebrates because the available data are insufficient to confirm the relative chronic toxicity of DCSA and dicamba. Likewise, the relative acute toxicity of DCSA and dicamba is unclear for aquatic invertebrates; therefore, EFED considered risk from DCSA exposure.

DCSA is a ROC for mammals given that it is more toxic than dicamba on a chronic exposure basis; however, it is 3X less acutely toxic than the DMA-salt. EFED assumed that terrestrial animals are potentially exposed to DCSA only in DT-plants. Available plant metabolism data

indicate that DCSA residues are expected to be negligible in non-DT plants[12] whereas DCSA residues are expected at higher concentrations in DT-plants because they contain the modified gene that confers dicamba tolerance on DT-plants allowing the DT-plants to convert dicamba residues to form the less phytotoxic DCSA (*as discussed in* USEPA, 2020a). Therefore, EFED assumed that DCSA exposure for terrestrial vertebrates occurs as a result of feeding on DT-plants, but that exposure would be negligible for terrestrial vertebrates feeding on non-DT plants. The only potential impact of DCSA on risk conclusions for non-DT plants is for chronic toxicity to mammals because DCSA is more toxic than dicamba; however, available information suggests that the difference in toxicity is not great enough to change risk conclusions for non-DT plants when taking into account the relative difference in residues of dicamba and DCSA detected in non-DT plants (*e.g.*, DCSA detected at concentrations 46 to 69X lower than dicamba versus 6 to 17X increased toxicity of DCSA compared to dicamba depending on comparison of the NOAEL or LOAEL; *as presented in* USEPA, 2016b). Although DCSA could potentially be formed at higher concentrations in untested species, risk conclusions would not change unless those concentrations occurred at levels observed in DT-plants, which are modified to specifically detoxify dicamba to DCSA.

DCSA is also considered a ROC for birds because the available data are insufficient to confirm the relative chronic toxicity of DCSA and dicamba, and acute toxicity data are not available. DCSA toxicity data are not available for honey bees, which could be exposed to residues in pollen and nectar in DT-plants. Therefore, uncertainty is characterized. Finally, DCSA is not a residue of concern for plants because available information indicates that it is less toxic than dicamba.

6-CSA is a ROC for aquatic animals because it is structurally similar to DCSA (potential for equivalent toxicities) and it forms up to 24% of applied dicamba in an aerobic aquatic metabolism study (MRID 50931307, *see* **Appendix C**). ECOSAR results were also used as weight of evidence and are consistent with the assumption of equal toxicity; however, the results could only be interpreted with caution due to limited empirical data and in some cases poor estimates of endpoints where empirical data were available (*see* **Section 6.1**). 6-CSA was not identified in any of the other environmental fate studies. Aquatic exposure estimates for 6-CSA are combined with those of DCSA. 6-CSA is not a ROC for plants because it is structurally similar to and a proposed breakdown product of DCSA, which is considered non-toxic to plants. Although DCSA is considered a ROC for terrestrial animals foraging on DT-plants or consuming arthropods that foraged on DT-plants, 6-CSA was not observed forming in available plant metabolism studies for DT-soybean and DT-cotton (MRID 48644205, 48219901, and 48728703). Therefore, 6-CSA is not a ROC for terrestrial animals because EFED considers 6-CSA residues to be negligible in plants and arthropods.

[12] When DCSA has been observed in non-DT plants (monocots and dicots), it is a small fraction of overall residues (*e.g.*, USEPA, 1998, USEPA, 2016b, Chang and Vanden Born, 1971)

5 Environmental Fate Summary

Dicamba is classified as mobile to highly mobile based on measured K_{oc} values (3.45-21.2 L/kg_{oc}) and the United Nations' Food and Agriculture Organization (FAO) classification system (FAO, 2000). Dicamba may be transported to surface water via spray drift, run-off, or volatilization or to groundwater via leaching. However, given dicamba's aerobic soil metabolism values (8-15 days), the probability that dicamba will reach groundwater is unlikely. Limited leaching is supported by observations in the terrestrial field dissipation studies in which dicamba was measured at up to 30 cm depth in the soil, while samples were collected up to a depth of 90 cm. While dicamba may be found in both water and sediment, the octanol-water partition coefficient (K_{ow}) and organic-carbon normalized soil-water distribution coefficient (K_{OC}) values are much lower than the values that would trigger the need to conduct a separate sediment exposure assessment (40 CFR Part 158.630).[13] Compounds with a log K_{OW} of three and above are generally considered to have the potential to bioconcentrate in aquatic organisms. Based on log K_{OW}'s ranging from -0.8 to 0.95, as well as the fact that dicamba exists as an anion at environmental pHs, bioconcentration of dicamba is not a primary concern. Dicamba falls between the classification for non-volatile and intermediate volatility on dry non-adsorbing surfaces and non-volatile from water (USEPA, 2010a). However, a number of literature studies have demonstrated that dicamba has increased volatility when applied during increased temperatures of the Summer.[14] **Table 5-1** summarizes the physical chemical properties of dicamba.

Table 5-1. Summary of Physical-Chemical, Sorption, and Bioconcentration Properties of Dicamba

Parameter	Value[1]	Source/Study Classification/Comment
Molecular Weight (g/mole)	221.04	--
Water Solubility Limit at 25°C (mg/L)	6100	SANDOZ Safety Data Sheet (No. 1998)
Vapor Pressure at 25°C (torr)	3.41×10^{-5}	SANDOZ Safety Data Sheet (No. 1998)
Henry's Law Constant at 25°C (atm-m^3/mole)	4.37×10^{-10}	Estimated[1] from vapor pressure and water solubility at 25°C
Log Dissociation Constant (pKa)	1.87	MRID 43140308
Octanol-water Partition Coefficient (K_{ow}) at 25°C (unitless)	3.5 (log K_{OW}=0.54), pH 5, 7, and 9	MRID 43140309 Not likely to bioconcentrate significantly

[13] Sediment data may be required if the soil-water distribution coefficient (K_d) is ≥ 50 L/kg, K_{OC}s are ≥1000 L/kg-organic carbon, or the log K_{OW} is ≥ 3 (40 CFR Part 158.630). Sediment data may also be requested if there is a toxicity concern.

[14] Al-Khatib and Tamhane, 1999; Auch and Arnold, 1978; Everitt and Keeling, 2009; Kelley et al., 2005; Hamilton and Arle, 1979; Marple et al., 2008; Wall, 1994; Weidenhamer et al., 1989; Wax et al., 1969.

Parameter	Value[1]			Source/Study Classification/Comment
Air-water Partition Coefficient (K_{AW}) (unitless)	6.65×10^{-8} (log K_{AW} = -7.2)			Estimated[1] from vapor pressure and water solubility at 25°C and pH 7
Soil-Water Distribution Coefficients (Kd in L/kg-soil or sediment) Organic Carbon-Normalized Distribution Coefficients (Koc in L/kg-organic carbon)	**Soil/Sediment**	**K_d**	**K_{OC}**	MRID 42774101 Acceptable Mobile to Highly Mobile (FAO classification system); K_{OC} better predictor of sorption based on lower CV
	Kenyon loam, pH 7.1, 2.2% OC	0.16	7.27	
	Clay loam, pH 6.9, 2.9% OC	0.10	3.45	
	Silt loam, pH 5.1, 2.5% OC	0.53	21.2	
	Sandy loam, pH 8.1, 0.4% OC	0.07	17.5	
	Sediment loam, pH 7.3, 1.2% OC	0.21	17.5	
	Mean	0.21	13.4	
	CV	86%	57%	
Fish Bioconcentration Factor (BCF)	**Species**	**BCF**	**Depur-ation**	No data submitted. Given log K_{OW} < 3, compound not expected to bioconcentrate.
	--	--	--	

CV = coefficient of variation
[1] All estimated values were calculated according to USEPA, 2010a.

The DCSA degradate is classified as slightly mobile to moderately mobile based on measured K_{oc} values (242 - 2930 L/kg_{oc}) and the FAO classification system (FAO, 2000). DCSA may be transported to surface water via run-off or to groundwater via leaching. However, given DCSA's aerobic soil metabolism values (2-33 days), the probability that DCSA will reach groundwater is unlikely. Limited leaching is supported by observations in the terrestrial field dissipation studies in which DCSA was measured at up to 20 cm depth in the soil, while samples were collected up to a depth of 90 cm. While it may be found in both water and sediment, the octanol-water partition coefficient (K_{ow}) and soil-water distribution coefficient (K_d) values are lower than the values that would trigger the need to conduct a separate sediment exposure assessment (40 CFR Part 158.630).[15] Compounds with a log K_{OW} of three and above are generally considered to have the potential to bioconcentrate in aquatic organisms. Based on a log K_{ow} of -0.53, bioconcentration of DCSA is not a primary concern. DCSA is classified as non-volatile from water and intermediately volatile from dry non-adsorbing surfaces (USEPA, 2010a). **Table 5-2** summarizes the physical chemical properties of DCSA.

Table 5-2. Summary of Physical-Chemical, Sorption, and Bioconcentration Properties of Dicamba's Degradate DCSA

Parameter	Value[1]	Source/Study Classification/Comment
Molecular Weight (g/mole)	207	--
Water Solubility Limit at 25°C (mg/L)	2112	MRID 43095301

[15] Sediment data may be required if the soil-water distribution coefficient (K_d) is ≥ 50 L/kg, K_{OC}s are ≥1000 L/kg-organic carbon, or the log K_{OW} is ≥ 3 (40 CFR Part 158.630). Sediment data may also be requested if there is a toxicity concern.

Parameter	Value[1]			Source/Study Classification/Comment
Vapor Pressure at 25°C (torr)	5.98×10^{-5}			Estimated value EPIWeb Version 4.1
Henry's Law Constant at 25°C (atm-m^3/mole)	1.72×10^{-9}			Estimated[1] from vapor pressure and water solubility at 25°C.
Octanol-water Partition Coefficient (K_{ow}) at 25°C (unitless)	0.29 (log K_{OW}=-0.53), pH 5, 7, and 9			MRID 41966601 Not likely to bioconcentrate significantly.
Air-water Partition Coefficient (K_{AW}) (unitless)	3.15×10^{-7} (log K_{AW} = -6.5)			Estimated[1] from vapor pressure and water solubility at 25°C and pH 7
Soil-Water Distribution Coefficients (Kd in L/kg-soil or sediment) Organic Carbon-Normalized Distribution Coefficients (Koc in L/kg-organic carbon)	**Soil/Sediment**	**K_d**	**K_{OC}**	MRID 43095301 Acceptable Slightly to Moderately Mobile (FAO classification system); K_d better predictor of sorption based on lower CV.
	Sandy loam, pH 6.7, 0.4% OC	2.51	628	
	Clay loam, pH 6.9, 2.9% OC	7.03	242	
	Silt loam, pH 5.1, 2.5% OC	20.3	812	
	Loam, pH 7.1, 2.2% OC	31.5	1432	
	Sediment loam, pH 7.3, 1.2% OC	35.2	2930	
	Mean	19.3	1209	
	CV	75%	87%	
	--	--	--	

CV = coefficient of variation
[1] All estimated values were calculated according USEPA, 2010a.

Dicamba is degraded by aerobic metabolism in soils (half-lives ranged from 6 to 15.1 days at 20-23°C in five soils). Aerobic soil metabolism results indicate that dicamba is non-persistent based on the Goring persistence scale (Goring et al., 1975).[16] Dicamba is stable to hydrolysis at pH 5, 7, and 9 and essentially stable to anaerobic aquatic metabolism (half-life of 141 days). Dicamba degraded in the aerobic aquatic metabolism studies with half-lives between 24 and 41 days. Dicamba is likely to degrade slowly via aqueous photolysis in clear water and on moist leaf surfaces (aqueous photolysis half-life = 105 days) and is stable to photolysis in soil. If dicamba were to volatilize, degradation in the atmosphere is expected to occur with a predicted half-life of around 3.6 days. **Table 5-3** summarizes representative degradation half-life values from laboratory degradation data for dicamba.

Table 5-3. Summary of Environmental Degradation Data for Dicamba

Study	System Details	Representative Half-life (days)[1]	Source/Study Classification/Comment
Abiotic Hydrolysis	pH 5, 7, 9	Stable	MRID 40335501 Acceptable

[16] Goring et al. (1975) provides the following persistence scale for aerobic soil metabolism half-lives:
- Non-persistent less than 15 days
- Slightly persistent for 15-45 days
- Moderately persistent for 45-180 days
- Persistent for greater than 180 days

Study	System Details	Representative Half-life (days)[1]	Source/Study Classification/Comment
Atmospheric Degradation	Hydroxyl Radical	3.58 (SFO)	Estimated value EPIWeb Version 4.1
Aqueous Photolysis	pH 7, 25°C 40°N sunlight	105 (SFO-LN)	MRID 42774102 Acceptable
Soil Photolysis	Silt loam, 25°C, pH 7 40°N sunlight	Stable	MRID 42774103 Acceptable
Aerobic Soil Metabolism	Silt loam, 23°C	6.32 (SFO)	MRID 43245207 Acceptable
	CA loam, 20°C	15.1 (SFO)	MRID 50931306[N] Acceptable
	IA silt loam, 20°C	9.46 (SFO)	
	ND sandy loam, 20°C	7.62 (SFO)	
	ND loamy sand, 20°C	11.4 (SFO)	
Aerobic Aquatic Metabolism	IL loam, 25°C	20.2 (SFO)	MRID 43758509 Supplemental Method detection limits not reported
	MA silt loam, 20°C	28.4 (SFO)	MRID 50931307[N] Supplemental Type of redox electrode not reported.
	MA sand, 20°C	40.7 (SFO)	
Anaerobic Aquatic Metabolism	Loam, 25°C	141 (SFO-LN)	MRID 43245208 Acceptable

SFO = single first order
Numbers in [] brackets represent the half-lives corrected to 20°C.
[N] Studies submitted since the PF was completed are designated with an N associated with the MRID number.
[1] The value used to estimate a model input value is the calculated SFO DT_{50}, T_{IORE}, or the DFOP slow DT_{50} from the DFOP equation. The model chosen is consistent with that recommended using NAFTA, 2012. Some values were calculated using natural log transformed data to estimate the SFO half-life (designated with SFO-LN).

Major transformation products resulting from the environmental degradation of dicamba are:

- 3,6-dichlorosalicylic acid (DCSA)
- 2-chloro-6-hydroxybenzoic acid (6-CSA)
- Carbon dioxide
- Unextractable residues

A table summarizing the maximum amounts of degradates formed in different studies and the structures is available in **Appendix C**. A proposed degradation pathway is provided in **Figure 5-1**. DCSA was present at a maximum concentration of 62% in anaerobic aquatic metabolism studies and was observed at maximum concentrations at the end of the study. DCSA was present at maximum concentrations of less than 38% in aerobic aquatic and soil metabolism studies and was observed at maximum concentrations between 14 and 60 days into the study. Limited environmental fate data on DCSA (**Table 5-4**) suggest that degradation of DCSA is slower than that of the parent, with half-live values ranging from 6 to 28 days in aerobic soil systems. Aerobic soil metabolism results indicate that DCSA is slightly persistent based on the Goring persistence scale. As no data are available, DCSA is considered stable to hydrolysis based on a structural comparison to the parent. Sorption data are available for DCSA, which is

classified as slightly mobile to moderately mobile based on measured K_{oc} values and the FAO classification system (**Table 5-2**).

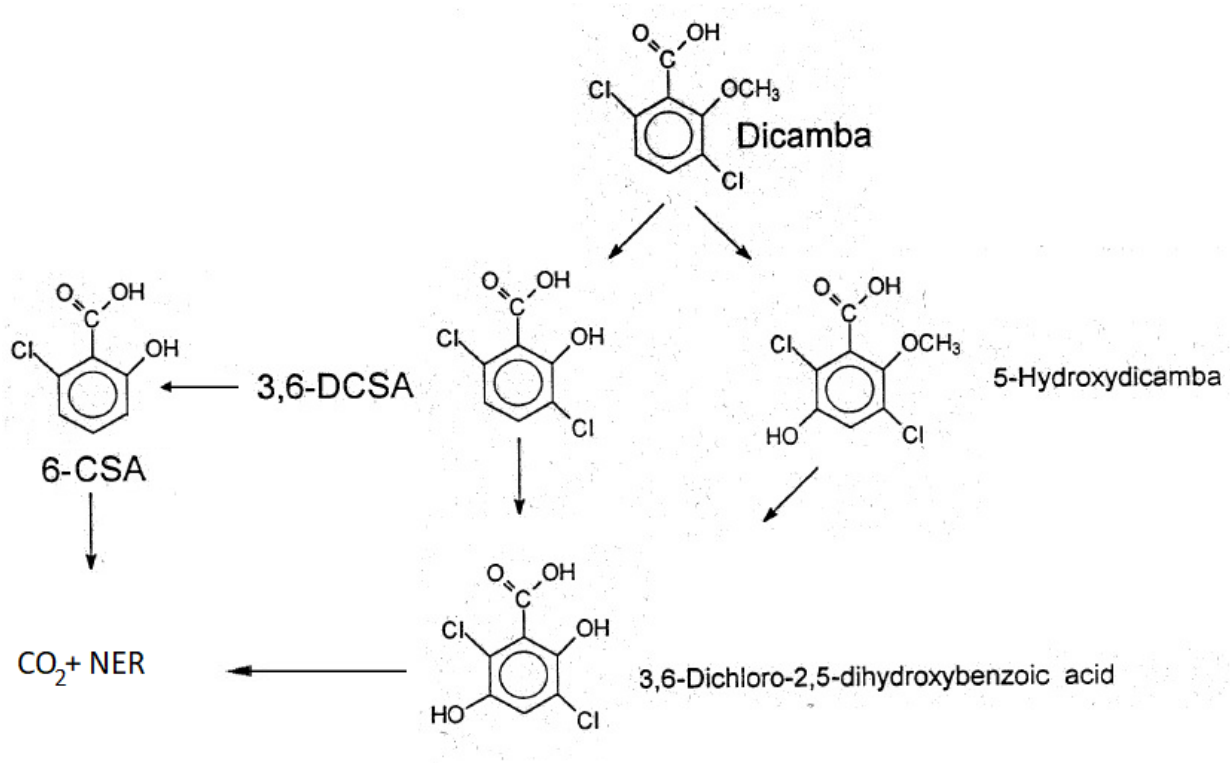

Figure 5-1. Potential Metabolic Degradation Pathway for Dicamba

6-CSA was present at a maximum concentration of 24.3% in a recently submitted aerobic aquatic metabolism study (MRID 50931307) and was observed at maximum concentrations at 30-60 days into the study. Combined residues of 6-CSA and DCSA showed a 55% and 36% reduction in residues in the silt loam:water and sand:water systems, respectively, over the final 40 days of the study. Formation and decline kinetics for dicamba and the 6-CSA and DCSA combined residues indicated that the combined residues degrade with half-lives of 35 and 63 days in the silt loam:water and sand:water systems, respectively (**Table 5-4**).

Unextracted residues were a major degradate in all aerobic soil, aerobic aquatic, and anaerobic aquatic studies. In two of the studies (MRID 50931306; aerobic soil metabolism study and MRID 50931307; aerobic aquatic metabolism study), additional extraction using polar and nonpolar solvents was conducted and released less than 2.7% additional radioactivity, resulting in a conclusion that the residues were strongly bound and would not be released in the environment.

The ecological risk assessment is based on separate exposure estimates for the parent compound and the combined residues of DCSA+6-CSA.

Table 5-4. Summary of Environmental Degradation Data for DCSA

Study	System Details	Day when peak occurred (Peak amount, %)	Representative Half-life (days)[1]	Source/Study Classification/Comment
Abiotic Hydrolysis	NA	NA	Stable	No data, assumed stable based on structural comparison to parent
Atmospheric Degradation	Hydroxyl Radical	NA	3.35 (SFO)	Estimated value EPIWeb Version 4.1
Aerobic Soil Metabolism	Silt loam, 23°C	7 (14.5)	6.41 (SFO)	MRID 43245207 Acceptable
	CA loam, 20°C	30 (32.6)	23.6 (SFO)	MRID 50931306[N] Acceptable
	IA silt loam, 20°C	21 (29.1)	27.8 (SFO)	
	ND sandy loam, 20°C	14 (32.6)	14.2 (SFO)	
	ND loamy sand, 20°C	30 (25.3)	25.0 (SFO)	
Aerobic Aquatic Metabolism	IL loam, 25°C	41 (38.2)	43.6 (SFO)	MRID 43758509 Supplemental Method detection limits not reported
	MA silt loam, 20°C	60 (31.5)[2]	34.9 (SFO)[2]	MRID 50931307[N] Supplemental Type of redox electrode not reported.
	MA sand, 20°C	60 (47.8)[2]	63.3 (SFO)[2]	

SFO = single first order
[N] Studies submitted since the PF was completed are designated with an N associated with the MRID number.
[1] The value used to estimate a model input value is the calculated SFO DT_{50}, T_{IORE}, or the DFOP slow DT_{50} from the DFOP equation. The model chosen is consistent with that recommended using NAFTA, 2012. Some values were calculated using natural log transformed data to estimate the SFO half-life (designated with SFO-LN).
[2] Combined residues of DCSA and 6-CSA. 6-CSA was not identified in any of the other studies.

A summary of terrestrial field dissipation data is provided in **Table 5-5**. Dissipation half-lives for dicamba in reviewed terrestrial field dissipation studies ranged from 3.2 to 19.8 days at 5 sites in the United States. Carryover of residues is not expected to occur. While most residues in terrestrial field dissipation studies remained in the top-soil layer, residues were detected at a depth of 30 cm. While field dissipation studies are designed to capture a range of loss processes, laboratory studies are designed to capture loss from one process (*e.g.*, hydrolysis, aerobic metabolism, etc.). Thus, the values from laboratory studies are not directly comparable to the values from the field studies. However, it is informative to have some understanding of how the laboratory data compares to the loss rates in the field dissipation studies. In this case, the dissipation half-lives from the field studies are similar to the half-lives derived for aerobic soil metabolism studies.

For the registration of dicamba products for use as OTT applications to DT-soybeans and DT-cotton, a number of laboratory (humidome), field volatility, and off target movement studies were conducted between 2016 and 2020 by the registrants as well as academia. These studies were designed to evaluate the volatility and spray drift potential of these dicamba products and

their effects to surrounding plants. Summaries of these studies can be found in USEPA, 2020a. EPA has recently received additional studies from the registrants for OTT products related to hooded sprayer applications. EPA believes that they may provide additional information on OTT applications and they are currently under review.

Table 5-5. Summary of Field Dissipation Data for Dicamba and Residues of Concern

System Details	Half-life (days)[1]	Deepest Core in Which ROC Found (cm)	Source/Study Classification/Comment
NE, Hastings silt loam, bare ground, pH 5.7, 2.9 %OM	3.2 (SFO-LN)	10 - 20	MRID 43651406 Supplemental Application rate was not verified, storage stability data not provided.
LA, Silt Loam, bare ground, pH 6.4, 1.1 %OM	9.0 (SFO-LN)	10 - 20	MRID 43651405 Supplemental Application rate was not verified, storage stability data not provided.
IN, Loam, bare ground, pH 5.8, 3.2 %OM	12.9 (SFO-LN)	20 - 30	MRID 43651407 Supplemental Application rate was not verified, storage stability data not provided.
CA, Sandy Loam, bare ground, pH 6.4, 1.9 %OM	19.8 (SFO-LN)	10 - 20	MRID 42754101 Acceptable
IN, Loam, bare ground, pH 6.9, 1.4 %OM	4.4 (SFO-LN)	20 - 30	MRID 42754102 Acceptable

SFO-LN = single first-order calculated using natural log-transformed data

[1] Half-life values only reflect the dissipation of dicamba. The deepest core in which ROC were found includes DCSA.

6 Ecotoxicity Summary

Ecological effects data are used to estimate the toxicity of dicamba and its degradation products to surrogate species. A detailed account and review of all previously submitted toxicity studies is reported in previous risk assessments and other documents (*e.g.*, USEPA, 2016c, USEPA, 2020a) as well as in the PF for RR (USEPA, 2016a). Toxicity data are available for dicamba acid, DCSA, and all currently registered salts except DEA (PC 029803). Toxicity data are not available for 6-CSA, which is similar in structure to and proposed to form from DCSA in aquatic environments. As in previous assessments (*e.g.*, USEPA, 2005 and USEPA, 2020a), data were bridged across the dicamba acid and dicamba salts. Any important updates to those studies are reported herein and supersede details reported in previous assessments.

Thirty additional toxicity studies (fish, aquatic invertebrates, and birds exposed to both dicamba acid and DCSA, aquatic plants exposed to dicamba acid, honey bees exposed to dicamba, and terrestrial plants exposed to dicamba acid, DGA salt, and DMA salt) were received since the PF was issued in 2016. In addition, six studies on the BAPMA salt (fish, aquatic invertebrates, birds,

aquatic plants, and terrestrial plants) which had been received prior to the PF but had not been reviewed, have been subsequently reviewed and incorporated into risk assessments. The results from these studies are incorporated into this section.

A search of the public ECOTOXicology database (ECOTOX) in April 2021 and the EFED ECOTOX refresh report (September 2020), yielded no new data from suitable studies with more sensitive (lower) toxicity endpoints than those previously used in risk assessments, except for three studies with aquatic non-vascular plants. The study showing the most sensitive endpoints was found suitable for characterization, the study with the next most sensitive endpoints was found suitable for risk estimation, and the third study was not reviewed further because a more sensitive endpoint was identified for risk estimation. In addition, there are two acute toxicity studies with aquatic-phase amphibians in the database. Although those species do not show greater sensitivity than the most sensitive of the tested fish species (used as surrogates for aquatic-phase amphibians), they were included in this DRA as under-represented taxonomic groups.

Information on the Endocrine Disruptor Screening Program (EDSP) is available in **Appendix D**.

Table 6-1 and **Table 6-3** summarize the most sensitive measured toxicity endpoints available across taxa. These endpoints are not likely to capture the most sensitive toxicity endpoint for a taxon but capture the most sensitive endpoint across tested species for each taxon. The full set of toxicity data are presented in **Appendix A.**

6.1 Aquatic Toxicity

Dicamba acid and salts

The available data indicate that dicamba acid is slightly toxic to practically non-toxic to fish and moderately toxic to practically non-toxic to aquatic invertebrates on an acute exposure basis. Acute studies with dicamba salts conducted with formulated products do not exhibit greater toxicity than dicamba acid TGAI except for toxicity of the Na-salt TEP (26.5% ai; MRID 00085935) to aquatic invertebrates, which is at least 11X more toxic than the TGAI of dicamba acid (MRID 40094602). In addition to the available registrant submitted studies, two open literature studies were identified in the ECOTOXicology database that report acute endpoints for aquatic-phase amphibians. Neither study indicates greater sensitivity of the tested amphibian species than the most sensitive tested fish species (surrogate for aquatic-phase amphibians); however, they are included for characterization because amphibians are an under-represented taxonomic group. In one study, exposure of tadpoles to dicamba (DMA salt-based product Banex; percent active ingredient not reported) resulted in a 96-hr LC_{50} = 185,000 µg/L for Tusked frog (*Adelotus brevis*) and a 96-hr LC_{50} = 106,000 µg/L for Brown striped marsh frog (*Limnodynastes peroni*) (Johnson, 1976). It is unclear if the toxicity values represent the formulation, DMA, or dicamba acid equivalent. In the other study, exposure of late-stage larvae (Gosner development stage 35-37) to DMA-salt resulted in a 96-hr LC_{50} = 358,440 µg ai/L (298,630 µg ae/L) for Argentine toad (*Rhinella arenarum*) (Soloneski et al., 2016).

Chronic toxicity data showed no effects up to the highest concentration tested for exposure to dicamba acid TGAI (two species of fish and one aquatic invertebrate species) and BAPMA-salt TEP (one species of aquatic invertebrate).

Aquatic vascular and non-vascular plants showed reduced growth (biomass) from dicamba exposure (dicamba acid TGAI and BAPMA salt) in submitted studies. In addition to the available registrant submitted studies, three open literature studies were identified in the ECOTOXicology database that reported a more sensitive endpoint for vascular plants (all with *Myriophyllum aquaticum*); therefore, those studies were reviewed as part of this DRA. The study with the most sensitive endpoints (Turgut and Fomin, 2002) showed 14-day IC_{50} values ranging from 98 to 100 µg/L for reductions in pigments (chlorophyll and carotenoid) and total root length. This study was classified as qualitative due to uncertainties about the test material (*e.g.*, if the tested product is similar to or the same as one registered in the U.S. and if the reported EC_{50} values are expressed in terms of the test material or the active ingredient) and basic details about the study design. Furthermore, root measurements are not typically used for risk estimation due to high variability historically observed for those endpoints and although pigmentation has been used as a surrogate for cell density of non-vascular plants, that relationship is less certain for vascular plants. In another study, Tunic et al. (2015; MRID 51610901) showed 7-day IC_{50} values ranging between 520 and 3140 µg ai/L for various measures of growth (root and shoot biomass, shoot length, and shoot growth rate) after exposure of *Myriophyllum aquaticum* to TGAI dicamba for 7 days. This study was classified as quantitative and suitable for risk estimation. The above ground endpoints (lowest 7-day IC_{50} = 1290 µg ae/L) can be used for risk estimation, but the root endpoints (lowest 7-day IC_{50} = 520 µg ae/L) can be used for characterization due to the concerns about inherent variability in those endpoints (this study reported variability after dicamba exposure around the mean that was 7-17X higher for the root endpoint compared to shoot endpoint). Finally, another study by some of the same authors (Mihajlović et al., 2019) showed similar but lower toxicity to *Myriophyllum aquaticum* (*most sensitive endpoint*: 14-day IC_{50} = 1950 µg ai/L based on the relative growth rate of fresh weight) after exposure to TGAI dicamba for 7 days. This study was not reviewed further because the more sensitive endpoints Tunic et al. (2015; MRID 51610901) can be used for risk estimation.

DCSA

DCSA toxicity data have not been submitted for aquatic plants or acute exposure to aquatic animals; however, the IUPAC database[17] reports values for each. According to the information in the IUPAC database, DCSA is less toxic than dicamba to fish on an acute basis (DCSA LC_{50} >100,000 µg/L compared to dicamba acid TGAI LC_{50} = 28,000 µg ae/L; MRID 40098001; both for rainbow trout), aquatic vascular plants (DCSA IC_{50} > 73,000 µg/L compared to dicamba acid TGAI IC_{50} = 52,600 µg ae/L; MRID 50881002; both for duckweed), and aquatic non-vascular

[17] http://sitem.herts.ac.uk/aeru/iupac/atoz.htm

plants (DCSA IC_{50} = 138,000 µg/L compared to dicamba BAPMA salt IC_{50} = 7,010 µg ae/L; MRID 48718009; both for green algae). The IUPAC database indicates that DCSA is slightly toxic on an acute basis to aquatic invertebrates (DCSA IC_{50} = 89,000 µg/L; *Daphnia magna*) compared to dicamba acid TGAI, which is classified as practically non-toxic (IC_{50} > 100,000 µg ae/L; *Daphnia magna;* MRID 40094602) and Na-salt, the most sensitive of the salt TEPs, which is classified as moderately toxic (IC_{50} = 10,040 µg ae/L; *Daphnia magna;* MRID 00085935). Relative acute toxicity to aquatic invertebrates is uncertain between dicamba acid TGAI and DCSA given that the IC_{50} values are close, and raw data are not available for either study (*i.e.*, it is unknown if mortality occurred in the *Daphnia magna* study with dicamba acid and if so what magnitude).

DCSA chronic toxicity data are available for fish and invertebrates. The aquatic invertebrate study with *Daphnia magna* showed no effects up to the highest DCSA concentration tested (NOAEC ≥ 9,710 µg DCSA/L; MRID 50944102) and provided no evidence of DCSA being more or less toxic than dicamba, which showed no effects in two available studies conducted at even higher concentrations; one with *Daphnia magna* (NOAEC ≥ 42,000 µg ae/L; MRID 48718007) and the other with *Americamysis bahia* (NOAEC ≥ 11,000; MRID 48718012 µg ae/L) and a definitive NOAEC (97,000 µg ae/L) for *Daphnia magna* as reported in the IUPAC database. In contrast, DCSA chronic toxicity to fathead minnow (NOAEC = 31 µg DCSA/L; MRID 50944101) is at least two orders of magnitude more toxic than dicamba acid TGAI to two different fish species (fathead minnow NOAEC ≥ 9,900 µg ae/L; MRID 48718010 and sheepshead minnow NOAEC ≥ 11,000 µg ae/L; MRID 48718011).

6-CSA

Toxicity data are not available for dicamba's 6-CSA degradate. However, 6-CSA is assumed to be similar in toxicity to DCSA given the structural similarity of the two compounds. ECOSAR estimates were also used as a line of evidence of the relative toxicity of DCSA and 6-CSA given the lack of submitted aquatic toxicity studies for 6-CSA. The ECOSAR results are consistent with the assumption of equal toxicity given that toxicity estimates for DCSA and 6-CSA are generally within 2-3X for vertebrates and invertebrates when compared to the same structural class (**Table 6-2**). However, the ECOSAR estimates are considered with caution because only chronic data are available for DCSA to judge the quality of the estimates and the fish estimate for chronic toxicity of DCSA is a poor match (two order of magnitude difference between empirical and estimated values).

Table 6-1. Aquatic Organism Toxicity Endpoints Selected for Risk Estimation for Dicamba and DCSA

Study Type	Test Substance (% ai)	Test Species	Toxicity Value in µg ae/L (unless otherwise specified)[1]	MRID or ECOTOX No./ Classification[2]	Comments
Freshwater Fish (Surrogates for Aquatic-phase Amphibians)					
Acute	TGAI Dicamba acid (88)	Rainbow Trout (*Oncorhynchus mykiss*)	96-h LC_{50} = 28,000	40098001 Supplemental	Slightly toxic

Study Type	Test Substance (% ai)	Test Species	Toxicity Value in µg ae/L (unless otherwise specified)[1]	MRID or ECOTOX No./ Classification[2]	Comments
Chronic (ELS)	TGAI Dicamba acid (92.9)	Fathead minnow (*Pimephales promelas*)	33 days NOAEC ≥ 9,900 LOAEC > 9,900	48718010[N] Acceptable	No effects
	TGAI DCSA (97)		32 days NOAEC = 31 µg DCSA/L LOAEC = 100 µg DCSA/L based on reduction in dry weight	50944101[N] Acceptable	Reduction in dry weight (5.5%) at LOAEC
Estuarine/Marine Fish (Surrogates for Aquatic-phase Amphibians)					
Acute	TGAI Dicamba acid (86.8)	Sheepshead minnow (*Cyprinodon variegates*)	96-h LC_{50} >180,000	00025390 Acceptable	Practically non-toxic No effects
Chronic (ELS)	TGAI Dicamba acid (93.9)		34 days NOAEC ≥ 11,000 LOAEC > 11,000	48718011[N] Acceptable	No effects
Freshwater Invertebrates (Water-Column Exposure)					
Acute	TGAI Dicamba acid (88)	Water Flea (*Daphnia magna*)	48-h LC_{50} >100,000	40094602 Supplemental	Practically non-toxic
	TEP Na salt (26.5)		48-h LC_{50} = 10,040[C]	00085935 Acceptable	Banvel 2S formulation Moderately toxic
Chronic (LC)	TEP BAPMA salt (48.4)		NOAEC ≥ 42,000 LOAEC > 42,000	48718007[N] Acceptable	BAS 183 WB H formulation No effects
	TGAI DCSA (97)		NOAEC ≥ 9,710 µg DCSA/L LOAEC > 9,710 µg DCSA/L	50944102[N] Acceptable	No effects
Estuarine/Marine Invertebrates (Water-Column Exposure)					
Acute	TGAI Dicamba acid (86.8)	Grass shrimp (*Palaemonetes pugio*)	96-h EC_{50} > 100,000	00034702 Acceptable	Practically non-toxic One mortality
Chronic (LC)	TGAI Dicamba acid (93.9)	Mysid (*Americamysis bahia*)	NOAEC ≥ 11,000 LOAEC > 11,000	48718012[N] Acceptable	No effects

Study Type	Test Substance (% ai)	Test Species	Toxicity Value in µg ae/L (unless otherwise specified)[1]	MRID or ECOTOX No./ Classification[2]	Comments
Aquatic Plants and Algae					
Vascular	TGAI Dicamba acid (98)	Parrot feather watermilfoil (*Myriophyllum aquaticum*)	7-day IC_{50} = 1290 µg ae/L	51610901[N] Quantitative	Tunic et al. (2015) Shoot length yield
Non-vascular	TGAI Dicamba acid (89.5)	Blue-green algae (*Anabaena flos-aquae*)	120-h EC_{50} = 61	42774109 Acceptable	Cell density

TGAI=Technical Grade Active Ingredient; TEP= Typical end-use product; ai=active ingredient; ae = acid equivalent
ELS = Early life-stage; LC = Life cycle; Na = sodium salt
[N] New data reviewed since the RR PF was completed (USEPA, 2016a).
[C] Previously reported endpoint has been revised to reflect acid equivalent. An inaccurate conversion was used to calculate the reported values in the RR PF (USEPA, 2016a) or past risk assessments.
[1] NOAEC and LOAEC are reported in the same units.
[2] Study classifications of Acceptable and Supplemental indicate that the study is useful for consideration in risk assessments. Studies identified as Supplemental indicate that there was some deviation from the guideline recommendations. Supplemental studies that can be used for risk estimation unless specified for characterization purposes only.

Table 6-2. ECOSAR (ver. 2.2) Toxicity Comparison for DCSA and 6-CSA

Chemical (structure class)	Freshwater fish (µg/L)		Saltwater fish (µg/L)	Freshwater invertebrate (µg/L)		Saltwater invertebrate (µg/L)
	96-hr LC_{50}	Chv[1]	96-hr LC_{50}	48-hr EC_{50}	Chv[1]	48-hr EC_{50}
DCSA (Empirical)	ND	31	ND	ND	9,700	ND
DCSA (Phenols)	82,500	8,900	66,000	51,000	6,400	19,200
6-CSA (Phenols)	191,000	19,200	185,000	88,000	9,800	48,200

ND = no data
[1] Chv is the geometric mean of the NOAEC and LOAEC.

6.2 Terrestrial Toxicity

Dicamba acid and salts

The available data indicate that dicamba acid is practically non-toxic to honey bees (contact and oral) and slightly to practically non-toxic to mammals on an acute exposure basis whereas it is moderately toxic (oral) to practically non-toxic (dietary) to birds on an acute exposure basis. Acute studies with dicamba salts conducted with formulated products do not exhibit greater toxicity than dicamba acid, except for a DMA salt formulation (MRID 00025371) that is about 3X more toxic than the acid to mammals on an acute basis. That said, several of the acute studies

with the salts were not conducted at high enough concentrations to establish relative toxicity with the acid.

In a reproduction study, dicamba acid TGAI reduced (12-21% ↓) the number of hatchlings, 14-day hatchlings, hatchlings/eggs laid, and 14-day hatchlings/eggs laid of Mallard duck (*Anas platyrhynchus*) at the study LOAEC (1390 mg ae/kg diet) but did not affect other measured endpoints. The study NOAEC = 695 mg ae/kg diet for Mallard duck. In contrast, Bobwhite quail (*Colinus virginianus*) was not affected by chronic exposure to dicamba acid TGAI at concentrations as high as 1390 mg ae/kg diet (MRID 43814004).

Laboratory rats (*Rattus norvegicus*) showed effects on pup weight and sexual maturation from chronic exposure to dicamba acid TGAI. In a 2-generation reproduction study (MRID 43137101), there was a reduction in pup body weight (F_1 and F_2 generation; ↓ 6-30%) and a delay in the sexual maturation of males (F_1 generation; ↑ 2 days) at 450 mg ae/kg-bw (NOAEL = 136 mg ae/kg bw), the highest treatment group. A sub-chronic feeding study (MRID 00128093) with dicamba acid TGAI showed reduced body weight (↓ 6-7%) and food consumption (↓ 9-11%) of adults at the study LOAEL (1000 mg ae/kg bw) after 13-weeks of exposure.

Dicamba exposure on a chronic basis caused effects on both larval and adult honey bee stages. Two studies were available for each life stage and showed similar results. Both adult chronic toxicity studies with TGAI dicamba acid showed a reduction in food consumption, which may be an indicator of reduced growth. In one study (MRID 50784603) conducted at multiple concentrations, there was 24% ↓reduced food consumption at the LOAEL (33 µg ae/bee); however, there is uncertainty about the magnitude of effect because of potential solvent effects which showed a similar decrease relative to the negative control. The second study (MRID 50931304) did not use a solvent and showed 44% ↓reduced food consumption the only concentration tested (LOAEL ≤ 64.8 µg ae/bee). The combined results of the two studies support the finding of reduced food consumption by adults despite the uncertainty about the results from the study conducted at multiple concentrations. Both larval chronic studies with TGAI dicamba acid showed a reduction in larval/pupal survival and adult emergence. In one study, (MRID 50784602), there was a 28% ↓ pupal survival and 28% ↓ adult emergence at the LOAEL (33 µg ae/bee). In the other study (MRID 50931303), there was a 19% ↓ larval survival, 28% ↓ pupal survival, and 28% ↓ adult emergence.

Dicamba is toxic to terrestrial plants. Guideline toxicity data (seedling emergence and vegetative vigor) are available for dicamba acid, DGA salt, BAPMA salt, DMA salt, DGA salt + glyphosate, and DGA salt + metolachlor. The tested DGA salt formulation showed the greatest overall toxicity among the tested species (vegetative vigor; MRID 47815102), but data indicate that there is potential differential toxicity of these various formulations to each tested species such that the DGA salt is not always the most toxic to a given plant species. The data show that the most sensitive tested dicots are at least an order of magnitude more sensitive than the most sensitive tested monocots exposed to the same test material (vegetative vigor and seedling emergence stages). The most sensitive species from all available studies was soybean exposed to DGA salt (vegetative vigor; MRID 47815102) based on a comparison of the IC_{25}

values (0.000513 lb ae/A based on reduced shoot height). Toxicity data are not available to compare plant sensitivity to several dicamba salts (*i.e.*, Na, K, DEA, IPA) to their sensitivity to dicamba acid. Nonetheless, EPA considers the soybean IC_{25} protective of all other species and forms of dicamba considered in this assessment. Dicamba salts are anticipated to rapidly disassociate to the acid; therefore, it is unclear if the salt itself or something about the combined ingredients in the formulations can in some cases increase toxicity (expressed as acid equivalent) over that from direct exposure to dicamba acid, which may also have been impacted by other ingredients in the tested acid-based formulations. In addition to standard guideline test species (crops), data have been submitted that show impacts of dicamba on sapling height of woody plant species (*i.e.*, apple and American red oak; MRID 51068202). Finally, dicamba also exhibits toxicity at the vegetative vigor stage through vapor-phase exposure. Non-DT soybean height was reduced 12% at the LOAEC = 238 ng/m^3 (NOAEC = 138 ng/m^3) based on the results of two greenhouse-based humidome studies (MRID 49925703 and 50578901). A more detailed account of the aforementioned studies can be found in USEPA, 2020a.

DCSA

DCSA is practically non-toxic to mammals on an acute basis, and the available data indicate it is of similar acute toxicity as dicamba acid but less toxic than a DMA-salt formulation. DCSA acute toxicity data are not available for birds or honey bees.

DCSA chronic toxicity data are available for birds and mammals but not for honey bees. The avian study with Mallard duck (*Anas platyrhynchos*) showed no effects (NOAEC ≥ 765 mg DCSA/kg-diet; MRID 50944103). The highest concentration test is greater than the NOAEC (695 mg ae/kg-diet; MRID 43814003) for Mallard duck exposed to dicamba acid TGAI, but lower than the LOAEC (1390 mg ae/kg-diet). Although the relative toxicity of the two compounds is unknown, the available data indicate that DCSA could not be more than 1.8X more toxic than dicamba acid to birds on a chronic basis.[18] In contrast, chronic DSCA exposure elicited effects on laboratory rats (*Rattus norvegicus*) in a 2-generation reproduction study (MRID 47899517). The effect, reduced pup body weight (↓ 9%), is consistent with effects on rats in chronic and sub-chronic studies with dicamba acid (MIRD 00128093 and 43137101). However, DCSA appears to be more toxic than dicamba acid on a chronic basis (DCSA LOAEL = 78 mg DCSA/kg-bw/day and dicamba NOAEL = 136 mg ae/kg-bw/day).

DCSA toxicity data have not been submitted for terrestrial plants. DT-plants rapidly transform dicamba into the less phytotoxic DCSA to make those plants tolerant to OTT applications; therefore, toxicity of DCSA to plants is not of concern.

[18] Dicamba LOAEC (1390 mg ae/kg bw) / DCSA NOAEC (765 mg ai/kg bw)

6-CSA

Toxicity data are not available for 6-CSA; however, 6-CSA is assumed to be similar in toxicity to DCSA given the structural similarity of the two compounds. Nonetheless, toxicity of 6-CSA is not a concern for terrestrial plants or animals. For plants, this is because 6-CSA is structurally similar to and a proposed breakdown product of DCSA, which is considered non-toxic to plants. For terrestrial animals, this is because 6-CSA residues were not observed forming in available plant metabolism studies for DT-soybean and DT-cotton. Therefore, EFED considers 6-CSA residues to be negligible in foraging items (*i.e.*, plants and arthropods).

Table 6-3. Terrestrial Organism Toxicity Endpoints Selected for Risk Estimation for Dicamba and DCSA

Study Type	Test Substance (% ai)	Test Species	Toxicity Value[1]	MRID or ECOTOX No./ Classification[2]	Comments
Birds (Surrogates for Terrestrial Amphibians and Reptiles)					
Acute Oral	TGAI Dicamba acid (86.9)	Bobwhite quail (*Colinus virginianus*)	LD_{50} = 188 mg ae/kg-bw	42918001 42774105 Acceptable	Moderately toxic
Sub-acute dietary	TGAI Dicamba acid (86.9)		LC_{50} > 10,000 mg ae/kg-diet	00025391 Acceptable	Practically non-toxic No treatment related mortality. Sublethal effects, some of which were not evident at the end of the study
Chronic	TGAI Dicamba acid (86.9)	Mallard duck (*Anas platyrhynchos*)	NOAEC = 695 LOAEC = 1,390 mg ae/kg-diet	43814003 Acceptable	Reduced (12-21%) number of hatchlings, 14-day hatchlings, hatchlings/eggs laid, and 14-day hatchlings/eggs laid at the LOAEC
	TGAI DCSA (97)		NOAEC ≥ 765 LOAEC > 765 mg DCSA/kg-diet	50944103[N] Acceptable	No effects
Mammals					
Acute Oral	TGAI Dicamba acid (99.7)	Laboratory rat (*Rattus norvegicus*)	LD_{50} = 2,740 mg ae/kg-bw (males)	00078444 Minimum	Practically non-toxic

Study Type	Test Substance (% ai)	Test Species	Toxicity Value[1]	MRID or ECOTOX No./ Classification[2]	Comments
Acute Oral	TEP DMA salt (40)	Laboratory rat (*Rattus norvegicus*)	LD_{50} = 858 mg ae/kg-bw Laboratory rat (*Rattus norvegicus*)	00025371 Minimum	BAS 183 06H % ai obtained from label Slightly toxic
	TGAI DCSA (99.7)		LD_{50} = 2,641 mg DCSA/kg-bw (males)	47899504[N] Acceptable	Practically non-toxic
Acute Inhalation	TEP Dicamba acid		4-hours LC_{50} > 5.3mg ae/L	00263861 Acceptable	No mortalities at limit dose
Chronic (2-generation reproduction)	TGAI Dicamba acid (86.9)		NOAEL = 136 LOAEL = 450 mg ae/kg-bw/day	43137101 Acceptable	Decreased pup weight in F1 and F2 (6% to 30%) and delayed F1 maturation of males (2 days)
	TGAI DCSA (97.7)		NOAEL = 8 LOAEL = 78 mg DCSA/kg-bw/day	47899517 Acceptable	9% reduced pup body weight 2-3 weeks post-natal days (PND)
Terrestrial Invertebrates					
Acute contact (adult)	TGAI Dicamba acid (93.9)	Honey bee (*Apis mellifera* L.)	LD_{50} > 100.1 µg ae/bee	50784601[N] Supplemental	Practically non-toxic Observed mortality (7%) within background and not clearly treatment related
Acute oral (adult)	TGAI Dicamba acid (93.9)		LD_{50} > 100.1 µg ae/bee	50784601[N] Supplemental	Practically non-toxic No effects
Chronic oral (adult)	TGAI Dicamba acid (93.9)		NOAEL = 19 LOAEL = 33 µg ae/bee	50784603[N] Acceptable	24% reduced food consumption. Solvent control also showed reduction in food consumption compared to negative control.

Study Type	Test Substance (% ai)	Test Species	Toxicity Value[1]	MRID or ECOTOX No./ Classification[2]	Comments
Chronic oral (larval)	TGAI Dicamba acid (93.9)	Honey bee (*Apis mellifera* L)	NOAEL = 5.1 LOAEL = 10 µg ae/larvae	50784602[N] Acceptable	28% increased pupal mortality (D15) and 28% reduced adult emergence (D22)
Terrestrial and Wetland Plants					
Seedling Emergence	TEP BAPMA salt (47.9)	Various species (6 dicots and 4 monocots)	Dicots (oilseed rape; dry weight): IC_{25} = 0.0357 lb ae/A Monocots (wheat; dry weight): IC_{25} = 0.344 lb ae/A	48718014[N] Acceptable	BAS 183 22 H formulation
Vegetative Vigor	TEP DGA salt (40.3)	Various species (6 dicots and 4 monocots)	Dicots (soybean; height): IC_{25} = 0.000513 lb ae/A	47815102[3] Supplemental	Clarity 4.0 SL formulation Lettuce test unreliable
	TEP BAPMA salt (47.9)	Various species (6 dicots and 4 monocots)	Monocots (onion; dry weight): IC_{25} = 0.0924 lb ae/A	48718015[N] Acceptable	BAS 183 22 H formulation
Vegetative Vigor (vapor exposure)	TGAI Dicamba acid; TEP DGA salt; TEP DMA salt	Soybean	NOAEC = 17.7 mg ae/m^3 LOAEC = 539 mg ae/m^3 based on reduced height	49925703[N] Supplemental	

TGAI=Technical Grade Active Ingredient; TEP= Typical end-use product; ai=active ingredient; ae = acid equivalent
[N] New data reviewed since the RR PF was completed (USEPA, 2016a).
[1] NOAEC and LOAEC are reported in the same units.
[2] Study classifications of Acceptable and Supplemental indicate that the study is useful for consideration in risk assessments. Studies identified as Supplemental indicate that there was some deviation from the guideline recommendations. Supplemental studies can be used for risk estimation unless specified for characterization purposes only.
[3] Incorrectly reported as MRID 47815101 in the RR PF (USEPA, 2016a).

6.3 Incident Data

Summary of incidents over time

Dicamba use has been associated with incident reports of damage to a wide variety of plants, predominantly from residential uses and off-site damage to non-DT soybeans from agricultural applications. Until recently, localized small-scale residential uses (*e.g.*, lawn care products) have

accounted for most alleged incidents whereas the number of wide area damage (*i.e.*, landscape level) incidents associated with crops has increased in recent years, specifically since the approval of OTT use on DT-plants. Prior to the registration of OTT use on DT-plants (cotton and soybean) for the 2017 growing season, there were almost 11,800 alleged incidents associated with dicamba that occurred between 1981 and 2016 and were reported in the Incident Data System (IDS)[19] at the time of the last database search (*see* below). Over 90% of those incidents were associated with residential uses. Starting in 2016 there was a pronounced annual increase in the number of incidents associated with agricultural sites and wide area damage to crops (*i.e.*, 10's to 100's of acres for individual incidents), primarily soybean. Although OTT use on DT-plants was not registered by EPA until the 2017 growing season, in 2016 there was a sudden increase in the number of incidents of soybean damage reported in IDS (107 incidents for that year). Those incidents were allegedly caused by OTT misuse of dicamba products on DT-plants, which was made possible because the DT-seed had become commercially available in the prior years (*see* details below). Once OTT products and use were approved for DT-cotton and DT-soybean, the number of wide area incidents increased to the 1000s per year from 2017 to 2020 (predominantly soybean damage and allegedly caused by OTT use on DT-plants) and the percentage of reported residential uses dropped in comparison. For example, in IDS there are about 1100 incidents for that period (the majority of those are backlogged incidents, *see* below) associated with the BAPMA and DGA-salts, both of which are registered for OTT use on DT-plants. In addition, about 97% of 5,600 additional incidents submitted to the Agency (not currently reported in IDS, although there may be some duplicates) report off-site damage to non-dicamba resistant varieties of soybean; however, a wide variety of other plants including woody species were allegedly impacted for the other approximately 3% of the reported incidents. Incidents were reported at distances from the treatment site beyond the required volatility and spray drift in-field setbacks on the DT-soybean and DT-cotton labels at the time of reporting. The reported incidents involved a variety of dicamba products applied in 2017, 2018, and 2019 after the approval of the use on DT-plants, including products that are labeled specifically for use on DT-plants. Many of the applications and observations of damage were reported as occurring in warmer months (*i.e.*, June or later), which is an indication that many of those incidents may have been associated with OTT uses on DT-plants or non-DT plants. Most recently, in 2021 EPA received nearly 3,500 incident reports (not currently in IDS) of damage to non-DT soybean, numerous other crops, and a wide variety of non-target plants in non-crop areas including residences, parks, and wildlife refuges.

Incidents reported in IDS

IDS provides information on ecological incidents reported to the Agency associated with the use of dicamba, including incidents that have been reported in the aggregate to the EPA between the time of initial registration to when the database was searched in June 2021. EPA recently became aware of a backlog of ecological incidents in IDS for multiple pesticides including

[19] Some ecological incidents were formerly located in the Ecological Incident Information System (EIIS) and the incidents reported within were integrated into IDS.

dicamba. Backlogged incidents are those that have been reported to the Agency and entered IDS, but their reviews have not been completed. In previous non-DT dicamba assessments (*e.g.*, USEPA, 2020a) and the 2016 PF for registration review (USEPA 2016a), EPA summarized all ecological incidents reported in IDS available at that time. However, due to technical issues associated with uploading, coding, and displaying ecological incident data in IDS, those earlier assessments likely under-counted the total number of ecological incidents reported in IDS and associated with dicamba. This DRA includes a summary of all fully reviewed ecological incidents in IDS as of June 2021 and includes a summary of the numbers of incidents in the backlog reported to be associated with dicamba use. It is important to note that IDS may not be current with all incident reports submitted to the Agency because there is a gap in time between the receipt of incidents and entry of those reports into IDS, especially for chemicals like dicamba with a high volume of incidents reported in a short period of time over the last several years. This DRA includes a summary of all incidents that EFED is aware of, and EPA will continue to evaluate all new reports of ecological incidents and consider the backlog incidents in more depth once they have been fully reviewed.

The IDS was searched for any ecological or aggregate incidents associated with dicamba acid and all currently registered dicamba salts. The incidents are briefly summarized below, and the list of reported incidents are provided in **Appendix E**.

The IDS contains 205 fully reviewed ecological incident reports (excluding the number of fully reviewed incidents associated with misuse of dicamba [177 incidents], incidents considered 'unlikely' caused by dicamba [10 incidents], and duplicate incidents) associated with the use of dicamba (the acid and the salts) occurring between 1991 and 2019 (*note*: incidents occurred after 2019 and are part of those in the backlog). Among the 205 incidents, 18 occurred between 2017 and 2019 (after the PF was conducted in 2016; USEPA 2016a). All but six of those 205 incidents report effects to terrestrial plants. Incidents were reported for dicamba, DGA-salt, DMA-salt, DEA-salt, K-salt, and Na-salt. Seventy-five of the 177 fully reviewed misuse incidents in IDS were reported in 2016 and allegedly were associated with use on soybean or cotton and damage to soybean. There were an additional 32 incidents of soybean damage where the use site was undermined. Some or all those 107 misuse incidents are likely associated with OTT dicamba applications to DT-soybean or DT-cotton plants prior to the registration and approval of specific dicamba products for use with those varieties of soybean and cotton. Thirty-two percent of the incident reports in IDS[20] are associated with soybean or cotton damage when considering those from 2016 to 2019.

- There are four fish kill incidents,[21] one mammal incident, and two honey bee incidents. The fish incidents occurred between 1991 and 2010 with hundreds to 2000 affected fish

[20] Excluding all misuse incidents except those with soybean or cotton in 2016, "unlikely" incidents, and duplicate incidents.

[21] There are five incident reports, two of which appear to be a duplicate reported under different PC codes (incident # I010274-002).

per incident (one incident did not report the number of affected fish). One of the fish incidents (hundreds of fish) is considered unlikely to have been caused by dicamba exposure, and three are considered possible; however, all those incidents report multiple active ingredients potentially applied in the vicinity of the fish kills; therefore, it is unclear if dicamba was the cause of any of the incidents. Furthermore, two of those incidents were followed up with analytical sampling for pesticide residues in water and sediment samples taken in the vicinity of the fish kills. None of the pesticides allegedly associated with those incident reports were detected (dicamba was not specifically tested for one of those incidents; however, there was no detection of the other pesticide that was allegedly in the reported tank mix with dicamba), further calling into question the link with dicamba exposure. There is only one incident specifically associated with mammals. It involved four rabbits and was considered possible for causation due to dicamba exposure, although the legality of the dicamba use is unknown. There are two reported incidents with bees; however, one is considered unlikely to have been caused by dicamba exposure and the other was attributed to indirect effects (*i.e.*, alleged dicamba-caused loss of habitat).

- Terrestrial plant incidents (excluding incidents considered 'unlikely' to be caused by dicamba and incidents associated with misuse of dicamba) are reported occurring at or near a wide variety of agricultural and non-agricultural use sites and affecting a wide variety plant species (*e.g.*, grasses, fruits, vegetables, and trees). Residential use sites were the most commonly (ca. 52%) associated with the incidents, whereas agricultural and non-agricultural (other than residential) use sites were associated with about 34% of the incidents and the use site was not reported for about 14% of the incidents. For residential use sites, grasses were the most commonly affected plants (ca. 50%), followed by trees (ca. 17%), and other plants (*e.g.*, fruits, vegetables, and ornamentals; collectively ca. 6%). For all use sites, agricultural crops (collectively ca. 37%) were the most commonly affected plants, followed by grasses (ca. 33%) and trees (ca. 12%). In many cases the affected species was not reported (ca. 27% for residential use sites and ca. 18% for all use sites). The magnitude and/or number of affected plants ranges from 1 tree to a variety of plants covering hundreds of acres. In these reports, pesticides were applied on-site directly to the affected species (*e.g.*, direct injury to treated corn plants) or in the vicinity of the affected species (*e.g.*, injury to a tree in the vicinity of a treated lawn), although the incident reports often do not include enough information to determine how an injured plant was potentially exposed. Off-site effects were reported occurring at distances between 2 and 60 feet from the treated area in the incident reports that provided that information.

- DT-seed was deregulated by USDA in 2015 and was commercially available to farmers in 2015 for DT-cotton and 2016 for DT-soybean, before the EPA-approved DT-products were registered for OTT use. Incidents occuring during this time period are associated with various dicamba products, none of which were registered for use on DT-seed; however, many of the reported 2016 incidents are allegedly associated with OTT misuse on DT-plants. Notably, there was a pronounced increase in the overall number of

reported dicamba incidents allegedly associated with damage to non-target plants (agricultural) starting around 2016 and this increase appears linked to the commercial availability of DT-seed and OTT applications to those crops. As such, many of the incidents in 2016 are considered to have been caused by misuse (*e.g.*, 81% of the total incidents currently in IDS for 2016), with at least 59% of the misuse occurring at soybean or cotton use sites and being allegedly associated with off-label OTT use on DT-soybean and DT-cotton planted prior to the EPA registration for those uses.

In terms of aggregate incidents, the IDS database includes 27 reports of minor 'wildlife' incidents (WB), 11,907 minor 'plant damage' incidents (PB) and 3 'other nontarget' incidents (ONT) (*see* **Appendix E**). Incidents were reported for dicamba, DGA-salt, DMA-salt, K-salt and Na-salt and occurred between 1995 and 2020. Aggregate incident reports do not contain information on the specific use site or plants affected; however, at least 10% of those incident reports are assumed to be associated with residential uses based on the product allegedly associated with the plant damage. Unless additional information on these aggregated incidents become available, they are assumed to be representative of registered uses of dicamba acid and dicamba salts.

There are 13,846 backlogged (*i.e.*, not fully reviewed) incidents reported in IDS (*see above* for background). Those incidents were reported between 1981 and 2020 for dicamba, DGA-salt, DMA-salt, K-salt, Na-salt, and BAPMA salt. Although the backlogged data review is incomplete, there are some general patterns that have emerged. Roughly 82% of the backlogged incidents occurred between 1981 and June 2016. The June 2016 date is of significance because it is when the PF was completed, when the EPA incident database was migrated to a new system (discussed above), and roughly coincides with the alleged start (misuse) of dicamba OTT use on DT-plants (discussed above). Any incident occuring prior to June 2016 would not be associated with OTT use on DT-plants unless it was caused by misuse of an existing dicamba product on a warm day (increased likelihood of volatilization) after the commercial availability of DT-cotton seed in 2015 and DT-soybean seed in 2016. Even with that possibility, all but eight of the 11,289 backlogged incidents occuring prior to June 2016 can be ruled out at this time as being assoicated with possible OTT misuse on DT-plants or OTT use on non-DT plants. Small area (localized) residential use patterns (*e.g.*, lawn care products) are associated with most (nearly 94%) of the pre-June 2016 backlogged incidents.[22] EFED expects that most incidents associated with residential use sites were damage to turf resulting from direct applications to lawns, as opposed to incidents associated with on or off-site effects to other non-target plants, although it is likely that some percentage of incidents at residential use sites will be the latter. EFED will revisit this assumption once the incident reviews are complete. For incidents occuring June 2016 and later, about half are associated with residential use patterns and the other half likely reflect wide area effects from dicamba use on DT-plants. The increase in alleged wide area effects is due to the increased number of incidents associated with BAPMA-salt and DGA-salt,

[22] EPA filtered the backlogged incidents for "PL", which represents lawn damage from direct application. EPA also filtered the backlogged incidents for dicamba products intended for residential or lawn use.

which are registered for use on DT-plants. BAMPA-salt is exclusively used on DT-plants; therefore, those incidents are clearly associated with use on DT-plants. Although DGA-salt can be used on both DT-plants and non-DT plants, DGA-salt incidents increased from a total of 48 (pre-June 2016) to a total of 860 (June 2016 and thereafter); thus, the increased number of reports likely reflects the 2016 registration of DGA-salt use on DT-plants.

Incidents not currently reported in IDS

EPA also has approximately 5,600 incident reports (occuring in 2017, 2018, and 2019) that were submitted by registrants directly to the Registration Division (RD) in 2020 to support the risk assessment for OTT use of dicamba on DT-plants (*see* USEPA, 2020a for details).[23] It is unclear at the current time how many of these incidents are already in IDS; however, they will be incorporated into IDS in the future. These records were crucial to EPA's ecological risk assessment work for the 2020 dicamba registration decision. Collectively, these reported incidents provide the largest body of evidence for wide-area off-site effects from dicamba use. The majority of the 5,600 incidents (ca. 97%) report off-site damage to non-dicamba resistant varieties of soybean; however, a wide variety of other plants including woody species were allegedly impacted for the other approximately 3% of the reported incidents (23 different specified species and 25 unspecified). Incidents were reported at distances off the treatment site beyond the required volatility and spray drift in-field setbacks on the DT-soybean and DT-cotton labels at the time of reporting. The reported incidents involve a variety of dicamba products applied in 2017, 2018, and 2019 after the approval of the use on DT-plants, including products that are labeled specifically for use on DT-plants. Many of the applications and observations of damage were reported as occurring in warmer months (*i.e.*, June or later), which is an indication that many of those incidents may have been associated with OTT uses on DT-plants or non-DT plants because plants have likely emerged and volatilization of dicamba is more likely at higher temperatures. In contrast, products not used for OTT applications are typically applied as pre-emergent, post-harvest, or fallow-field applications when temperatures are typically not elevated (*e.g.*, in Spring or Fall).

Two additional sources of potential incidents associated with dicamba were obtained from volunteer monitoring programs searching for signs of suspected herbicide injury (Audubon Arkansas and Prairie Rivers Network). EPA evaluated these study reports and generally found that the lack of survey distinction of 2,4-D and dicamba damage symptomology precludes definitive conclusions regarding the cause of observed plant symptoms (*see* USEPA, 2020a for details).

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[23] The sources of incidents were from Bayer's Off-target movement (OTM) Inquiries reports for 2017, 2018 and 2019 submitted under FIFRA section 6(a)(2) and BASF's Off-Target Report for the same time period. The information was submitted in response to a letter from the Office of Pesticide Programs (OPP) reminding all registrants who have registrations of products containing dicamba for post-emergent uses on crops genetically engineered to be resistant to dicamba of their obligations under FIFRA section 6(a)(2) and its implementing regulations at 40 CFR Part 159.

For additional evaluation of incidents from OTT use of dicamba (*i.e.*, on DT-plants), see USEPA 2020a and 2020b, available in the public docket EPA-HQ-OPP-2020-0492 at www.regulations.gov.

Despite the large number of incidents reported to EPA, information available from the United States Department of Agriculture's (USDA) Agricultural Research Service (USEPA, 2020b) indicates that both the number of dicamba incidents and their geographic extent are substantially greater than indicated by registrants' 6(a)(2) reporting and incidents reported by others to the Agency. For example, incidents in Illinois, Iowa, and Minnesota make up a disproportionate number of the 5,600 incidents in the dataset used for the 2020 risk assessment (discussed above), which may reflect differences in the robustness of reporting programs within those states rather than a greater number of incidents in those states compared to others. Finally, it should be noted that most incident reports associated with agricultural uses claim damage to crops, and damage to non-crop species are reported less often. This may reflect an underreporting of damage to non-crop species with perceived lower value than crop species rather than a lack of incidents to non-crop species in the vicinity of agricultural use sites.

Lastly, EPA summarized reported incidents of plant damage that occurred during the 2021 growing season, after the 2020 OTT registration decision was issued (USEPA, 2021).[24,25] In 2021 EPA received nearly 3,500 incident reports of damage to non-DT soybean, numerous other crops, and a wide variety of non-target plants in non-crop areas including residences, parks, and wildlife refuges. These incidents occurred even though EPA implemented new control measures in the 2020 registration decision and were reported by various stakeholders including states, academic researchers, media, impacted individuals, and companies. As generically discussed above, incidents reported for the 2021 season provide a snapshot of potential damage caused by product use, but the number of reported incidents is generally expected to underrepresent the actual number of incidents.

7 Analysis Plan

7.1 Overall Process

This assessment uses a weight of evidence approach that relies heavily, but not exclusively, on a RQ method. RQs are calculated by dividing an EEC by a toxicity endpoint (*i.*e., EEC/toxicity endpoint). This is a way to determine if an EEC is expected to be above or below the concentration associated with the effect endpoint. The RQs are compared to LOCs. The LOCs for non-listed species are meant to be protective of community-level effects. For acute and

[24] https://www.epa.gov/pesticides/epa-releases-summary-dicamba-related-incident-reports-2021-growing-season
[25] USEPA, 2021 available in the docket EPA-HQ-OPP-2020-0492-0021 at www.regulations.gov

chronic risks to vertebrates, the LOCs are 0.5 and 1.0, respectively, and for plants, the LOC is 1.0. The acute and chronic risk LOCs for bees are 0.4 and 1.0, respectively.

7.2 Modeling

The models used to calculate aquatic and terrestrial EECs are reported in **Table 7-1**. Current models and their user guides can be found on the web at https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/models-pesticide-risk-assessment.

Surface water aquatic modeling was simulated using the Pesticide in Water Calculator (PWC version 2.001) for use patterns to terrestrial areas. EFED calculated separate exposure estimates for the parent compound (dicamba) and the two degradation products (DCSA + 6-CSA).

The terrestrial residue exposure (T-REX) model was used to assess risk from spray deposition of dicamba onto dietary items and dicamba residues associated with granular uses. For DT-plants, DCSA exposure was based on residues in DT-plants from empirical field studies.

The bee residue exposure (Bee-REX) model was used to assess risk to bees from contact and dietary exposure (pollen and nectar).

The screening tool for inhalation risk (STIR v.1.0) was used to assess the potential for risk to birds and mammals through inhalation exposure given that dicamba is semi-volatile and may move off-site by this pathway.

The TerrPlant model (version 1.2.2) was used to provide screening-level estimates of exposure to terrestrial plants from single pesticide applications.

AgDRIFT (v 2.1.1) was used to determine the distance off the treated field where the LOC is exceeded for terrestrial plants and spray drift deposition to waterbodies based on exposure that occurs exclusively from spray drift. Although EPA previously conducted this analysis and numerous additional refinements for use on DT-cotton and DT-soybean plants (*e.g.*, USEPA, 2016b and USEPA, 2020a), it has never been conducted for previous nation-wide assessments of non-DT plant uses.

Table 7-1. List of the Models Used to Assess Risk

Environment	Taxa of Concern	Exposure Media	Exposure Pathway	Model or Pathway
Aquatic	Vertebrates/ Invertebrates	Surface water	Run-off and spray drift to water	PWC version 2.001[1]
	Aquatic Plants			

Environment	Taxa of Concern	Exposure Media	Exposure Pathway	Model or Pathway
Terrestrial	Vertebrates	Dietary items	Residues on plant parts and arthropods from spray applications. Residues associated with granule exposure.	T-REX version 1.5.2[2]
		Vapor-phase and spray droplet	Inhalation	STIR v.1.0[3]
	Plants	Spray drift/run-off	Run-off and spray drift to plants	TerrPlant version 1.2.2
Terrestrial	Invertebrates	Contact/ Dietary items	Spray contact and ingestion of residues in/on dietary items as a result of direct application	BeeREX version 1.0[4]
All Environments	Plants and taxa that forage on plants	Movement through air to terrestrial plants	Spray drift	AgDRIFT version 2.1.1 (Spray drift)[5]

[1] The Pesticide in Water Calculator (PWC) is a Graphic User Interface (GUI) that estimates pesticide concentration in water using the Pesticide Root Zone Model (PRZM) and the Variable Volume Water Model (VVWM). PRZM-VVWM.
[2] The Terrestrial Residue Exposure (T-REX) Model is used to estimate pesticide concentration on avian and mammalian food items.
[3] The Screening Tool for Inhalation Risk (STIR v.1.0) is intended to determine if exposure is likely or not and whether the potential for risk exists based on a chemical's maximum application rate, molecular weight and vapor pressure and the available mammalian acute oral and inhalation toxicity endpoints and avian acute oral endpoint (an adjusted avian inhalation toxicity endpoint is estimated from the mammalian toxicity data). If STIR predicts that exposure is likely, additional inhalation data may be necessary to adequately assess risk due to the inhalation exposure pathway.
[4] The Bee Residue Exposure (Bee-REX) model (Version 1.0) calculates default (*i.e.*, high end, yet reasonably conservative) EECs for contact and dietary routes of exposure for foliar, soil, and seed treatment applications.
[5] For applications to DT-soybeans and DT-cotton, spray drift estimates are based on submitted spray drift studies and label requirements for wind-directional buffers.

8 Aquatic Organisms Risk Assessment

8.1 Aquatic Exposure Assessment

8.1.1 Modeling

Surface water aquatic modeling was simulated using the PWC (version 2.001) for use patterns to terrestrial areas. Chemical input parameters for dicamba and DCSA + 6-CSA used in modeling

are presented in **Table 8-1** and **Table 8-2**, respectively, and were calculated based on information described in **Section 5.** Input parameters specific to the application scenario are specified in **Table 8-3** based on the use information described in **Section 3.2.** Input parameters were selected in accordance with EFED's guidance documents (USEPA, 2009; USEPA, 2010b; USEPA, 2012; USEPA, 2013a; USEPA, 2013b; USEPA, 2014a; USEPA, 2014b; USEPA and Health Canada, 2013). EFED considered the labels when deriving recommended dates for the first day of application simulated use patterns (*see* **Table 8-3**). EECs in sediment were not assessed because the log Kow is less than three for dicamba and DCSA, the mean K_{OC} is less than 1000 L/kg-organic carbon (dicamba), and the mean K_d is less than 50 L/kg-soil (DCSA). Accumulation in soil and sediment is not expected, as both dicamba and DCSA degrade in soil and water columns with half-lives less than 63 days. To model EECs for dicamba and the combined residues of DCSA and 6-CSA separately, dicamba was modeled as the "parent compound" and DCSA + 6-CSA residues were modeled as the "daughter compound" in PWC (USEPA, 2019a).

New aerobic soil and aerobic aquatic metabolism studies were submitted between the PF and the development of the risk assessment that affect half-lives used in modeling. The previous aerobic soil half-life used in modeling was 18 days, based on a single soil half-life of 6 days (7.39 days at 20°C; MRID 43245207) which was multiplied by three to account for uncertainty (USEPA, 2009). The new aerobic soil metabolism study (MRID 50931306) evaluated 4 soils with half-lives ranging from 7.6-15.1 days. Likewise, the previous aerobic aquatic half-life used in modeling was 72.9 days, based on a single soil half-life of 24.3 days (34.4 days at 20°C; MRID 43758509) which was multiplied by three to account for uncertainty. The new aerobic aquatic metabolism study (MRID 50931307) evaluated 2 water:sediment systems with half-lives of 28.4 and 40.7 days.

To model EECs for dicamba and DCSA + 6-CSA separately, formation-decline kinetics were used to estimate the aerobic soil and aquatic metabolism half-life values for DCSA + 6-CSA. Using the Computer Assisted Kinetic Evaluation (CAKE) tool (v. 3.4), aerobic soil metabolism half-life values ranged from 6.41 to 27.8 days and aerobic aquatic metabolism half-life values ranged from 34.9 to 63.3 days.

To model the upper-bound EECs for DCSA + 6-CSA in PWC, EFED used half-life values from the trials where the maximum residues of DCSA + 6-CSA formed. The maximum amounts of DCSA + 6-CSA residues formed in the ND sandy loam soil (35.6% at 14 days). The associated aerobic soil half-life values for dicamba (7.62 days) and DCSA + 6-CSA (14.2 days) were used for modeling upper-bound EECs for DCSA + 6-CSA. Likewise, the maximum amount of DCSA + 6-CSA occurred in the MA sand aerobic aquatic environment (47.8% at 60 days), so the aerobic aquatic half-life values for dicamba (40.7 days) and DCSA + 6-CSA (63.3 days) from this trial were used for modeling upper-bound EECs for DCSA + 6-CSA.

For modeling upper-bound EECs of dicamba in PWC, EFED used the trials that generated the minimum amounts of DCSA + 6-CSA. For aerobic soil media, this occurred in the silt loam trial (16.9% at 7 days), with half-life values of 6.32 days for dicamba and 6.41 days for DCSA + 6-CSA.

For aerobic aquatic media, this occurred in the MA silt loam trial (31.5% at 60 days), with half-life values of 28.4 days for dicamba and 34.9 days for DCSA + 6-CSA.

PWC scenarios are used to specify soil, climatic, and agronomic inputs in the model and are intended to result in high-end water concentrations associated with a particular crop and pesticide within a geographic region. Each PWC scenario is specific to a vulnerable area where the crop is commonly grown. Soil and agronomic data specific to the location are built into the scenario, and a specific climatic weather station providing 30 years of daily weather values is associated with the location. **Table 8-3** identifies the use sites associated with each PRZM scenario.

The uses on agricultural crops and non-agricultural areas allow for aerial and ground applications of a flowable material. EFED generated EECs for broadcast aerial and ground spray applications for these uses using a batch processing input file (**Appendix F**). All modeled methods for each use scenario are shown in the results tables in this section (**Table 8-4**). As discussed above, new aerobic soil and aerobic aquatic metabolism data are available. The model inputs for dicamba half-lives decreased with the newly available data, and these new data have been incorporated into the risk assessment. Additionally, it is now recommended that the daily average value be used to calculate acute RQs for aquatic organisms rather than the peak value used in previous risk assessments (USEPA, 2017).

Table 8-1. Aquatic Modeling Input Parameters for Chemical Tab for Dicamba[1]

Parameter (units)	Value	Source	Comments
K_{OC} (mL/g)	13.4	MRID 42774101	Average of 5 values. The coefficient of variation was 57% for K_{OC} and 86% for K_d.
Water Column Metabolism Half-life (days) at 20°C	40.7 28.4	MRID 43758509/ 50931307	Values used to estimate upper bound and lower bound EECs via formation decline kinetics.
Benthic Metabolism Half-life (days) at 25°C	423	MRID 43245208	Represents 3 times the half-life values from single anaerobic aquatic metabolism study (141 days).
Aqueous Photolysis Half-life (days) at pH 7	105 at 40°N	MRID 42774102	One measured value for parent.
Hydrolysis Half-life (days)	0	MRID 40335501	No significant degradation observed at 25°C and pH 7.
Soil Half-life (days) at 20°C	7.62 6.32	MRID 43245207/ 50931306	Values used to estimate upper bound and lower bound EECs via formation decline kinetics.
Foliar Half-life (days)	0	--	No Data
Molecular Weight (g/mol)	221.04	--	SANDOZ Safety Data Sheet (No. 1998)
Vapor Pressure (Torr) at 25°C	3.41×10^{-5}	--	SANDOZ Safety Data Sheet (No. 1998)
Solubility in Water (mg/L)	6100	--	SANDOZ Safety Data Sheet (No. 1998)
Henry's Law Constant (unitless)	6.65×10^{-8}	--	Estimated using (VP x MW)/solubility/R/298K, where R is the ideal gas constant (62.36 L-torr/K/mole)

[1] Other input parameters for the applications tab are shown in **Table 8-3**.

Table 8-2. Aquatic Modeling Input Parameters for Chemical Tab for DCSA[1]

Parameter (units)	Value	Source	Comments
K_d (mL/g)	1209	MRID 43095301	Average of 5 values. While the coefficient of variation was slightly lower for the Kd (75% for Kd and 87% for KOC), the Koc was used to match that used for dicamba for modeling purposes
Water Column Metabolism Half-life (days) at 20°C	63.3 34.9	MRID 43758509/ 50931307	Values used to estimate upper bound and lower bound EECs via formation decline kinetics.
Benthic Metabolism Half-life (days) at 25°C	0	MRID 43245208	Data not available, assumed stable.
Aqueous Photolysis Half-life (days) at pH 7	105 at 40°N	MRID 42774102	Data not available, used value for dicamba.
Hydrolysis Half-life (days)	0	--	No data, assumed stable.
Soil Half-life (days) at 20°C	14.2 6.41	MRID 43245207/ 50931306	Values used to estimate upper bound and lower bound EECs via formation decline kinetics.
Foliar Half-life (days)	0	--	No Data
Molecular Weight (g/mol)	207	--	
Vapor Pressure (Torr) at 25°C	5.98×10^{-5}	--	EPISuite
Solubility in Water (mg/L)	2112	MRID 43095301	
Henry's Law Constant (unitless)	$3.15\text{x}10^{-7}$	--	Estimated using (VP x MW)/solubility/R/298K, where R is the ideal gas constant (62.36 L-torr/K/mole)

[1] Other input parameters for the applications tab are shown in **Table 8-3**.

Upper bound daily, 21-day, and 60-day average EECs for dicamba ranged from 0.84-73.5, 0.79-59.4, and 0.72-81.6, respectively. Because applications for certain PWC runs occur late in the year (*e.g.*, 11/1), the maximum 21-day and 60-day averages for a year may roll over to the next year, resulting in a 1-in-10 year 21-day and/or 60-day average that is higher than the 1-in-10 year daily average. Upper bound daily, 21-day, and 60-day average EECs for DCSA + 6-CSA ranged from 0.38-44.5, 0.38-44.3, and 0.37-38.5, respectively. The lower bound EECs are between 2% and 25% lower than the upper bound EECs for both dicamba and DCSA + 6-CSA.

Table 8-3. PWC Input Parameters Specific to Use Patterns for Dicamba (Applications Tab and Crop/land Tab)

Use	Scenario	Timing[1]	Rates[2] (lb ae/A)	Application efficiency / spray drift fraction (unitless)	Comments
Asparagus	MIasparagusSTD	7 days prior to emergence	0.74	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	Emergence should occur in mid-April, so application date set to 4/8
Barley	NDwheatSTD ORwheatOP TXwheatOP	7 days postemergence, 7 days prior to harvest	0.12, 0.26	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	
Barley, oat, small grains, wheat	NDwheatSTD ORwheatOP TXwheatOP	14 and 7 days prior to emergence, 7 days postemergence	1, 0.875, 0.12	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	
Corn	CAcornOP IAcornSTD ILcornSTD INcornSTD KScornSTD MNcornSTD NDcornOP NEcornSTD OHcornSTD PAcornSTD STXcornNMC TXcornOP NCcornESTD NCcornWOP	7 days prior to emergence, 7 days postemergence	2 x 1.0	0.99 / 0.062 (ground)	
Cotton, non-DT	CAcotton_WirrigSTD MScottonSTD NCcottonSTD STXcottonNMC TXcottonOP	7 and 14 days after harvest	2 x 1.0	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	
Cotton, DT	MScottonSTD NCcottonSTD STXcottonNMC TXcottonOP	14 and 7 days prior to emergence, 7 and 14 days postemergence	4 x 0.5	0.99 / 0 (ground)	Drift buffers of 240 ft, drift fraction set to 0.

Use	Scenario	Timing[1]	Rates[2] (lb ae/A)	Application efficiency / spray drift fraction (unitless)	Comments
Oat	NDwheatSTD ORwheatOP TXwheatOP	7 and 37 days after harvest	2 x 0.13	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	
Proso millet	NDwheatSTD KSsorghumSTD TXsorghumOP	7 days postemergence	0.18	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	Warm season grass, similar to sorghum
Sorghum	KSsorghumSTD TXsorghumOP	7 days prior to emergence, 30 days preharvest	2 x 0.25	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	
Sorghum	KSsorghumSTD TXsorghumOP	14 and 7 days prior to emergence, 7 days postemergence	1, 0.75, 0.25	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	
Soybean, non-DT	MSsoybeanSTD	3/10, 3/17	2 x 1.0	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	Labels recommend first application 21-30 days prior to planting
Soybean, DT	MSsoybeanSTD	14 and 7 days prior to emergence, 7 and 14 days postemergence	4 x 0.5	0.99 / 0 (ground)	Drift buffers of 240 ft, drift fraction set to 0.
Sugarcane	FLsugarcaneSTD LAsugarcaneSTD	10/31, 11/14	2 x 1.0	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	Typical planting Sep-Dec, so end of Oct was selected as first app date
Triticale	NDwheatSTD ORwheatOP TXwheatOP	7 days postemergence	0.18	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	
Triticale	NDwheatSTD ORwheatOP TXwheatOP	7 and 37 days after harvest	2 x 0.12	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	
Wheat	NDwheatSTD ORwheatOP TXwheatOP	7 days postemergence, 7 days preharvest	0.44, 0.17	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	
Fallow/Idle/Conservation Reserve	RangeBSS CArangelandhayRLF_V2	9/21, 3/21	2 x 1.0	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	Fall and Spring are considered most effective timings

Use	Scenario	Timing[1]	Rates[2] (lb ae/A)	Application efficiency / spray drift fraction (unitless)	Comments
Commercial/industrial lawns	CAresidentialRLF ResidentialBSS	3/15, 4/14	2 x 0.07	0.99 / 0 (ground)	Granular broadcast application with spray drift fraction set to 0. Applied mid-March with Spring fertilizer.
Forest trees	CAforestryRLF	3/21	1.0	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	Spring application
Golf course	CAturfRLF FLturfSTD PAturfSTD TurfBSS	3/31	1.0	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	Applications occur mid-March to mid-April when weeds are actively growing. End of March selected as midpoint.
Grass forage/fodder/hay	CArangelandhayRLF_V2	10/15	1.0	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	October application would give weeds time to grow and before weeds become dormant
Hay	CArangelandhayRLF_V2	10/15	2.0	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	October application would give weeds time to grow and before weeds become dormant
Grass grown for seed	ORgrassseedSTD	7 days after harvest	2.0	0.99 / 0.062 (ground)	
Grass grown for seed	ORgrassseedSTD	7 and 14 days postemergence	2 x 1.0	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	
Pasture, rangeland	CArangelandhayRLF_V2	10/15	1.94	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	October application would give weeds time to grow and before weeds become dormant
Residential (outdoor premises, ornamentals, paved areas)	CAresidentialRLF ResdientialBSS	3/21, 4/20	2 x 0.1	0.99 / 0 (ground)	Apply first day of Spring and 30 days later. Granular broadcast application with spray drift fraction set to 0.
Rights of way, fences, hedgerows	CArightofwayRLF_V2	3/31	1.95	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	Applications occur mid-March to mid-April when weeds are actively growing. End of March selected as midpoint.
Parks, sod farms, recreational lawns	CAturfRLF FLturfSTD PAturfSTD TurfBSS	3/22, 4/21	2 x 1.0	0.95 / 0.125 (aerial) 0.99 / 0.062 (ground)	Label indicates to apply after 2nd mowing. First mowing occurs around mid-March. Second mowing 7 days later. Dicamba is then applied and applied 30 days later.

[1] Application timing developed in consultation with BEAD.
[2] Rates reflect the application rates used and number of applications applied.

Table 8-4. Surface Water EECs for Dicamba and DCSA + 6-CSA (Estimated Using PWC version 2.001)

Batch Run ID	Scenario	Application Method	App. Rates (lb ae/A)	Dicamba EECs			DCSA + 6-CSA EECs		
				1-day	21-day	60-day	1-day	21-day	60-day
Asparagus	MIAsparagusSTD	aerial	1 x 0.74	5.42	5.17	4.51	2.87	2.87	2.83
	MIAsparagusSTD	ground		2.76	2.63	2.29	1.58	1.57	1.55
Barley	NDwheatSTD	aerial	0.12, 0.26	4.31	3.64	2.85	2.58	2.57	2.52
	NDwheatSTD	ground		3.59	2.98	2.25	1.95	1.94	1.90
	ORwheatOP	aerial		2.91	2.59	2.02	1.60	1.59	1.57
	ORwheatOP	ground		1.98	1.77	1.39	1.04	1.03	1.03
	TXwheatOP	aerial		8.06	6.40	4.16	3.59	3.61[1]	3.67[1]
	TXwheatOP	ground		7.41	5.89	3.83	3.43	3.46[1]	3.46[1]
Barley, oats, small grains, wheat	NDwheatSTD	aerial	1.0, 0.875, 0.12	23.6	21.7	17.2	12.5	12.5	12.2
	NDwheatSTD	ground		17.5	16.0	12.5	9.04	9.01	8.90
	ORwheatOP	aerial		23.1	20.3	16.1	10.0	9.97	9.84
	ORwheatOP	ground		17.9	15.2	12.1	6.83	6.81	6.72
	TXwheatOP	aerial		**73.5**	**59.4**	44.2	27.3	27.8[1]	28.7[1]
	TXwheatOP	ground		70.2	56.7	42.1	26.1	26.6[1]	27.4[1]
Corn	CAcornOP	ground	2 x 1.0	13.8	12.2	10.6	5.84	5.85[1]	5.90[1]
	IAcornstd	ground		14.6	12.4	9.75	7.56	7.50	7.25
	ILCornSTD	ground		21.2	19.2	16.0	9.37	9.32	8.91
	INCornStd	ground		30.3	27.3	20.6	11.4	11.3	10.9
	KSCornStd	ground		37.2	33.5	28.4	14.3	14.2	13.8
	MNCornStd	ground		24.9	23.4	20.0	10.1	10.0	9.87
	MScornSTD	ground		51.1	47.1	39.6	18.5	17.6	16.3
	NDcornOP	ground		14.0	12.7	9.82	7.96	7.93	7.82
	NECornStd	ground		37.9	35.1	28.6	16.4	16.3	15.8
	OHCornSTD	ground		40.4	38.4	31.8	13.9	13.7	13.3
	PAcornSTD	ground		14.6	13.6	11.6	6.42	6.40	6.27
	STXcornNMC	ground		17.0	15.2	11.7	7.35	7.33	7.17
	TXcornOP	ground		18.5	16.0	12.9	7.57	7.45	7.12
	NCcornESTD	ground		16.9	15.0	11.8	7.05	6.97	6.91

Batch Run ID	Scenario	Application Method	App. Rates (lb ae/A)	Dicamba EECs			DCSA + 6-CSA EECs		
				1-day	21-day	60-day	1-day	21-day	60-day
Corn	NCcornWOP	ground	2 x 1.0	16.0	14.3	11.3	6.70	6.65	6.55
Cotton (non-DT)	CAcotton_WirrigSTD	aerial	2 x 1.0	21.7	21.4	17.3	7.53	7.40	6.87
	CAcotton_WirrigSTD	ground		15.4	16.4[1]	12.7	5.48	5.19	4.89
	MScottonSTD	aerial		41.1	34.3	27.0	15.5	14.9	15.5[1]
	MScottonSTD	ground		36.2	30.2	24.1	13.6	13.1	12.7
	NCcottonSTD	aerial		61.7	58.0	51.4	18.5	18.1	16.7
	NCcottonSTD	ground		57.5	54.0	47.9	16.5	16.5	14.7
	STXcottonNMC	aerial		36.9	32.4	27.0	15.1	15.1	14.6
	STXcottonNMC	ground		31.9	28.5	23.8	13.4	13.3	12.8
	TXcottonOP	aerial		34.3	27.2	21.1	20.1	19.9	19.1
	TXcottonOP	ground		29.0	23.1	19.6	18.3	18.2	17.4
Cotton (DT)	MScottonSTD	ground	4 x 0.5	22.2	19.0	14.6	9.93	9.88	9.47
	NCcottonSTD	ground		18.1	15.7	12.8	8.98	8.66	8.37
	STXcottonNMC	ground		14.2	11.9	8.34	5.64	5.29	4.99
	TXcottonOP	ground		11.5	9.90	7.01	5.23	5.03	4.68
Oats	NDwheatSTD	aerial	2 x 0.13	2.93	2.55	2.20	1.71	1.70	1.69
	NDwheatSTD	ground		2.32	2.03	1.86	1.26	1.26	1.25
	ORwheatOP	aerial		1.97	1.78	1.48	1.16	1.15	1.13
	ORwheatOP	ground		1.31	1.16	1.01	0.73	0.73	0.72
	TXwheatOP	aerial		4.97	3.83	2.61	2.61	2.56	2.33
	TXwheatOP	ground		4.55	3.48	2.33	2.37	2.33	2.12
Proso millet	NDwheatSTD	aerial	1 x 0.18	2.30	2.06	1.63	1.16	1.15	1.12
	NDwheatSTD	ground		1.70	1.52	1.20	0.86	0.85	0.82
	KSsorghumSTD	aerial		3.13	2.75	2.01	1.22	1.21	1.14
	KSsorghumSTD	ground		2.58	2.27	1.66	0.98	0.97	0.92
	TXsorghumOP	aerial		2.63	2.12	1.46	1.00	0.99	0.93
	TXsorghumOP	ground		2.11	1.69	1.14	0.82	0.81	0.76
Sorghum	KSsorghumSTD	aerial	2 x 0.25	5.65	4.70	3.53	2.90	2.88	2.82
	KSsorghumSTD	ground		4.84	3.98	2.96	2.33	2.32	2.26

Batch Run ID	Scenario	Application Method	App. Rates (lb ae/A)	Dicamba EECs			DCSA + 6-CSA EECs		
				1-day	21-day	60-day	1-day	21-day	60-day
Sorghum	TXsorghumOP	aerial	2 x 0.25	6.41	5.08	3.52	3.13	3.14[1]	3.32[1]
	TXsorghumOP	ground		5.99	4.63	3.30	2.91	2.92[1]	3.03[1]
	KSsorghumSTD	aerial	1, 0.75, 0.25	29.2	27.0	22.0	12.3	12.1	11.9
	KSsorghumSTD	ground		24.5	22.3	18.2	9.74	9.66	9.47
	TXsorghumOP	aerial		32.8	29.4	22.1	14.8	14.5	13.8
	TXsorghumOP	ground		28.6	25.6	19.0	12.9	12.7	12.0
Soybean (non-DT)	MSsoybeanSTD	aerial	2 x 1.0	54.1	48.5	38.4	16.4	16.3	15.7
	MSsoybeanSTD	ground		49.3	44.3	34.9	14.5	14.4	14.0
Soybean (DT)	MSsoybeanSTD	ground	4 x 0.5	42.2	38.2	31.2	15.6	15.5	14.9
Sugarcane	FLsugarcaneSTD	aerial	2 x 1.0	70.2	59.2	**81.6[1]**	**44.5**	**44.3**	**38.5**
	FLsugarcaneSTD	ground		67.5	58.4	81.2[1]	43.9	43.7	38.2
	LAsugarcaneSTD	aerial		33.3	31.3	28.5	14.5	14.5	13.9
	LAsugarcaneSTD	ground		29.0	27.0	24.7	12.5	12.5	12.0
Triticale	NDwheatSTD	aerial	1 x 0.18	3.39	2.91	2.13	1.47	1.46	1.41
	NDwheatSTD	ground		2.85	2.46	1.80	1.16	1.15	1.11
	ORwheatOP	aerial		2.02	1.88	1.47	0.84	0.84	0.82
	ORwheatOP	ground		1.48	1.36	1.10	0.56	0.56	0.55
	TXwheatOP	aerial		6.25	4.87	3.17	2.36	2.22	2.02
	TXwheatOP	ground		5.89	4.60	2.99	2.22	2.08	1.88
	NDwheatSTD	aerial	2 x 0.12	2.54	2.21	1.91	1.48	1.48	1.47
	NDwheatSTD	ground		2.01	1.76	1.61	1.10	1.09	1.09
	ORwheatOP	aerial		1.71	1.54	1.29	1.00	1.00	0.98
	ORwheatOP	ground		1.14	1.00	0.88	0.63	0.63	0.62
	TXwheatOP	aerial		4.31	3.32	2.26	2.26	2.22	2.02
	TXwheatOP	ground		3.94	3.02	2.02	2.06	2.02	1.84
Wheat	NDwheatSTD	aerial	0.44, 0.17	5.85	5.23	4.15	3.39	3.38	3.36
	NDwheatSTD	ground		4.31	3.86	3.05	2.52	2.48	2.41
	ORwheatOP	aerial		6.13	5.17	4.07	3.10	3.09	3.06

Batch Run ID	Scenario	Application Method	App. Rates (lb ae/A)	Dicamba EECs			DCSA + 6-CSA EECs		
				1-day	21-day	60-day	1-day	21-day	60-day
Wheat	ORwheatOP	ground	0.44, 0.17	4.43	3.73	2.92	2.18	2.17	2.15
	TXwheatOP	aerial		21.2	17.8	13.2	8.32	8.41[1]	8.21
	TXwheatOP	ground		20.7	17.3	12.8	8.02	8.11[1]	7.91
Fallow/ Idle/ Conservation Reserve	RangeBSS	aerial	2 x 1.0	29.6	23.3	17.3	15.8	15.7	15.2
	RangeBSS	ground		27.6	21.8	16.3	14.6	14.5	14.0
	CArangelandhayRLF_V2	aerial		10.5	9.64	8.16	6.75	6.74	6.70
	CArangelandhayRLF_V2	ground		6.54	6.00	5.13	4.66	4.64	4.72[1]
Commercial /Industrial lawns	CAresidentialRLF	ground	2 x 0.07	1.01	0.93	0.79	0.49	0.49	0.48
	ResidentialBSS	ground		1.63	1.44	1.22	0.55	0.55	0.53
Forest trees	CAForestryRLF	aerial	1 x 1.0	12.65	11.9	10.3	5.94	5.93	5.91
	CAForestryRLF	ground		9.32	8.72	7.57	4.28	4.28	4.26
Golf course	CATurfRLF	aerial	1 x 1.0	11.7	10.9	9.40	4.71	4.71	4.68
	CATurfRLF	ground		8.84	8.09	7.04	3.38	3.38	3.36
	CATurfRLF[1]	aerial		9.88	9.21	8.02	4.13	4.13	4.11
	CATurfRLF[1]	ground		6.93	6.34	5.52	2.78	2.78	2.76
	FLturfSTD	aerial		13.3	11.4	8.65	4.38	4.35	4.20
	FLturfSTD	ground		10.6	9.09	6.72	3.31	3.29	3.17
	PAturfSTD	aerial		9.36	8.77	7.65	3.85	3.84	3.79
	PAturfSTD	ground		5.87	5.50	4.80	2.40	2.39	2.36
	TurfBSS	aerial		9.22	8.29	6.52	3.02	3.01	2.94
	TurfBSS	ground		5.88	5.28	4.14	1.86	1.86	1.81
Grass Forage/ Fodder/ Hay	CArangelandhayRLF_V2	aerial	1 x 1.0	8.78	7.62	6.58	4.47	4.36	4.13
	CArangelandhayRLF_V2	ground		5.50	4.81	4.54	3.18	3.10	2.85
Hay	CArangelandhayRLF_V2	aerial	1 x 2.0	17.6	15.2	13.2	8.94	8.72	8.26
	CArangelandhayRLF_V2	ground		11.0	9.62	9.07	6.36	6.20	5.69
Grass grown for seed	ORgrassseedSTD	ground	1 x 2.0	7.84	6.88	5.75	3.87	3.84	3.76

Batch Run ID	Scenario	Application Method	App. Rates (lb ae/A)	Dicamba EECs			DCSA + 6-CSA EECs		
				1-day	21-day	60-day	1-day	21-day	60-day
Grass grown for seed	ORgrassseedSTD	aerial	2 x 1.0	14.1	12.8	11.1	7.56	7.58[1]	7.61[1]
	ORgrassseedSTD	ground		7.32	6.71	5.97	4.40	4.41[1]	4.43[1]
Pasture, Rangeland	CArangelandhayRLF_V2	aerial	1 x 1.94	17.0	14.8	12.7	8.67	8.45	8.00
	CArangelandhayRLF_V2	ground		10.7	9.32	8.79	6.16	6.01	5.52
Residential (outdoor premises, ornamentals, paved areas)	CAresidentialRLF	ground	2 x 0.1	0.84	0.79	0.72	0.38	0.38	0.37
	ResidentialBSS	ground		1.62	1.40	1.10	0.58	0.57	0.54
Rights of way, Fences, Hedgerows	CArightofwayRLF_V2	aerial	1 x 1.95	41.1	37.2	30.9	13.6	13.6	13.5
	CArightofwayRLF_V2	ground		35.4	32.0	26.6	11.0	11.0	11.0
Parks, Sod farms, Recreational lawns	CATurfRLF	aerial	2 x 1.0	15.6	14.4	12.0	7.31	7.30	7.23
	CATurfRLF	ground		9.54	8.88	7.64	4.32	4.31	4.27
	CATurfRLF[2]	aerial		14.4	13.0	10.7	6.73	6.72	6.65
	CATurfRLF[2]	ground		8.18	7.42	6.24	3.74	3.73	3.70
	FLturfSTD	aerial		18.0	15.1	12.6	7.75	7.71	7.45
	FLturfSTD	ground		13.2	11.1	9.39	5.58	5.56	5.39
	PAturfSTD	aerial		14.9	13.8	11.8	7.33	7.31	7.18
	PAturfSTD	ground		8.88	8.11	6.99	4.35	4.33	4.25
	TurfBSS	aerial		18.8	15.8	11.8	7.19	7.16	6.87
	TurfBSS	ground		13.8	11.6	8.33	4.92	4.89	4.69

Gray cells with **BOLD** font indicate the maximum values for the different modeling runs.

[1] Applications for these PWC runs occur late in the year (*e.g.*, 11/1); therefore, the maximum 21-day and 60-day averages for a year may roll over to the next year, resulting in a 1-in-10 year 21-day and/or 60-day average that is higher than the 1-in-10 year daily average.

[2] EPA has received comments regarding the curve numbers in the California turf scenario (CN=83) not matching the scenario metadata (CN=80). A second set of runs was done using the curve numbers reflected in the scenario metadata.

8.1.2 Monitoring

The following databases and sources were searched for water monitoring information on dicamba and DCSA in April 2021:

- Water Quality Portal (WQP)[26]
- California Department of Pesticide Regulation Surface Water Database[27] (CADPR SURF, 2004)

Dicamba results are provided in **Table 8-5** and **Table 8-6** for the WQP and CADPR SURF database, respectively. Neither data source contained sampling information for DCSA. The WQP dataset was summarized using the United States Geological Survey (USGS) hydrologic unit code, level 2 (HUC2) to provide some regional specificity to the data (USGS, 1987).

In the WQP dataset, there were 2,462 reported detections (5.1%) of dicamba out of 48,525 surface water samples analyzed for dicamba with the maximum detection of 26 µg/L. The limit of quantitation (LOQ) ranged from 0.004 to 4.8 µg/L. It is unknown whether samples were collected in areas where dicamba is used. There was a higher detection rate (15%) reported in CADPR's SURF database, with a maximum detection of 14 µg/L and LOQ range of 0.01 to 2.4 µg/L.

It should be noted that in its 2006 RED (USEPA, 2006), EPA determined that use rate limitations (maximum single application rate of 1.0 lb ae/A and maximum annual application rate of 2.0 lb ae/A) were necessary, and corresponding label changes were implemented in 2009. For the WQP data, the number of detections since 2009 decreased slightly (3.1%) but the maximum concentration remained relatively the same (21 µg/L). For the CADPR SURF data, the percentage of detections since 2009 increases slightly (23%), but the range of concentrations remained the same.

Groundwater and surface water are connected, where groundwater may feed surface water or surface water may move into groundwater. Both groundwater and surface water monitoring are important in understanding the potential for exposure in the aquatic environment. In most cases, residues observed in groundwater are expected to be diluted when moving into and interacting with surface water; however, there are cases where groundwater may be the dominant source of a surface water body during dry periods. Additionally, detections in groundwater could be problematic in areas where groundwater is used for irrigation purposes. Groundwater samples from the WQP dataset indicate a detection frequency of 0.6%, with a range of values from 0.01 to 1,500 µg/L. There were four samples, all collected in Oregon in 2000 and 2001, that were greater than 100 µg/L. The number of detections since 2009 decreased (0.11%) with the maximum concentration decreasing significantly (1.1 µg/L).

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[26] https://www.waterqualitydata.us/
[27] http://www.cdpr.ca.gov/docs/emon/surfwtr/surfdata.htm

Table 8-5. Surface Water Monitoring Results for Dicamba from Water Quality Portal

HUC2	Years with Available Data	Number of Sites	Number of Samples	Number of Samples with Non-detection	Range of Detection (µg/L)
1	1993 - 2020	108	973	971	0.01 - 1.46
2	1986 - 2020	364	2998	2924	0.01 - 2.14
3	1985 - 2020	468	4053	4015	0.01 - 1.76
4	1990 - 2020	256	1634	1540	0.01 – 17.0
5	1988 - 2020	229	2739	2637	0.01 - 7.80
6	1980 - 2020	99	543	535	0.01 – 0.32
7	1988 - 2020	1167	12559	11838	0.01 – 16.6
8	1988 - 2020	231	1865	1766	0.004 – 21.0
9	1987 - 2020	280	916	875	0.01 - 8.30
10	1983 - 2020	662	5384	4582	0.01 – 26.0
11	1988 - 2020	231	1065	1015	0.005 – 18.5
12	1986 - 2020	221	2018	1963	0.01 – 0.97
13	1986 - 2020	91	480	478	0.01 – 0.07
14	1983 - 2020	186	730	692	0.01 - 1.45
15	1983 - 2020	46	526	521	0.01 – 0.13
16	1977 - 2020	180	899	896	0.01 - 1.46
17	1983 - 2020	1011	6925	6607	0.01 – 14.0
18	1985 - 2020	453	2112	2103	0.01 – 0.10
19	1998 - 2019	2	28	28	NA
20	1999 - 2019	46	76	75	0.01 - 1.22
21	2013	2	2	2	NA

NA = not applicable

Table 8-6. Surface Water Monitoring Results for Dicamba from CDPR SURF Database

Years	Number of Sites	Number of Samples	Number of Samples with Non-detection	Range of detection (µg/L)
1985 - 2020	210	2161	1841	0.05 – 14

Modeled dicamba surface water concentrations ranged from 0.84 to 74 µg/L, with the maximum modeled concentrations occurring in small grains areas in Texas. It should be noted that most monitoring data described above were not specifically targeted at dicamba use areas, and the frequency of sample collection in all studies was not adequate to ensure the capture of peak concentrations. Monitoring data are useful in that they provide some information on the occurrence of dicamba in the environment under existing usage conditions. However, the measured concentrations should not be interpreted as reflecting the upper end of potential exposure unless samples were collected in areas with frequent sampling and where usage was occurring. Absence of detections from non-targeted monitoring cannot be used as a line of evidence to indicate exposure is not likely to occur because it is often collected in areas where the pesticide is not used. Additionally, modeling results are not expected to be similar to monitoring results as monitoring does not reflect PWC's conceptual model, and the sampling

frequency and duration does not reflect what is simulated in modeling. However, monitoring data are a useful line of evidence to explore whether exposure in the environment is occurring at the levels of the modeled EECs and whether monitoring shows that exposure is occurring at levels that are higher than toxicity endpoints. For non-targeted monitoring data, if exceedances are not occurring this is not evidence that exceedances will not occur with usage; however, if there are exceedances, it confirms that exposure occurred in the environment at levels where effects are expected to occur.

8.2 Aquatic Organism Risk Characterization

8.2.1 Aquatic Vertebrates

There is a not a risk concern for non-listed aquatic vertebrate species from any use of dicamba, except from potential chronic exposure to the combination of DCSA and 6-CSA under a single use scenario (Florida sugarcane). This conclusion is consistent with the findings of previous risk assessments (*e.g.*, USEPA, 2005 and USEPA, 2020a) except for the additional potential risk concern from exposure to the degradates. Acute and chronic RQs for dicamba are < 0.01 (LOC = 0.5) for freshwater fish and chronic RQs are < 0.01 (LOC = 1.0) for estuarine/marine fish (**Table 8-7**). Acute RQs for dicamba were not calculated for estuarine-marine fish because of the non-definitive LC_{50} value; however, the tested estuarine-marine fish is at least 6X less acutely sensitive than the most sensitive freshwater fish and the highest concentration tested with estuarine-marine fish is at least three orders of magnitude higher than EECs (**Table 8-7**). Available open literature data with the aquatic-phase of three frog species (dicamba 96-hr LC_{50} ranging from 106,000 to 358,000 µg/L) were not used to calculate RQs in part given the low observed toxicity and uncertainty for one of the studies if the results were expressed in terms of test material or active ingredient; however, those toxicity values are about three orders of magnitude higher than daily average exposure estimates for all uses (**Table 8-7**).

Acute toxicity data are not available for the two major degradates (DCSA and 6-CSA); however, DCSA appears to be less toxic than dicamba acid TGAI based on an LC_{50} reported in the IUPAC database[28] (LC_{50} >100,000 µg DCSA/L; IUPAC; rainbow trout versus LC_{50} = 28,000 µg ae/L; MRID 40098001; rainbow trout). EFED assumes that the toxicity of 6-CSA is the same as that of DCSA based on the structural similarity of the two compounds and ECOSAR evidence (*as discussed in* **Section 6.1**). Acute risk from DCSA and 6-CSA is considered low because the maximum daily EEC (44.5 µg DCSA+6-CSA/L; **Table 8-4**) is three orders of magnitude below the reported LC_{50} value for DCSA (>100,000 µg DCSA/L), which is used as a surrogate for toxicity of DCSA and 6-CSA.

Chronic risk from exposure to DCSA is considered because available data show that it is at least two orders of magnitude more toxic on a chronic basis than dicamba to the same tested freshwater fish species (fathead minnow; **Table 6-1**). EFED assumes that the toxicity of 6-CSA is the same as that of DCSA based on the structural similarity of the two compounds and ECOSAR

[28] http://sitem.herts.ac.uk/aeru/iupac/atoz.htm

evidence (*as discussed in* **Section 6.1**). The chronic LOC (exposure to DCSA + 6-CSA) is not exceeded for any uses except for the Florida sugarcane scenario (RQs ≤ 1.24)[29]. These RQs may be over or underestimated given that toxicity of 6-CSA may not be equal to that of DCSA. It is also unknown if any effects would be elicited from exposure to the degradates because the exposure estimates (60-day EECs ≤ 38.5 µg DCSA+6-CSA/L; **Table 8-4**) are lower than the lowest test concentration showing effects in the available study with DCSA (LOAEC = 100 µg DCSA/L based on 5.5% reduction in dry weight, MRID 50944101). There remains some additional uncertainty about chronic risk to freshwater fish from exposure to DCSA because there are not enough acute toxicity data with DCSA to assess if fathead minnow might be the most sensitive species on a chronic basis among the typically tested species; however, one of those species would need to be 2-3X more sensitive than fathead minnow to change the risk conclusion (*i.e.*, have a LOC exceedance) for several additional registered uses. Despite the lack of a chronic toxicity test with DCSA for estuarine-marine fish, it is reasonable to assume that data, if generated, would indicate low risk to estuarine-marine species given the lack of both acute and chronic toxicity to sheepshead minnow from exposure to dicamba at higher concentrations than tested for freshwater fish (fathead minnow) (*see* **Table 6-1**, **Appendix A**).

There are four reported incidents of fish kills, although there is no strong evidence to support any causation of dicamba exposure with the fish kills (*see* **Section 6.3**). Incidents other than mortality are unlikely to be reported. There are also 22 reported minor incidents involving wildlife; however, the taxonomic group and details of the incidents are unknown.

Overall, the weight of evidence indicates no acute risk concern for non-listed fish from any currently registered uses of dicamba and a potential chronic risk concern from the combined exposure to the degradation products (DCSA and 6-CSA) under at least one use-scenario (Florida sugarcane).

Table 8-7. Acute and Chronic Fish Risk Quotients for Non-listed Species[1]

Use Sites	1-in-10 Yr Dicamba EEC µg ae/L		RQ			
			Freshwater		Estuarine/Marine	
			Acute[2]	Chronic[3]	Acute[2]	Chronic[3]
	Daily Ave	60-day Ave	LC_{50} = 28,000 µg ae/L	NOAEC ≥ 9,900 µg ae/L	LC_{50} > 180,000 µg ae/L	NOAEC ≥ 11,000 µg ae/L
All uses	0.84-73.5	0.72-81.6	<0.01	<0.01	NC	<0.01

The endpoints listed in the table are the endpoint used to calculate the RQ.
NC: Not calculated because of the non-definitive LC_{50} value.
[1] All comparisons for parent dicamba (acid equivalent).
[2] The EECs used to calculate these RQs are based on the 1-in-10-year peak 1-day average (**Table 8-4**).
[3] The EECs used to calculate these RQs are based on the 1-in-10-year 60-day average value (**Table 8-4**).

[29] NOAEC = 31 µg DCSA/L (MRID 50944101) and DCSA + 6-CSA 60-day EECs (0.37 - 38.5 µg DCSA + 6-CSA/L**; Table 8-4**).

8.2.2 Aquatic Invertebrates

There is a not a risk concern for non-listed aquatic invertebrate species from any use of dicamba, consistent with the findings of previous risk assessments (*e.g.*, USEPA, 2005 and USEPA, 2020a). Acute RQs for dicamba were not calculated for exposure to dicamba acid because of the non-definitive LC_{50} values. Although one mortality occurred in the dicamba study with grass shrimp (MRID 00034702), the highest concentration tested for all species is at least three orders of magnitude higher than EECs (**Table 8-8**). There is no evidence of the dicamba salts being more toxic than the acid, except for the Na-salt TEP, which is at least 10X greater toxicity to *Daphnia magna* than dicamba acid TGAI. Given that dicamba salts should disassociate to the acid rapidly in water, and the evident lack of toxicity observed in all the other available freshwater invertebrate studies, it is likely that the observed toxicity in this study is due to effects from the formulation, rather than toxicity specific to the Na-salt. Nonetheless, acute RQs are ≤ 0.01 (LOC = 0.5) for potential exposure to this TEP.[30] Finally, acute toxicity data are not available for the two major degradates (DCSA and 6-CSA); however, DCSA may be more toxic than dicamba acid TGAI based on an IC_{50} reported in the IUPAC database[31] (89,000 µg DCSA/L; IUPAC; *Daphnia magna* versus IC_{50} > 100,000 µg ae/L; MRID 40094602; *Daphnia magna*). That said, the relative toxicity of dicamba and DCSA is uncertain given that the values are close, and that the raw data are not available for either study; therefore, acute risk to DCSA is considered given the ambiguity. Acute risk is also considered for 6-CSA because EFED assumes that the toxicity of 6-CSA is the same as that of DCSA based on the structural similarity of the two compounds and ECOSAR evidence (*as discussed in* **Section 6.1**). Acute risk from DCSA and 6-CSA is considered low because the maximum daily EEC (44.5 µg DCSA+6-CSA/L; **Table 8-4**) is three orders of magnitude below the reported IC_{50} value for DCSA (89,000 µg DCSA/L), which is used as a surrogate for toxicity of DCSA and 6-CSA.

Chronic RQs are below the LOC for dicamba (**Table 8-8**). There is some uncertainty because the available data for freshwater invertebrates is based on toxicity of the BAPMA-salt TEP and not dicamba acid TGAI. However, the uncertainty is low given that no effects were observed on the tested freshwater invertebrate (exposed to BAPMA) or the tested estuarine marine species (exposed to dicamba acid) (*see* **Appendix A**), and dicamba acid TGAI would need to be at least 700X more toxic than BAPMA-salt TEP to exceed the LOC. The available chronic toxicity study with DCSA showed no effects on *Daphnia magna* but did not resolve the relative toxicity between dicamba acid TGAI and DCSA (*i.e.*, no effects observed in either study); therefore, risk from DCSA exposure is considered. Chronic risk is also considered for 6-CSA because EFED assumes that the toxicity of 6-CSA is the same as that of DCSA based on the structural similarity

[30] EC_{50} = 9,100 µg ae/L (Na-salt, MRID 00085935) and dicamba daily average EECs (**Table 8-4**). Conservatively assumes that toxicity is due to the salt alone and compared to EECs that account for spray drift and run-off (*i.e.*, TEP toxicity data are typically compared to spray drift only EECs).
[31] http://sitem.herts.ac.uk/aeru/iupac/atoz.htm

of the two compounds and ECOSAR evidence (*as discussed in* **Section 6.1**). Chronic risk from DCSA and 6-CSA is low because the RQs (< 0.01) are well below the chronic LOC of 1.0.[32]

There are no reported incidents for aquatic invertebrates. There are 22 reported minor incidents involving wildlife; however, the taxonomic group and details of the incidents are unknown. Notably, the lack of reported incidents for aquatic invertebrates does not indicate either a lack of exposure, mortalities of small-sized invertebrates (these would likely go unnoticed), or chronic effects.

Overall, the weight of evidence indicates a low potential risk concern for non-listed aquatic invertebrates from all uses of dicamba (consistent with previous risk assessments).

Table 8-8. Acute and Chronic Aquatic Invertebrate Risk Quotients for Non-listed Species[1]

Use Sites	1-in-10 Yr Dicamba EEC µg ae/L		RQ			
			Freshwater		Estuarine/Marine	
			Acute[2]	Chronic[3]	Acute[2]	Chronic[3]
	Daily Ave	21-day Ave	LC_{50} > 100,000 µg ae/L	NOAEC ≥ 42,000 µg ae/L	LC_{50} > 100,000 µg ae/L	NOAEC ≥ 11,000 µg ae/L
All uses	0.84-73.5	0.79-59.4	NC	<0.01	NC	<0.01

The endpoints listed in the table are the endpoint used to calculate the RQ.
NC: Not calculated because of the non-definitive LC_{50} value.
[1] All comparisons for parent dicamba (acid equivalent).
[2] The EECs used to calculate these RQs are based on the 1-in-10-year peak 1-day average (**Table 8-4**).
[3] The EECs used to calculate these RQs are based on the 1-in-10-year 21-day average value (**Table 8-4**).

8.2.3 Aquatic Plants

There is a potential risk concern for non-listed aquatic non-vascular plants for a small number (three) of the total registered uses and no risk concern for non-listed aquatic vascular plants, consistent with the findings of past risk assessments (*e.g.*, USEPA, 2005 and USEPA, 2020a).

The aquatic non-listed non-vascular plant LOC (1.0) is exceeded (RQs of 1.01-1.2) for some but not all exposure scenarios of use on grains (barley, oats, small grains, and wheat), cotton (non-DT), and sugarcane (**Table 8-9**).

The aquatic vascular plant LOC is not exceeded based on registrant submitted studies with *Lemna gibba* or the open literature study with *Myriophyllum aquaticum* (Tunic et al., 2015; MRID 51610901), which was judged suitable for quantitative risk assessment (*i.e.*, RQ calculation). Furthermore, there is not a risk concern based on the most sensitive of all the endpoints reported in the Tunic et al. (2015; MRID 51610901) study, which can be used for

[32] NOAEC ≥ 9710 µg DCSA/L (DCSA, MRID 50944102) and DCSA + 6-CSA 21-day average EEC (max EEC = 44.3 µg DCSA + 6-CSA/L**; Table 8-4**).

characterization purposes (*see* **Section 6** for details).[33] Although one open literature study with *Myriophyllum aquaticum* (Turgut and Fomin, 2002) showed greater toxicity than other available studies, RQs were not calculated using the endpoints from this study because it was classified as qualitative due to uncertainties about the test material (*e.g.*, if the tested product is similar to or the same as one registered in the U.S. and if the reported EC_{50} values are expressed in terms of the test material or the active ingredient) and basic details about the study design. In addition, EFED has reduced confidence in the use of the reported growth endpoints (root length and pigmentation) as being representative of the typical apical growth measurements used for risk assessment (*see* details in **Section 6**). Nonetheless, there is not a risk concern based on the Turgut and Fomin (2002) data because the reported EC_{50} values (98 to 100 µg/l) are lower than the exposure estimates for all use scenarios (**Table 8-9**).

There are no reported incidents; however, incidents with aquatic plants, particularly non-vascular plants are unlikely to be reported.

Overall, the weight of evidence indicates a potential risk concern for non-listed non-vascular aquatic plant species for some use sites and no risk concern for non-listed vascular aquatic plant species.

Table 8-9. Aquatic Plant Risk Quotients for Non-listed Species[1]

Use Sites	1-in-10 Year Daily Mean Dicamba EEC (µg ae/L)[2]	RQ	
		Vascular	Non-vascular
		IC_{50} = 1290 µg ae/L	IC_{50} = 61 µg ae/L
Various grains (barley, oats, small grains, wheat)[3]	17.5-73.5	≤0.06	0.29-**1.2**
Cotton (non-DT)	15.4-61.7	≤0.05	0.25-**1.01**
Sugarcane	29-70.2	≤0.05	0.48-**1.15**
All other uses	0.84-54.1	≤0.04	0.01-0.89

Bolded values exceed the chronic LOC of 1.0. RQs greater than 2 are rounded to the nearest whole number.
The LOC for non-listed plants is 1.
The endpoints listed in the table are the endpoint used to calculate the RQ.
[1] All comparisons for parent dicamba (acid equivalent).
[2] The EECs used to calculate these RQs are based on the 1-in-10-year peak 1-day average (**Table 8-4**).
[3] Two pre-emergent applications (1.0 and 0.875 lb ae/A) and one post-emergent application (0.125 lb ae/A) for an annual total of 2 lb ae/A to the treated field.

[33] IC_{50} = 520 µg ae/L for root length, which is an apical growth endpoint that can be used for characterization. Maximum EEC = 73.5 µg ae/L (**Table 8-4**).

9 Terrestrial Vertebrates Risk Assessment

9.1 Terrestrial Vertebrate Exposure Assessment

T-REX (Terrestrial Residue Exposure Model, v 1.5.2) is used to estimate potential avian and mammal dietary exposure for terrestrial wildlife based on consumption of dicamba residues on food items following spray applications and residues associated with granular uses. Although the conclusions from previous assessments (*e.g.*, USEPA, 2005 and USEPA, 2020a) are generally representative of current labeled uses, a review was conducted using the most current information. Maximum labeled rates for each use pattern were considered. The most significant change is a reassessment of chronic risk to birds from exposure to DCSA (DT-plants) based on the updated toxicity endpoint used for risk assessment and the use of a more sensitive endpoint for acute toxicity (DMA-salt formulation) to mammals than was used in past risk assessments (*see* Section 6). The lowest and highest EECs across all use sites are presented (Table 9-1), and risk estimates are binned by application rate ranges given that the risk picture has not changed; however, a complete presentation of EECs is presented in Appendix G. T-REX was used to estimate initial dicamba residues on food items using upper-bound Kenaga and mean Kenaga residue values, which are derived from a dataset of field-based empirical residue measurements of various pesticides. The upper-bound Kenaga values are representative of the highest observed residues values from the empirical dataset. EFED assumes that the upper-bound Kenaga values provide a reasonable upper-bound initial residue estimate in most cases because the upper-bound Kenaga values are representative of 84% or greater (depending on the food item) of the residues in the dataset. EFED considers mean initial Kenaga values when the LOC is exceeded using upper-bound Kenaga-value-based residue estimates of the pesticide of interest. The use of the mean initial Kenaga values will underestimate residues in some cases and overestimate in other cases, with the percentage of underestimates and overestimates depending on the actual distribution of residue values. Although mean initial Kenaga values provide a characterization of the central tendency of the distribution of initial pesticide residues, they should not be interpreted as a "typical" (*e.g.*, the most common) initial residue value. EECs based on mean Kenaga values basically represent the average of initial residues values expected among different treated fields.

Consistent with recent risk assessments (*e.g.*, *see* USEPA, 2020a for more details), risk was estimated using a dicamba-specific foliar dissipation half-life (8.4 days) based on dicamba-specific residue data (MRID 43370701; Acceptable). This half-life represents the upper 90th percentile confidence interval of all the available decline data from the tested dicamba salt formulations (DMA, DGA and Na-salt formulations). The field trial data indicate that dicamba acid residue levels are not dependent on the salt formulation used; therefore, it is assumed that the data bridge to all salts, and the foliar half-life value was calculated using data for all the tested salts.

Table 9-1. Summary of Dietary (mg ae/kg-diet) and Dose-based EECs (mg ae/kg-bw) as Food Residues for Birds, Reptiles, Terrestrial-Phase Amphibians and Mammals from Labeled Uses of Dicamba (T-REX v. 1.5.2, Upper Bound and Mean Kenaga)[1,2,3]

Food Type	Dietary-Based Dicamba EEC (mg/kg-diet)	Dose-Based Dicamba EEC (mg ae/kg-body weight)					
		Birds			Mammals		
		Small (20 g)	Medium (100 g)	Large (1000 g)	Small (15 g)	Medium (35 g)	Large (1000 g)
Minimum dicamba EECs for spray applications based on triticale and millet (0.18 lb ae/A)							
Upper Bound Kenaga							
Short grass	43.20	49.20	28.06	12.56	41.19	28.47	6.60
Tall grass	19.80	22.55	12.86	5.76	18.88	13.05	3.03
Broadleaf plants/small insects	24.30	27.68	15.78	7.07	23.17	16.01	3.71
Fruits/pods/seeds	2.70	3.08	1.75	0.79	2.57	1.78	0.41
Arthropods	16.92	19.27	10.99	4.92	16.13	11.15	2.59
Seeds (granivore)[4]	-	0.68	0.39	0.17	0.57	0.40	0.09
Mean Kenaga							
Short grass	15.30	17.43	9.94	4.45	14.59	10.08	2.34
Tall grass	6.48	7.38	4.21	1.88	6.18	4.27	0.99
Broadleaf plants/small insects	8.10	9.23	5.26	2.36	7.72	5.34	1.24
Fruits/pods/seeds	1.26	1.44	0.82	0.37	1.20	0.83	0.19
Arthropods	11.70	13.33	7.60	3.40	11.16	7.71	1.79
Seeds (granivore)[4]	-	0.32	0.18	0.08	0.27	0.18	0.04
Maximum dicamba EECs for spray applications based on various non-agricultural uses (1.94 - 2 lb ae/A)[5]							
Upper Bound Kenaga							
Short grass	480.0	546.7	311.7	139.6	457.6	316.3	73.3
Tall grass	220.0	250.6	142.9	64.0	209.8	145.0	33.6
Broadleaf plants/small insects	270.0	307.5	175.4	78.5	257.4	177.9	41.3
Fruits/pods/seeds	30.0	34.2	19.5	8.7	28.6	19.8	4.6
Arthropods	188.0	214.1	122.1	54.7	179.2	123.9	28.7
Seeds (granivore)[4]	-	7.6	4.3	1.9	6.4	4.4	1.0
Mean Kenaga							
Short grass	170.0	193.6	110.4	49.4	162.1	112.0	26.0
Tall grass	72.0	82.0	46.8	20.9	68.6	47.4	11.0
Broadleaf plants/small insects	90.0	102.5	58.5	26.2	85.8	59.3	13.8
Fruits/pods/seeds	14.0	15.9	9.1	4.1	13.3	9.2	2.1
Arthropods	130.0	148.1	84.4	37.8	123.9	85.7	19.9
Seeds (granivore)[4]	-	3.5	2.0	0.9	3.0	2.1	0.5

[1] Granule uses (0.07-0.1 lb ae/A; 0% incorporation): EEC = 1.04 mg ae/ft^2 (based on 0.1 lb ae/A).
[2] Parent dicamba (acid equivalent).
[3] Dietary and dose-based EECs are calculated for birds and mammals. The dietary-based EEC is expressed in terms of the concentration of pesticide in the diet (*e.g.*, mg ae/kg food item) and the dose-based EEC is expressed in terms of how much pesticide is expected to be consumed for a given animal body weight (*e.g.*, mg ae/kg body weight).

[4] Seeds presented separately for dose-based EECs due to difference in food intake of granivores compared with herbivores and insectivores.
[5] EECs reported for uses with a single application rate of 2 lb ae/A

Dicamba residues on forage items may be impacted by plant uptake or vapor deposition because dicamba is systemic and volatile. Nonetheless, maximum residues on food items are assumed to be present immediately following application and dominated by deposition of spray droplets. Empirical residue data from field measurements are used as the basis for T-REX estimates of initial residues on food items and the specific contributions of the various potential sources of the residues from those field measurements has not been determined. Therefore, T-REX does not distinguish among potential residue sources following a spray application. While it is possible that the contribution of other sources of residues (*e.g.,* vapor deposition and systemic uptake) could lead to maximum residues on a day after the application, those residue sources are assumed to be minor and accounted for in the field measurements used as the basis for estimating initial residues.

AgDRIFT (v 2.1.1) was used to determine the distance off the treated field where the LOC is exceeded for terrestrial vertebrates based on exposure that occurs exclusively from spray drift. All possible droplet size ranges (ground and aerial applications) and boom heights (ground applications) were modeled because the typical dicamba end-use product label does not have specific restrictions (except for use on DT-soybean and DT-cotton, which require ultra-coarse droplets). Any specific label restrictions may reduce the amount of spray drift caused by dicamba applications compared to that determined by this analysis (**Table 9-6**). Screening-level distances are not presented for DT-plants because the default settings in AgDRIFT do not consider ultra-course droplets, and EPA recently conducted a refined analysis of off-site distances specific to DT-plant uses, products, and label restrictions (*see* USEPA, 2020a for details and **Section 11** for a summary).

Available data indicate that DCSA residues are expected to be negligible in non-DT plants; however, DCSA residues are expected at higher concentrations in DT-plants because they contain the modified gene that confers dicamba tolerance on DT-plants allowing the DT-plants to convert dicamba residues to form the less phytotoxic DCSA (*as discussed in* USPEA, 2020a). Therefore, it is assumed that there is negligible exposure to DCSA in non-DT plants and potential exposure in DT-plants. A recent risk assessment reports DCSA exposure estimates in DT-plants (USEPA, 2020a); therefore, they are not recalculated here. However, chronic risk to birds (DCSA exposure) is reevaluated because DCSA chronic toxicity data (*see* **Section 6**) was reviewed after the conduct of the 2020 risk assessment, which based risk conclusions on estimated chronic toxicity to DCSA extrapolated from mammalian data.

EFED also evaluated the potential for risk to terrestrial vertebrates through inhalation exposure because dicamba has intermediate volatility and may move off-site by this pathway. Although inhalation risk is not typically considered in registration review ecological risk assessments for chemicals with a low propensity to volatilize, there is a potential exposure pathway for dicamba due to its propensity to volatilize (**Section 5**). The STIR model was used to assess the potential

for risk to birds and mammals through inhalation exposure. The exposure pathways that are assessed by this tool include both droplet inhalation and vapor-phase inhalation. STIR is intended to determine if exposure is likely or not and whether the potential for risk exists based on a chemical's maximum application rate, molecular weight and vapor pressure and the available mammalian acute oral and inhalation toxicity endpoints and avian acute oral endpoint (an adjusted avian inhalation toxicity endpoint is estimated from the mammalian toxicity data). If STIR predicts that exposure is likely, additional inhalation data may be necessary to adequately assess risk due to the inhalation exposure pathway. The maximum vapor concentration (at saturation) and maximum inhalation doses (vapor and spray droplet) are shown in **Table 9-2** for the maximum single application rate of 2 lb ae/A.

Table 9-2. Estimated Vapor-Phase and Spray Inhalation Exposure Values for On-field Birds and Mammals[1]

Assessed Taxa	Maximum Vapor Concentration (mg/m^3)	Maximum 1-hr Vapor Inhalation Dose (mg/kg)	Maximum Post-treatment Spray Inhalation Dose (mg/kg)
Small (20 g) bird	0.41	0.051	0.192
Small (15 g) mammal	0.41	0.064	0.242

[1] Based on use with maximum exposure potential (single aerial application of 2 lb ae/A); MW dicamba (221 g/mole); vapor pressure of dicamba (3.41x10-5 mmHg). Parent dicamba (acid equivalent).

9.2 Terrestrial Vertebrate Risk Characterization

9.2.1 Dicamba Exposure

On-field exposure (dietary)

There is a potential risk concern for non-listed terrestrial vertebrate species limited to acute oral exposure of dicamba to birds and chronic exposure of dicamba to mammals, consistent with the findings of previous risk assessments (*e.g.*, USEPA, 2005 and USEPA, 2020a).

There is not a risk concern for sub-acute/chronic dietary risk to birds or acute risk to mammals. Acute RQs are ≤ 0.24 for mammals[34,35] (LOC = 0.5) and chronic RQs are ≤ 0.69 for birds[36] (LOC = 1.0). Acute RQs were not calculated for sub-acute dietary exposure to birds because of the non-definitive LC_{50} value (>10,000 mg ae/kg-diet, MRID 00025391; **Table 6-3**); however, there was

[34] ***Spray applications***: RQ = EEC/body-weight adjusted LD_{50}. Maximum dose-based EEC = 457.6 mg/kg-bw (15-g mammal consuming short-grass; **Table 9-1)**. 15-g mammal LD_{50} = 1886 mg ae/kg-bw (derived from lab rat LD_{50} = 858 mg ae/kg-bw; MRID 00025371; **Table 6-3**).

[35] ***Granular applications***: RQ = EEC/amount of dicamba consumed per animal to reach the LD_{50}. Maximum LD_{50}/ft^2 based EEC = 1.04 mg ae/ft^2 (**Table 9-1**). Amount (90.33 mg ae) of dicamba consumed per animal to reach the LD_{50} = 15-g mammal LD_{50} (1886 mg ae/kg-bw) * 0.015 kg. Body-weight adjusted LD_{50} is derived from lab rat LD_{50} = 858 mg ae/kg-bw; MRID 00025371; **Table 6-3**).

[36] RQ = EEC/NOAEC. Maximum dietary-based EEC = 480 mg/kg-diet (short-grass; **Table 9-1**). Bird chronic NOAEC = 695 mg ae/kg-diet (Mallard duck, MRID 43814003; **Table 6-3**).

no treatment-related mortality and the highest concentration tested is at least 21X higher than dietary EECs (**Table 9-1**).

Chronic RQs are not calculated for exposure to granules due to a lack of methodology; however, the direct consumption of granules can be considered to characterize risk. Typically, the characterization is based on the number of granules that would need to be consumed to reach the toxicity thresholds. While EFED does not have information on the weight of individual granules in registered products (needed to determine the number of granules of potential concern), we do know the maximum amount of dicamba (ae) per unit of treated area. Accordingly, EFED calculated the size of treated areas that would contain levels of dicamba that exceed the NOAEC(L) values. Based on these calculations, a bird (size of the tested species) would need to consume every granule (*i.e.*, 100% foraging efficiency) in 85 ft^2 for exposure levels to reach the NOAEC value (695 mg ae/kg-diet, MRID 43814003)[37] and a mammal (size of the tested species) would need to consume every granule in 45 ft^2 for exposure levels to reach the NOAEL value (136 mg ae/kg-bw, MRID 43137101).[38] It is unlikely that an animal would consume every granule in an area of such sizes on a daily basis given that the granules are un-baited (*i.e.*, not likely an attractive foraging item). If a lower foraging efficiency is assumed (*e.g.*, 10%), then the number of granules that need to be consumed remains the same, but the foraging area would increase to 850 ft^2 for the bird (size of the tested species) and 450 ft^2 for the mammal (size of the tested species). It is also notable that the foraging areas of concern are greater than the 1 ft^2 area metric used as the basis for calculating RQs for acute risk (*i.e.*, mg ae/ft^2). Finally, birds may use granules for grit. There is no reason to assume that the granules would be selectively consumed for grit over other soil particles and in the absence of intentionally selecting the granules, birds would need to consume large amounts of other particles to ingest the number of granules of concern; thereby decreasing the possibility that all the granules in 85 ft^2 would be ingested.

Another consideration is the duration of exposure potential to elicit a chronic effect. In general, granules will be on the treated field for a limited and indeterminant time. In the case of dicamba, the granules can be applied twice annually with a 30-day minimum retreatment interval; thereby increasing the exposure potential. Importantly, short-term sublethal exposure can impact reproduction if the timing of exposure is during a critical window of development. It is unknown what was the required duration and timing of dicamba exposure to elicit the effects observed in the available 2-gen toxicity study with rats (MRID 43137101); therefore, it is

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[37] Individual granule size unknown and likely varies among products. EEC = 1.04 mg ae/ft^2 (**Table 9-1**). NOAEC = 695 mg ae/kg-diet (MRID 43814003). Amount (88 mg ae) of dicamba consumed/day/animal to reach the NOAEC for the tested bird (Mallard duck) = (NOAEC (mg ae/kg-diet) * food consumption (kg)) / body weight of tested bird (kg). Average food consumption of control birds throughout the study = 0.129 kg. Average body weight of control birds throughout the study = 1.113 kg.

[38] Individual granule size unknown and likely varies among products. EEC = 1.04 mg ae/ft^2 (**Table 9-1**). NOAEL = 136 mg ae/kg-bw (MRID 43137101). Amount (47 mg ae) of dicamba consumed/day/animal to reach the NOAEL for the tested mammal (lab rat) = NOAEL (mg ae/kg-bw) / body weight of tested rats (kg). Body weight = 0.350 kg.

possible but unknown if exposure potential from granules would be of sufficient duration to elicit effects.

Overall, the available information suggests low chronic risk, and this assumption can be further characterized if information is provided on granule weights.

Birds (acute oral)

The acute LOC (0.5) is exceeded for all uses of dicamba with annual application rates ≥ 0.38 lb ae/A (RQ ≤ 4.04; **Table 9-3 and Appendix G**). The potential risk concern is based on LOC exceedances for all weight classes of birds (20g to 1000 g was assessed) and all feeding strategies except for birds consuming fruits & pods (herbivores and omnivores) or seeds (all types of feeders). On-field exposure estimates are high enough to be of concern for up to 39 days based on upper bound Kenaga values and up to 16 days based on mean Kenaga values. However, the temporal exposure potential of an individual plant may be less depending on its sensitivity to dicamba (*i.e.*, concentration to cause effect and how long it takes for dicamba to act) and the foraging palatability of dead or dying plant material to an individual bird.

Table 9-3. Acute RQ values for Birds from Labeled Uses of Dicamba (T-REX v. 1.5.2, Upper Bound and Mean Kenaga)[1,2]

Food Type	Acute Dose-Based RQ[3,4] LD_{50} = 188 mg ae/kg-bw			Acute Dietary RQ NOAEC > 10,000 mg ae/kg-diet
	Small (20 g)	Medium (100 g)	Large (1000 g)	
Minimum dicamba EECs for spray applications based on triticale and millet (0.18 lb ae/A)				
Upper Bound Kenaga				
Herbivores/Insectivores				
Short grass	0.3	0.1	<0.1	NC
Tall grass	0.1	<0.1	<0.1	NC
Broadleaf plants	0.2	<0.1	<0.1	NC
Fruits/pods/seeds	<0.1	<0.1	<0.1	NC
Arthropods	0.1	<0.1	<0.1	NC
Granivores				
Seeds[5]	<0.1	<0.1	<0.1	NC
Mean Kenaga				
Herbivores/Insectivores				
Short grass	0.1	<0.1	<0.1	NC
Tall grass	<0.1	<0.1	<0.1	NC
Broadleaf plants	<0.1	<0.1	<0.1	NC
Fruits/pods/seeds	<0.1	<0.1	<0.1	NC
Arthropods	0.1	<0.1	<0.1	NC
Granivores				
Seeds[5]	<0.1	<0.1	<0.1	NC

Food Type	Acute Dose-Based RQ[3,4] LD_{50} = 188 mg ae/kg-bw			Acute Dietary RQ NOAEC > 10,000 mg ae/kg-diet
	Small (20 g)	Medium (100 g)	Large (1000 g)	
Maximum dicamba EECs for spray applications based on various non-agricultural uses (1.94-2 lb ae/A)[6]				
Upper Bound Kenaga				
Herbivores/Insectivores				
Short grass	**4**	**1.8**	**0.6**	NC
Tall grass	**1.8**	**0.8**	0.3	NC
Broadleaf plants	**2**	**1.0**	0.3	NC
Fruits/pods/seeds	0.3	0.1	<0.1	NC
Arthropods	**1.6**	**0.7**	0.2	NC
Granivores				
Seeds[5]	<0.1	<0.1	<0.1	NC
Mean Kenaga				
Herbivores/Insectivores				
Short grass	**1.4**	**0.6**	0.2	NC
Tall grass	**0.6**	0.3	0.1	NC
Broadleaf plants	**0.8**	0.3	0.1	NC
Fruits/pods/seeds	0.1	0.1	<0.1	NC
Arthropods	**1.1**	0.2	0.2	NC
Granivores				
Seeds[5]	<0.1	<0.1	<0.1	NC

Bolded values exceed the LOC for chronic risk LOC of 1.0.
RQs greater than 2 are rounded to the nearest whole number.
The endpoints listed in the table are the endpoint used to calculate the RQ.
NC = not calculated because of non-definitive LC_{50} value.
[1] All comparisons for parent dicamba (acid equivalent).
[2] Dietary and dose-based RQs are calculated for birds and mammals. The toxicity estimates are derived from different studies where the pesticide is administered in the diet, which is provided *ad libitum* (*i.e.*, no restrictions) or administered as a fixed amount by oral gavage. The exposure estimates used for the dietary-based and dose-based RQ calculations match the units of the toxicity endpoints. In other words, the exposure estimate for the dietary-based RQ is expressed in terms of the concentration of pesticide in the diet (*e.g.*, mg ae/kg food item) and the exposure estimate for the dose-based RQ is expressed in terms of how much pesticide is expected to be consumed for a given animal body weight (*e.g.*, mg ae/kg body weight).
[3] RQs > 0.5 (short grass consumed by small sized bird) for all uses with annual rates of ≥ 0.38 lb ae/A. LOC = 0.5
[4] ***Granular applications***: RQ = EEC/amount of dicamba consumed per animal to reach the LD_{50}. Maximum LD_{50}/ft^2 based EEC = 1.04 mg ae/ft^2 (**Table 9-1**). Amount (2.7 mg ae) of dicamba consumed per animal to reach the LD_{50} is 20-g bird LD_{50} = 135.4 mg ae/kg-bw * 0.020 kg. Body-weight adjusted LD_{50} is derived from Bobwhite quail LD_{50} = 188 mg ae/kg-bw; MRID 42918001; **Table 6-3**.
[5] Seeds presented separately for dose-based RQs due to difference in food intake of granivores compared with herbivores and insectivores.
[6] RQs reported for 2 lb ae/A rate.

Another assumption to consider is that risk estimates (RQs) are based on a bird consuming 100% of its diet on the treated field. Although the highest RQ value (4.04) assumes that a bird consumed 100% of its diet on the treated field, there would still be a risk concern if that same bird consumed 25% of its diet on the treated field (*i.e.*, RQ would be 1.01).[39] In both scenarios,

[39] % daily diet at a RQ of 1 = (1/RQ based on 100% daily diet)*100; RQ values in **Table 9-3**.

the exposed bird has a ≥ 50% chance of dying from consuming ≥ 25% of its diet on a dicamba-treated field because the exposure estimate is equal to the dose that caused 50% of individuals to die in the toxicity study (*i.e.*, the LD_{50}). RQ values of ≥1 indicate that ≥ 50% of birds are expected to die, but from varying percentages of diet consumed as dicamba-contaminated food items from the treatment field (ranging from 25% to 100% of daily diet for registered uses).

There is only one incident specifically associated with birds, and it is unlikely to have been caused by exposure to dicamba. There are also 22 reported minor incidents involving wildlife; however, the taxonomic group and details of the incidents are unknown.

Overall, based on the weight of evidence, there is a potential acute risk concern for birds from uses with annual application rates ≥ 0.38 lb ae/A.

Mammals (chronic)

The chronic dose-based LOC (1.0) is exceeded for all uses with annual application rates ≥ 1.94 lb ae/A (RQ ≤ 1.53; **Table 9-4**), except uses on DT-soybean and DT-cotton, which are applied in 0.5 lb ae/A increments. The potential risk concern is limited to small (15g) and medium (35g) mammals foraging on food item represented by the short grass category (dose-based exposure). On-field exposure estimates are high enough to exceed the LOC for up to six days; however, the temporal exposure potential of an individual plant may be less depending on its sensitivity to dicamba (*i.e.*, concentration to cause effect and how long it takes for dicamba to act) and the foraging palatability of dead or dying plant material to an individual mammal. T-REX uses the one-day averaging period (peak residues) as a screen of potential chronic risk concerns; however, this approach is used because short-term sublethal exposure can impact reproduction if the timing of exposure is during a critical window of development. It is unknown what was the required duration and timing of dicamba exposure to elicit the effects observed in the available 2-gen toxicity study with rats (MRID 43137101); however, the exposure estimates from registered uses suggest that repeated exposure potential is possible for a limited period of time.

Another assumption to consider is that risk estimates are based on a mammal consuming 100% of its diet on the treated field. In this case, mammals would need to consume less than 100% of their daily diet on the treatment field to exceed the LOC. This is because the only scenario where an animal must obtain 100% of its diet from the treated field to trigger a risk concern is when the RQ = LOC (RQs are presented as consumption of a single food item but, exposure could come from a combination of contaminated food items). Therefore, the magnitude of the RQ is inversely related to how much contaminated food must be consumed to be of concern for an individual (*i.e.,* % of diet consumed). The greater the RQ above the LOC, the lesser the % diet needed to be consumed on the treatment field and the greater the likelihood of a potential risk concern, all things being equal. For the scenario with the highest RQ (1.53; small mammal consuming short grass), the 15-gram mammal would need to consume plants containing dicamba residues as 65% of their daily diet (based in upper bound Kenaga values) to exceed the

chronic LOC.[40] Scenarios of potential risk concern from registered dicamba uses (*i.e.*, RQs > 1) require mammals to consume between 65% to 100% of their daily diet on the treated field to exceed the LOC of 1.0.

The chronic LOC is not exceeded for any non-listed mammal species based on dietary exposure or mean Kenaga exposure values. It is unclear if effects observed in the toxicity study (6% to 30% decreased pup weight in F1 and F2 and 2-day delayed F1 maturation of males at the LOAEL = 450 mg ae/kg-bw/day[41]; MRID 43137101) would be observed because exposure values are below those eliciting those effects.

There is only one incident specifically associated with mammals. It involved four rabbits and was considered possible to have been caused by dicamba exposure, although the legality of the dicamba use is unknown. There are also 22 reported minor incidents involving wildlife; however, the taxonomic group and details of the incidents are unknown and reported wildlife incidents typically tend to be acute in nature (mortality) and may not reflect any reproductive effects.

Overall, based on the weight of evidence, there is a potential chronic risk concern for mammals from uses on non-DT plants with annual application rates ≥ 1.94 lb ae/A.

Table 9-4. Chronic RQ values for Mammals from Labeled Uses of Dicamba (T-REX v. 1.5.2, Upper Bound and Mean Kenaga)[1,2]

Food Type	Chronic Dose-Based RQ NOAEL = 136 mg ae/kg-bw			Chronic Dietary RQ NOAEC = 2720 mg ae/kg-diet
	Small (15 g)	Medium (35 g)	Large (1000 g)	
Minimum dicamba EECs for spray applications based on triticale and millet (0.18 lb ae/A)				
Upper Bound Kenaga				
Herbivores/Insectivores				
Short grass	0.1	0.1	<0.1	<0.1
Tall grass	<0.1	<0.1	<0.1	<0.1
Broadleaf plants	<0.1	<0.1	<0.1	<0.1
Fruits/pods/seeds	<0.1	<0.1	<0.1	<0.1
Arthropods	<0.1	<0.1	<0.1	<0.1
Granivores				
Seeds[3]	<0.1	<0.1	<0.1	NA
Mean Kenaga				
Herbivores/Insectivores				
Short grass	<0.1	<0.1	<0.1	<0.1
Tall grass	<0.1	<0.1	<0.1	<0.1
Broadleaf plants	<0.1	<0.1	<0.1	<0.1
Fruits/pods/seeds	<0.1	<0.1	<0.1	<0.1
Arthropods	<0.1	<0.1	<0.1	<0.1

[40] % daily diet = (1/RQ)*100; RQ values in **Table 9-4**.
[41] Body-weight scaled LOAEL = 989 mg ae/kg bw (15 g mammal); LOAEL = 800 mg ae/kg bw (35 g mammal).

Food Type	Chronic Dose-Based RQ NOAEL = 136 mg ae/kg-bw			Chronic Dietary RQ NOAEC = 2720 mg ae/kg-diet
	Small (15 g)	Medium (35 g)	Large (1000 g)	
Granivores				
Seeds[3]	<0.1	<0.1	<0.1	NA
Maximum dicamba EECs for spray applications based on various non-agricultural uses (1.94-2 lb ae/A)[4]				
Upper Bound Kenaga				
Herbivores/Insectivores				
Short grass	**1.5**	**1.3**	0.7	0.2
Tall grass	0.7	0.6	0.3	<0.1
Broadleaf plants	0.9	0.7	0.4	0.1
Fruits/pods/seeds	0.1	<0.1	<0.1	<0.1
Arthropods	0.6	0.5	0.3	<0.1
Granivores				
Seeds[3]	<0.1	<0.1	<0.1	NA
Mean Kenaga				
Herbivores/Insectivores				
Short grass	0.5	0.5	0.3	<0.1
Tall grass	0.2	0.2	0.1	<0.1
Broadleaf plants	0.3	0.3	0.1	<0.1
Fruits/pods/seeds	<0.1	<0.1	<0.1	<0.1
Arthropods	0.4	0.4	0.2	<0.1
Granivores				
Seeds[3]	<0.1	<0.1	<0.1	NA

Bolded values exceed the LOC for chronic risk LOC of 1.0.
The endpoints listed in the table are the endpoint used to calculate the RQ.
NA = not applicable
[1] All comparisons for parent dicamba (acid equivalent).
[2] Dietary and dose-based RQs are calculated for birds and mammals. The toxicity estimates are derived from different studies where the pesticide is administered in the diet, which is provided *ad libitum* (*i.e.*, no restrictions) or administered as a fixed amount by oral gavage. The exposure estimates used for the dietary-based and dose-based RQ calculations match the units of the toxicity endpoints. In other words, the exposure estimate for the dietary-based RQ is expressed in terms of the concentration of pesticide in the diet (*e.g.*, mg ae/kg food item) and the exposure estimate for the dose-based RQ is expressed in terms of how much pesticide is expected to be consumed for a given animal body weight (*e.g.*, mg ae/kg body weight).
[3] Seeds presented separately for dose-based RQs due to difference in food intake of granivores compared with herbivores and insectivores.
[4] RQs reported for 2 lb ae/A rate. RQs > 1 (short grass consumed by small and medium sized animals) for all uses with total annual rates of 1.94-2 lb ae/A except DT-soybean and DT-cotton.

On-field exposure (inhalation)

There is not a risk concern for birds or mammals from inhalation exposure of dicamba. The STIR model is intended to determine if exposure is likely and not whether the potential for risk exists based on a chemical's maximum application rate, molecular weight and vapor pressure and the available mammalian acute oral and inhalation toxicity endpoints and avian acute oral endpoint (an adjusted avian inhalation toxicity endpoint of >2.0 mg ae/L was estimated from the mammalian toxicity data). It is important to note that the mammalian inhalation endpoint is

non-definitive (>5.3 mg ae/L). If STIR predicts that exposure is likely, additional inhalation data may be necessary to adequately assess risk due to the inhalation exposure pathway.

However, based on the STIR results, inhalation is not considered likely to be a significant route of exposure for birds and mammals from vapor exposure or spray droplet inhalation. Exposure estimates are more than one order of magnitude below the estimated avian inhalation endpoint and more than four orders of magnitude below the mammalian inhalation endpoint (**Table 9-5**). EPA considers these estimates to be highly conservative because the mammalian inhalation endpoint is non-definitive and there was a lack of mortality from inhalation exposure in the available study.

Table 9-5. Estimated Vapor-Dose and Spray Inhalation Dose Exposures and Resulting Exposure: Toxicity Ratios Following Dicamba Application (2 lb ae/A)[1]

Assessed Taxa	Maximum 1-hr Vapor Inhalation Dose (mg/kg)	Ratio of Vapor Dose to Inhalation LD_{50}[2]	Maximum Post-treatment Spray Inhalation Dose (mg/kg)	Ratio of Droplet Inhalation Dose to Adjusted Inhalation LD_{50}
Small (20 g) bird	0.051	< 0.025	0.192	<0.095
Small (15 g) mammal	0.064	<0.01	0.242	<0.01

[1] All comparisons for parent dicamba (acid equivalent).
[2] Mammalian inhalation LD_{50} (body-weight adjusted for a 15g individual) > 316 mg ae/kg-bw (based on MRID 00263861; 4-hr rat LC_{50} > 5.3 mg ae/L). Bird inhalation LD_{50} (body-weight adjusted for a 20g individual) > 2 mg ae/kg-bw (estimated based on ratio of lowest bird acute oral LD_{50} (188 mg ae/kg-bw); MRID 42918001, the lowest mammal acute oral LD_{50} (2740 mg ae/kg-bw) based on exposure to the acid; MRID 00078444, and the mammalian acute inhalation LC_{50} (>5.3 mg ae/L); MRID 00263861). EFED used oral acute toxicity estimates based on the acid TGAI, which was the most sensitive for birds but not mammals. Mammals are more acutely sensitive from dietary exposure to a DMA-salt formulation (MRID 00025371) than to the acid; however, estimates of avian inhalation toxicity should be based on a relative comparison of toxicity to the same test material. Furthermore, the use of the acid-based oral toxicity estimate for mammals predicts a more conservative avian inhalation LD_{50}.

Off-field exposure

T-REX does not provide a quantitative measure of residues on food items off the treatment field. However, the magnitude of the RQ for spray applications reflects the extent of land beyond the treated field containing contaminated food items, which impacts exposure potential in terms of overall availability of contaminated food items as well as the potential for contamination of a variety of food items. There is only a potential off-field risk concern for scenarios where the LOC is exceeded on the treatment field (*i.e.*, acute oral exposure for birds and chronic dietary exposure for mammals).

Birds (acute oral)

Off-field LOC exceedances extend up to 24 ft from the edge of treatment field for ground applications and up to 67 ft from the edge of treatment field for aerial uses with annual applications up to 1.94 to 2 lb ae/A (**Table 9-6**). Uses with annual application rates of 1 lb ae/A or less have off-field LOC exceedances of up to 13 feet from the edge of the treatment field for

ground applications and up to 23 feet for aerial applications. Use of lower boom heights (ground applications) and coarser droplet size ranges are expected to have less drift and shorter distances.

Mammals (chronic)

Off-field LOC exceedances extend up to 2 ft from the edge of treatment field (**Table 9-6**).

Table 9-6. Distance from the Edge of the Treatment Field Exceeding the Acute LOC (birds) and Chronic LOC (mammals) from Exposure to Dicamba[1]

Use Pattern[2]	Air/Ground	Bird (Acute LD_{50} = 188 mg ae/kg-bw)			Mammal (Chronic NOAEL = 136 mg ae/kg-bw)		
		RQ[3]	Droplet size	Distance from edge of field (ft)	RQ[3]	Droplet size	Distance from edge of field (ft)
Various non-agricultural (*e.g.*, rights of way, fences, hedgerows, hay, grass grown for seed)[4]	G Low boom	**4**	VF-F F-M/C	7 2	**1.5**	VF-F F-M/C	<3 <3
	G High boom		VF-F F-M/C	24 4		VF-F F-M/C	<3 <3
	A		F-M M-C C-VC	67 36 24		F-M M-C C-VC	<3 <3 <3
Various agricultural (*e.g.*, corn and non-DT soybean) and non-agricultural (*e.g.*, parks)[5]	G Low boom	**3**	VF-F F-M/C	5 <3	**1.2**	VF-F F-M/C	<3 <3
	G High boom		VF-F F-M/C	19 3		VF-F F-M/C	<3 <3
	A		F-M M-C C-VC	48 26 17		F-M M-C C-VC	<3 <3 <3
Various non-agriculture (*e.g.*, golf, grass forage, forest)[6]	G Low boom	**2**	VF-F F-M/C	3 <3	0.8	VF-F F-M/C	0 0
	G High boom		VF-F F-M/C	12 <3		VF-F F-M/C	0 0
	A		F-M M-C C-VC	23 12 8		F-M M-C C-VC	0 0 0
DT-cotton and DT-soybean	G Low boom	**2**	Ultra-coarse	NC*f*	0.8	Ultra-coarse	0
Asparagus	G Low boom	**1.5**	VF-F F-M/C	<3 <3	0.6	VF-F F-M/C	0 0
	G High boom		VF-F F-M/C	8 <3		VF-F F-M/C	0 0
	A		F-M M-C C-VC	11 6 4		F-M M-C C-VC	0 0 0

Use Pattern[2]	Air/Ground	Bird (Acute LD_{50} = 188 mg ae/kg-bw)			Mammal (Chronic NOAEL = 136 mg ae/kg-bw)		
		RQ[3]	Droplet size	Distance from edge of field (ft)	RQ[3]	Droplet size	Distance from edge of field (ft)
Wheat	G Low boom	**0.9**	VF-F F-M/C	<3 <3	0.3	VF-F F-M/C	0 0
	G High boom		VF-F F-M/C	3 <3		VF-F F-M/C	0 0
	A		F-M M-C C-VC	<3 <3 <3		F-M M-C C-VC	0 0 0
Sorghum	G Low boom	**0.8**	VF-F F-M/C	<3 <3	0.3	VF-F F-M/C	0 0
	G High boom		VF-F F-M/C	3 <3		VF-F F-M/C	0 0
	A		F-M M-C C-VC	<3 <3 <3		F-M M-C C-VC	0 0 0
Barley	G Low boom	**0.7**	VF-F F-M/C	<3 <3	0.3	VF-F F-M/C	0 0
	G High boom		VF-F F-M/C	<3 <3		VF-F F-M/C	0 0
	A		F-M M-C C-VC	<3 <3 <3		F-M M-C C-VC	0 0 0
Various agricultural (*e.g.*, barley, millet, oats, triticale)[7]	G Low boom	0.4	VF-F F-M/C	0 0	0.1	VF-F F-M/C	0 0
	G High boom		VF-F F-M/C	0 0		VF-F F-M/C	0 0
	A		F-M M-C C-VC	0 0 0		F-M M-C C-VC	0 0 0

VF-F – very fine to fine, F-M/C – fine to medium/coarse, F-M – fine to medium, M-C – medium to coarse, C-VC – coarse to very coarse, G – Ground; A - Aerial

f AgDRIFT does not model ultra-coarse droplets. Off-field spray drift distances were refined accounting for specific label restrictions and product characteristics for this use (*see* USEPA, 2020 for details). In 2020, EPA concluded that DT-plant label restrictions reduce off-field movement of dicamba below toxicity thresholds.

[1] All comparisons for parent dicamba (acid equivalent).

[2] See **Appendix B** for complete list of uses associated with various application rates.

[3] RQs above 2 are rounded to the nearest whole number. **Bolded** values exceed the LOC (1.0) for chronic risk or LOC (0.5) for acute risk.

[4] Application rates of 1.94 to 2 lb ae/A. RQs reported for 2 lb ae/A rate.

[5] Application rates of 1 lb ae/A x 2. RQs reported for 1 lb ae/A x 2 rate with a minimum reapplication interval of 7 days. Some uses have longer reapplication intervals or three applications (*e.g.*, 1, 0.875, and 0.12 lb ae/A).

[6] Application rates of 1 lb ae/A

[7] Uses with single maximum application rates of 0.18 lb ae/A and lower. RQs reported for 0.18 lb ae/A.

9.2.2 DCSA Exposure

As described elsewhere (*e.g.*, **Section 9-1** and USEPA, 2020a), there is a potential for on-field exposure to DCSA in DT-soybean and DT-cotton plants. In contrast, off-field exposure to DCSA is expected to be minimal. Available toxicity information indicates that DCSA is more toxic than dicamba on a chronic basis to mammals, but the relative chronic toxicity of the two compounds is less clear for birds. Therefore, risk potential from chronic exposure is considered.

The assessment of acute risk from exposure to dicamba covers the overall risk conclusions for acute exposure to DCSA. This is because acute toxicity data indicate that DCSA is similar to dicamba acid in toxicity to mammals, although DCSA is less acutely toxic than a DMA-salt formulation. In contrast, acute DCSA toxicity data are not available for birds; however, there is no evidence of enhanced acute toxicity of DCSA to other taxonomic groups and there is already a risk concern for acute dietary exposure to dicamba. Therefore, EFED considers the uncertainty about risk from DCSA exposure to birds to be low.

There has been some uncertainty if the available residue studies capture potential upper bound DCSA residues due to the limited temporal sampling in DT-soybean and DT-cotton tissues (*described in detail in* USEPA, 2020a). However, EPA is reviewing existing DT-soybean studies (MRID 48644205 and 48219901), which appear to sufficiently meet the data need for DCSA formation and decline data to establish a half-life for DCSA in DT-soybean plants. In contrast, EPA has determined that data are needed for DT-cotton, specifically plant metabolism studies that track DCSA residues over time in all parts of DT-cotton plants following post-emergent application. For the current assessment of chronic exposure and risk, EPA relied on past exposure estimates, which represent the maximum measured residues (USEPA, 2020a). EPA anticipates that the measured residues in DT-cotton and DT-soybean may underestimate peak residues in those plants but has not quantified the magnitude of that difference at this time. The sections below discuss the impact of this uncertainty on risk conclusions.

<u>Birds</u>

There is not a risk concern for birds from chronic exposure to DCSA. This conclusion differs from past risk assessments (*e.g.*, USEPA, 2020a), which identified LOC exceedances for use on DT-soybean. This conclusion was based on an estimated NOAEC value for birds based on the ratio of dicamba to DCSA chronic toxicity observed in mammals. The current risk assessment updates that analysis using a recently reviewed reproduction study with Mallard ducks exposed to DCSA (MRID 50944103). The results of that study did not establish if DCSA (Mallard duck NOAEC ≥ 765 mg ae/kg diet) or dicamba (Mallard duck NOAEC = 695 mg ae/kg diet and LOAEC = 1390 mg ae/kg diet; MRID 43814003) is more toxic to birds on a chronic basis. Nonetheless, the results from the study establish that the LOC (1.0) is not exceeded because the highest concentration is at least an order of magnitude higher than the highest DCSA residues observed in DT-soybean or DT-cotton (61.1 mg ae/kg-diet; *as reported in* USEPA, 2020a). Although there is uncertainty if peak DCSA residues are captured by the available measured residue data, residues would need to be underestimated by at least an order of magnitude to result in an LOC exceedance. EFED

considers this uncertainty to be low because the LOC would only be exceeded if DCSA residues are greater than peak residues of the parent dicamba, as estimated by T-REX (upper-bound Kenaga). This is unlikely given that T-REX upper-bound residue estimates are based on empirical residue data.

Overall, based on the weight of evidence, there is not a chronic risk concern for birds from exposure to DCSA from DT-plant uses.

Mammals

There is a potential risk concern for mammals from chronic exposure to DCSA in DT-soybean plants but not in DT-cotton (*see* USEPA, 2020a for details including the consideration of alternative endpoints; RQs ≤ 0.34 for DT-cotton). The chronic LOC (1.0) is exceeded for mammals of all assessed size classes (15g, 35g, and 1000g) consuming DCSA in forage/hay or arthropods that had consumed the DT-soybean plants (RQs up to 3.3). The LOC is not exceeded at the study LOAEL (78 mg ae/kg bw; 9% ↓ pup body weight). As noted above, any potential risk from exposure of terrestrial vertebrates to DCSA residues are assumed to be largely confined to DT-soybean plants on the treated field (as off-site plants as well as surviving weed species on the field would not be anticipated to convert dicamba residues to DCSA in substantial quantities given that this conversion is seen primarily in DT-crops through genetic modification).

Overall, based on the weight of evidence there is a potential chronic risk concern for mammals from exposure to DCSA in DT-soybean plants. Although EPA is currently reviewing existing DT-soybean residue studies to determine if measured DCSA residue values captured peak DCSA residues in DT-soybean, there is low uncertainty about the potential chronic risk concern for non-listed mammals given that the LOC is exceeded based on the measured DCSA residues in DT-soybean plants. That said, the formation/decline information will be useful to characterize the duration of time that DCSA residues exceed the toxicity threshold. Based on the USEPA, 2020a assessment, EPA found that the uses of dicamba products on DT-cotton plants results in on-field DCSA exposures that are not at levels to cause a chronic risk of concern; however, this assumes that the measured values from the available residue data (maximum measured = 6.29 mg DCSA/kg diet; MRID 48728703) do not underestimate peak (upper bound) residues by more than 3X. This uncertainty can be addressed with DT-cotton plant metabolism studies that track DCSA residues over time in all parts of DT-cotton plants following post-emergent application.

Overall, based on the weight of evidence, there is a chronic risk concern for mammals from exposure to DCSA from DT-soybean use and remaining uncertainty about potential risk from DT-cotton use.

10 Terrestrial Invertebrate Risk Assessment

10.1 Bee Exposure Assessment

Bees may be exposed to dicamba in the pollen and nectar of many labeled crops. The attractiveness of those crops to pollinators is reported in **Appendix H** (*based on* USDA, 2018) as a line of evidence to identify which crops may represent direct exposure to pollinators on the field.

Bees may be exposed to dicamba in plants on the treatment field depending on the timing of application relative to bloom (*e.g.*, there is greater exposure potential for post-emergent and pre-harvest applications than pre-emergent applications); however, it is unlikely for plants that are not bee attractive (*e.g.*, barley, oat, sugarcane, triticale, and wheat). Residues may occur in pollen and nectar if spray applications are made directly to blooming plants. Furthermore, residues may occur in plants treated prior to bloom because dicamba is a systemic compound that is absorbed through the leaves and roots. The degree of exposure from systemic uptake would be highly dependent on the timing of application relative to bloom and the sensitivity of the plant (*i.e.*, how long the plant would be viable relative to the translocation of dicamba to pollen and nectar). Asparagus and soybean are both pollen and nectar attractive. Although asparagus is attractive, it only requires bee pollination and managed pollinators for seed production, which is a small % of acreage grown. Pollen-attractive only crops are corn, millet, sorghum, and turfgrass. Cotton is nectar-only attractive. There is also exposure potential on the treatment field for any attractive flowering plants, if they are present, and only for the duration that it takes dicamba to kill sensitive plants.

Although turfgrass is not a crop, it is still captured under the "grasses" crop, which is pollen attractive to honey bees. However, the USDA data reports that grasses are wind-pollinated, and bees would only use it if no other forage is available. Whether specific areas of turf are attractive to bees depends on how that turf is maintained. For residential lawns or other turf areas that are not maintained, it is assumed that blooming weeds (*e.g.*, clover, dandelions) or pollen are present on the grasses. Well maintained turf on golf courses and sod farms are assumed not attractive to bees since pollen is unlikely present on the field (although areas adjacent to the fairways, greens, and tees could contain attractive flowering plants).

In terms of attractiveness to bees, the ornamental and forestry use categories include a wide variety of flowers, trees and shrubs with different biology/physiology and varying levels of attractiveness to bees. The USDA guidance for pollinator attractiveness (USDA, 2018) does not include ornamental and tree species. However, the IR-4 has published a list of over 400 ornamental plants that are considered attractive to pollinators (primarily bees).[42]

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[42] http://campaign.r20.constantcontact.com/render?m=1104982944285&ca=a7e26b54-c915-4491-8bd1-e2aea4ddfb1b

Attractiveness of trees is widely variable within the forestry group[43], with some trees being highly attractive to bees (*e.g.,* black locust, maple) and others not attractive (*e.g.,* American hemlock, most conifers).

Off-field exposure to dicamba is possible from spray drift and run-off from all registered uses since it is applied as a ground or aerial spray and is systemic; therefore, there is exposure potential for bees to dicamba residues on attractive flowering plants adjacent to the treatment field.

Finally, there is potential for inhalation exposure given that dicamba is semi-volatile. However, EPA does not have methods to assess exposure to bees from vapor inhalation and does not have inhalation toxicity data. Therefore, it is unknown if dicamba poses a risk concern to invertebrates from this pathway.

10.2 Bee Tier I Exposure Estimates

The Bee-REX model (v 1.0) calculates default (*i.e*., high end, yet reasonably conservative) EECs for contact and dietary routes of exposure for foliar, soil, and seed treatment applications.

AgDRIFT (v 2.1.1) was used to determine the distance off the treated field where the LOC is exceeded for terrestrial invertebrates based on exposure that occurs exclusively from spray drift. All possible droplet size ranges (ground and aerial applications) and boom heights (ground applications) were modeled because many dicamba end-use product labels do not have specific restrictions (except for use on DT-soybean and DT-cotton, which require ultra-coarse droplets). Specific label restrictions may reduce the amount of spray drift caused by dicamba applications compared to that determined by this analysis. Screening-level distances are not presented for DT-plants because the default settings in AgDRIFT do not consider ultra-course droplets, and EPA recently conducted a refined analysis of off-site distances specific to DT-plant uses, products, and label restrictions (*see* USEPA, 2020a for details and **Section 11** for a summary).

Available data indicate that DCSA residues are expected to be negligible in non-DT plants; however, DCSA residues are expected at higher concentrations in DT-plants because they contain the modified gene that confers dicamba tolerance on DT-plants allowing the DT-plants to convert dicamba residues to form the less phytotoxic DCSA (*as discussed in* USEPA, 2020a). Therefore, it is assumed that there is negligible exposure to DCSA in non-DT plants and potential exposure in DT-plants. DCSA toxicity data are not available for honey bees. Available information for other taxonomic groups indicates that in some cases DCSA is more toxic than dicamba on a chronic basis, but there isn't any strong evidence of enhanced acute toxicity of DCSA compared to dicamba. Consequently, there is uncertainty about risk potential, primarily from chronic exposure to DCSA in DT-plants. Nonetheless, there is a potential risk concern based on exposure to dicamba; therefore, the lack of DCSA toxicity data has little impact on the

[43] https://www.arborday.org/trees/health/pests/article-trees-for-bees.cfm

risk conclusions other than potentially providing additional characterization on the timing and duration of a risk concern if DCSA residues in pollen and nectar reached levels that exceed DCSA toxicity thresholds.

10.3 Bee Risk Characterization (Tier I)

10.3.1 Tier I Risk Estimation (Contact Exposure)

Risk potential from contact exposure is assumed to be low for all uses of dicamba. RQs were not calculated because of the non-definitive LD_{50} values. No clear treatment-related effects were observed in the available toxicity studies (**Table 6-3** and **Appendix A**), and the highest dose tested (100.1 µg ae/bee) is greater than EECs (≤ 5.4 µg ae/bee[44]). There are two reported incidents with bees; however, one is considered unlikely to have been caused by dicamba exposure and the other was attributed to alleged dicamba-caused loss of habitat.

DCSA residues are expected to form inside DT-plants and would not be in spray droplets at the time of application; therefore, there is negligible contact exposure potential.

Overall, the weight of evidence suggests no acute contact honey bee risk concern.

10.3.2 Tier I Risk Estimation (Oral Exposure)

On-field exposure

<u>Acute exposure (adult and larvae)</u>

Risk potential from acute oral exposure (adults and larvae) is assumed to be low for all uses of dicamba. RQs were not calculated for exposure to adults because of the non-definitive LD_{50} values. No treatment-related effects were observed in the available toxicity studies (**Table 6-3** and **Appendix A**), and the highest concentration tested (100.1 µg ae/bee) was greater than EECs (≤ 64 µg ae/bee; adult worker foraging for nectar). RQs for larvae (≤ 0.23) are below the LOC of 0.4 for all uses.[45] There are two reported incidents with bees; however, one is considered unlikely to have been caused by dicamba exposure and the other was attributed to indirect effects (*i.e.*, alleged dicamba-caused loss of habitat).

DCSA exposure could occur in pollen and nectar residues of DT-plants. Nonetheless, EFED considers there to be low risk potential for acute exposure to DCSA. This is because DCSA would need to be more toxic than dicamba (at least 7X before accounting for potential differences

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[44] EEC (µg ae/bee) = Max single application rate (2 lb ae/A) * 2.7 µg ae/bee (USEPA, 2014c)

[45] EEC = 27 µg ae/bee (5-day old worker larvae) for the single maximum labeled application rate (2 lb ae/A). LD_{50} = 117 µg ae/bee (MRID 50931302). RQ = EEC/LD_{50}.

between dicamba and DCSA residues in pollen and nectar[46]) to change risk conclusions based on exposure to dicamba, and there is not any strong evidence of DCSA being more acutely toxic than dicamba to other taxa.

Overall, the weight of evidence suggests no acute oral risk concern for honey bee adults or larvae.

Chronic exposure (adult)

For uses that exceed the adult chronic NOAEL (single application of 0.74 lb ae/A and greater; **Table 10-1**), those most likely to result in a potential chronic risk concern on the treatment field are asparagus (post-emergent applications)[47], soybean (non-DT plant pre-harvest applications[48]), and any unmaintained non-agricultural area uses including but not limited to forests, pasture/rangeland, and rights-of-ways. Other uses with application rates ≥ 0.74 lb ae/A are of less concern because they are not pollinator attractive (*e.g.,* sugarcane), are pollinator attractive but the application timing limits exposure potential (*e.g.*, applied to a fallow non-DT cotton field), or are pollen attractive only (pollen exposure estimates are not high enough to be of concern; *see* **Table 10-1**) (*e.g.*, corn or grasses grown for seed). However, there is a potential risk concern on the treatment field for all uses with single application rates ≥ 0.74 lb ae/A if target plants (*i.e.*, weeds) are blooming and nectar attractive. Only uses with single application rates ≥ 1.94 lb ae/A are anticipated to elicit the effects observed in the available toxicity studies (ca. 24% ↓ food consumption, which is a potential indicator of effects on body weight; *note*: see **Section 6** about uncertainty in the magnitude of effect). Among those uses (*i.e.*, anticipated to potentially elicit effects observed in the toxicity studies), the most likely to be of concern are non-agricultural areas such as rights of way, fences, hedgerows, pasture, and rangeland to the extent that blooming nectar-attractive plants (target or non-target) are present. Exposure potential will likely be lower for hay (cut plants) and postharvest application to grasses grown for seed given that those use patterns do not have attractive non-target plants. There are two reported incidents with bees; however, one is considered unlikely to have been caused by dicamba exposure and the other was attributed to indirect effects (*i.e.*, alleged dicamba-caused loss of habitat).

Toxicity data are not available for DCSA; however, the lack of DCSA data has no impact on the overall risk conclusions because a risk concern is identified for exposure to the parent compound, dicamba. That said, DCSA would need to be about 1.2X more toxic than dicamba

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[46] Dicamba EEC = 16 µg ae/bee for exposure to adults foraging on nectar (DT plants) (**Table 10-1**) and 10-d chronic NOAEL = 19 µg ae/bee/day (**Table 6-3**). Assuming DCSA residues are ≤ 16 µg ae/bee, then DCSA LD_{50} ≤ 16 µg ae/bee would exceed the LOC (1.0). 19 µg ae/bee / 16 µg ae/bee = 1.2X.

[47] Only requires bee pollination and managed pollinators for seed production. Small % of acreage is grown for seed.

[48] Pre-harvest applications to non-DT soybean are intended to be applied late season.

(before accounting for any reductions in DCSA residues in pollen and nectar compared to those of dicamba) to change risk conclusions specifically for DT-plants.[49]

Overall, the weight of evidence suggests a potential chronic risk concern for adult honey bees.

Table 10-1. Honey Bee Tier I (Default) Oral Risk Quotients based on Toxicity for Use Rates and Uses that Exceed the Chronic LOC[1]

Use Pattern[2]	Maximum Single Application Rate (lb ae/A)	Bee Caste/Task	Foliar (dicamba)[3]	
			Oral Dose (µg ae/bee)	Chronic Oral RQ[4]
Various non-agricultural (*e.g.*, rights of way, fences, hedgerows, hay, grass grown for seed[5])	1.94-2[6]	Adult nectar forager	64.2	**3**
		Larval worker	27.2	**5**
Various agricultural (*e.g.*, corn[5] and non-DT soybean)	1	Adult nectar forager	32.1	**1.7**
		Larval worker	13.6	**3**
Asparagus	0.74	Adult nectar forager	23.8	**1.3**
		Larval worker	10.1	**2**
DT-cotton and DT soybean	0.5	Adult nectar forager	16.0	0.8
		Larval worker	6.8	**1.3**
Wheat	0.44	Adult nectar forager	14.1	0.7
		Larval worker	6.0	**1.2**

BOLD = RQ exceeds LOC (1.0); RQs > 2 are rounded to the nearest whole number
[1] All comparisons for parent dicamba (acid equivalent).
[2] See **Appendix B** for complete list of uses associated with various application rates.
[3] Any residues from soil uptake are expected to be negligible in comparison to foliar residues and are not considered. This includes soil uptake from spray applications and soil uptake from granule applications. Granule application rates (≤ 0.1 lb ae/A) are lower than foliar application rates (which result in higher EECs than soil uptake ECCs) that do not exceed the LOC.
[4] Based on a 10-d chronic NOAEL = 19 µg ae/bee/day for adults (MRID 50784603) and a 22-d chronic NOAEL = 5.1 µg ae/larvae/day for larvae (MRID 50784602).
[5] Turf grasses, corn, sorghum, and millet are pollen attractive only. Maximum chronic RQ ≤ 0.5 for adult pollen foragers (based on 2 lb ae/A rate and EEC = 9.6 µg ae/bee). Maximum chronic RQ ≤ 0.16 for larvae exposed to dicamba residues in only pollen (based on 2 lb ae/A rate and assuming residues in pollen = 220 mg ae/kg and residues in nectar = 0 mg ae/kg; EEC = 0.8 µg ae/larvae for 5-day old worker).
[6] RQs reported for 2 lb ae/A rate.

Chronic exposure (larvae)

For uses that exceed the larval chronic NOAEL (single application of 0.44 lb ae/A and greater; **Table 10-1**), those most likely to result in a potential chronic risk concern on the treatment field

[49] Dicamba EEC = 6.8 µg ae/bee for exposure to larval workers (DT plants) (**Table 10-1**) and LD_{50} = 114 µg ae/bee for larvae (**Table 6-3**). Assuming DCSA residues are ≤ 6.8 µg ae/bee, then DCSA LD_{50} ≤ 17 µg ae/bee would exceed the LOC (0.4). 114 µg ae/bee / 17 µg ae/bee = 6.7. No effects observed in acute dicamba studies with adult bees.

are asparagus (post-emergent applications)[50], soybean (DT-plant post-emergent applications and non-DT plant pre-harvest applications), DT-cotton (post-emergent applications), and any unmaintained non-agricultural area uses including but not limited to forests, pasture/rangeland, and rights-of-ways. Other uses with application rates ≥ 0.44 lb ae/A are of less concern because they are not pollinator attractive (*e.g.,* sugarcane), are pollinator attractive but the application timing limits exposure potential (*e.g.*, applied to a fallow non-DT cotton field), or are pollen attractive only (pollen exposure estimates are not high enough to be of concern; *see* **Table 10-1**) (*e.g.*, corn or grasses grown for seed). The potential risk for DT-soybean and DT-cotton may be less in some circumstances because the LOC exceedance assumes that bees will obtain more than 75% of their diet from dicamba-treated sources and label restrictions on the timing of application to DT-soybean relative to bloom may further reduce but not eliminate exposure potential (USEPA, 2020a). Nonetheless, there is a potential risk concern on the treatment field for all uses with single application rates ≥ 0.44 lb ae/A if target plants (*i.e.*, weeds) are blooming and nectar attractive. Only uses with single application rates ≥ 0.74 lb ae/A are anticipated to elicit the effects observed in the available toxicity studies (ca. 28% reduced survival of pupae and reduced emergence of adults). Among those uses (*i.e.*, anticipated to potentially elicit effects observed in the toxicity studies), the most likely to be of concern are asparagus (post-emergent applications), non-DT soybean, and non-agricultural areas such as rights of way, fences, hedgerows, pasture, and rangeland to the extent that blooming nectar-attractive plants (target or non-target) are present. Exposure potential will likely be lower for hay (cut plants) and postharvest application to grasses grown for seed given that those use patterns do not have attractive non-target plants. There are two reported incidents with bees; however, one is considered unlikely to have been caused by dicamba exposure and the other was attributed to indirect effects (*i.e.*, alleged dicamba-caused loss of habitat).

Toxicity data are not available for DCSA; however, the lack of DCSA data has no impact on the overall risk conclusions because a risk concern is identified for exposure to the parent compound, dicamba.

Overall, the weight of evidence suggests a potential chronic risk concern for larval honey bees.

Off-Field Risk

In addition to bees foraging on the treated field, bees may also be foraging in fields adjacent to the treated fields. The analysis indicated potential risk on the treated field from chronic exposure but not acute exposure; therefore, there is only a potential chronic concern for bees foraging off the treatment field on blooming nectar attractive plants (*adults*: use patterns with maximum single application rates ≥ 0.74 lb ae/A.; *larvae*: use patterns with single application rates ≥ 0.44 lb ae/A). Bee-REX does not provide a quantitative measure of residues on pollen

[50] Only requires bee pollination and managed pollinators for seed production. Small % of acreage is grown for seed.

and nectar off the treatment field; however, the magnitude of the RQ for spray applications reflects the extent of land beyond the treated field containing contaminated food items. For adults, off-field LOC exceedances extend up to 3 ft from the edge of treatment field for all ground applications except those applied by high boom and a very fine to fine droplet size, which result in exceedances up to 10 ft from the edge of the treatment field (**Table 10-2**). Aerial applications result in off-field LOC exceedances up to 16 ft from the edge of the treatment field. For larvae, off-field LOC exceedances extend up to 7 ft from the edge of treatment field for all ground applications except those applied by high boom and a very fine to fine droplet size at single application rates of 1.94 lb ae/A and higher, which result in exceedances up to 16 ft from the edge of the treatment field. Aerial applications result in off-field LOC exceedances up to 39 ft from the edge of the treatment field. Off-field risk concerns are limited to uses on non-DT plants because DT-plant label restrictions reduce off-field movement of dicamba below toxicity thresholds (as concluded in 2020; USEPA, 2020a); furthermore, any risk from exposure to DCSA in DT-plants would also be limited to the treatment field.

Table 10-2. Distance from the Edge of the Treatment Field Exceeding the Chronic LOC for Honey Bees[1]

Use Pattern[2]	Single Maximum Application Rate (lb ae/A)[3]	Air/Ground	Larvae (NOAEL = 5 µg ae/larvae)			Adult (NOAEL = 19 µg ae/bee)		
			RQ	Droplet size	Distance from edge of field (ft)	RQ	Droplet size	Distance from edge of field (ft)
Various non-agricultural (*e.g.*, rights of way, fences, hedgerows, hay, grass grown for seed)	1.94-2[4]	G Low boom	**5**	VF-F F-M/C	5 <3	**3**	VF-F F-M/C	<3 <3
		G High boom	**5**	VF-F F-M/C	16 <3	**3**	VF-F F-M/C	10 <3
		A	**5**	F-M M-C C-VC	39 23 20	**3**	F-M M-C C-VC	16 13 10
Various agricultural (*e.g.*, corn and non-DT soybean)	1	G Low boom	**3**	VF-F F-M/C	<3 <3	**2**	VF-F F-M/C	<3 <3
		G High boom	**3**	VF-F F-M/C	7 <3	**2**	VF-F F-M/C	<3 <3
		A	**3**	F-M M-C C-VC	9 7 6	**2**	F-M M-C C-VC	<3 <3 <3
Asparagus	0.74	G Low boom	**2**	VF-F F-M/C	<3 <3	**1.3**	VF-F F-M/C	<3 <3
		G High boom	**2**	VF-F F-M/C	5 <3	**1.3**	VF-F F-M/C	<3 <3
		A	**2**	F-M M-C C-VC	<3 <3 <3	**1.3**	F-M M-C C-VC	<3 <3 <3

VF-F – very fine to fine, F-M/C – fine to medium/coarse, F-M – fine to medium, M-C – medium to coarse, C-VC – coarse to very coarse, G – ground application, A – aerial application

RQs > 2 are rounded to the nearest whole number, but the unrounded value was used for determining the distance. **Bolded** values exceed the LOC (1.0)

[1] All comparisons for parent dicamba (acid equivalent).

[2] See **Appendix B** for complete list of uses associated with various application rates.

[3] Application rates between 0.44 and 0.74 were not modeled because the distance is < 3 ft for all scenarios.
[4] EECs and distances reported for 2 lb ae/A rate.

10.4 Non-Bee Terrestrial Invertebrates

There is no toxicity data available for non-bee terrestrial invertebrates; therefore, risk was not assessed.

11 Terrestrial Plant Risk Assessment

11.1 Terrestrial Plant Exposure Assessment

The TerrPlant (v 1.2.2) model was used to calculate EECs for characterizing exposure of terrestrial and semi-aquatic plants to dicamba. The EECs represent off-site dicamba residues occurring via run-off and spray drift from the treatment field to non-target plants found near application sites. Granular uses do not produce spray drift; therefore, exposure estimates are based on only run-off for those uses. Screening-level exposure estimates are presented in **Table 11-1** for all uses. A summary is provided of refinements to off-site exposure estimates (spray drift and run-off) for DT-plant uses in lieu of repeating those calculations, which are up to date (*see* USEPA, 2020a for details). Additionally, EPA considered the potential for off-site movement of dicamba by volatility from the treatment field, as discussed below.

AgDRIFT (v 2.1.1) was used to determine the distance off the treated field where the LOC (1.0) is exceeded for terrestrial plants based on exposure that occurs exclusively from spray drift. All possible droplet size ranges (ground and aerial applications) and boom heights (only ground applications) were modeled because most dicamba end-use product labels do not have specific restrictions (except for use on DT-soybean and DT-cotton, which requires ultra-coarse droplets). Specific label restrictions may reduce the amount of spray drift caused by dicamba applications compared to that determined by this analysis (**Table 11-3**). Screening-level distances are not presented for DT-plants because the default settings in AgDRIFT do not consider ultra-course droplets, and EPA recently conducted a refined analysis of off-site distances specific to DT-plant uses, products, and label restrictions (USEPA, 2020a; *as summarized below*).

Table 11-1. TerrPlant Calculated EECs for Non-Target Terrestrial Plants in Dry and Semi-Aquatic Areas near Dicamba Use Areas[1]

Use Pattern[2]	Maximum Single Application Rate (lb ae/A)	Application Method[3]	EECs (lb ae/A)		
			Dry Areas (Total)	Semi-Aquatic Areas (Total)	Spray Drift
Various non-agricultural (*e.g.*, rights of way, fences, hedgerows, hay, grass grown for seed)	1.94-2[4]	Air	0.20	1.10	0.10
		Ground	0.12	1.02	0.02

Use Pattern[2]	Maximum Single Application Rate (lb ae/A)	Application Method[3]	EECs (lb ae/A)		
			Dry Areas (Total)	Semi-Aquatic Areas (Total)	Spray Drift
Various agricultural (*e.g.*, corn and non-DT soybean)	1	Air	0.10	0.55	0.05
		Ground	0.06	0.51	0.01
Asparagus	0.74	Air	0.07	0.41	0.04
		Ground	0.04	0.38	0.01
DT-cotton and DT soybean[5]	0.5	Ground	0.03	0.26	0.01
Wheat	0.44	Air	0.04	0.24	0.02
		Ground	0.03	0.22	<0.01
Sorghum and Barley	0.25-0.26[6]	Air	0.03	0.14	0.01
		Ground	0.02	0.13	<0.01
Triticale and millet	0.18	Air	0.02	0.10	0.01
		Ground	0.01	0.09	<0.01
Turf (*e.g.*, commercial and residential lawns)	0.07-0.1[7]	Granule	<0.01	0.05	0

[1] All comparisons for parent dicamba (acid equivalent).
[2] See **Appendix B** for complete list of uses associated with various application rates.
[3] ***Air***: based on a run-off fraction of 5%; drift fraction of 5%; incorporation of 1-inch. ***Ground***: based on a run-off fraction of 5%; drift fraction of 1%; incorporation of 1-inch. ***Granule***: based on a run-off fraction of 5%; drift fraction of 0%; incorporation of 1-inch.
[4] EECs reported for 2 lb ae/A rate.
[5] Refined elsewhere (most recently USEPA, 2020a).
[6] EECs reported for 0.26 lb ae/A rate.
[7] EECs reported for 0.1 lb ae/A rate.

11.2 Terrestrial Plant Risk Characterization

As is expected for an herbicide, there is a potential risk concern for terrestrial plants (dicots and monocots) located off the treatment field for all uses of dicamba. The LOC is exceeded for dicots (RQ = 0.1-195) and monocots (RQ = less than 0.1 to 3) from exposure to run-off and spray drift combined or spray-drift alone (**Table 11-2**). There is not a risk concern for exposure to DCSA, which is the less phytotoxic transformation product produced by DT-plants after uptake of dicamba. Likewise, there is not a risk concern for 6-CSA, which is structurally similar to and a proposed breakdown product of DCSA.

Table 11-2. RQs values for Non-Target Terrestrial Plants in Dry and Semi-Aquatic Areas near Dicamba Use Areas (TerrPlant)[1]

Use Pattern[2]	Maximum Single Application Rate (lb ae/A)	Application Method	RQ[3]					
			Dry Areas (Total)		Semi-Aquatic Areas (Total)		Spray Drift	
			M	D	M	D	M	D
Various non-agricultural (*e.g.*, rights of way, fences, hedgerows, hay, grass grown for seed)	1.94-2[4]	Air	0.6	**6**	**3**	**31**	**1.1**	**195**
		Ground	0.3	**3**	**3**	**29**	0.2	**39**
Various agricultural (*e.g.*, corn and non-DT soybean)	1	Air	0.3	**3**	**1.6**	**15**	0.5	**97**
		Ground	0.2	**1.7**	**1.5**	**14**	0.1	**19**
Asparagus	0.74	Air	0.2	**2**	**1.2**	**11**	0.4	**72**
		Ground	0.1	**1.2**	**1.1**	**11**	0.1	**14**
DT-cotton and DT soybean[5]	0.5	Ground	0.1	0.8	0.7	**7**[4]	0.1	**10**[4]
Wheat	0.44	Air	0.1	**1.2**	0.7	**7**	0.2	**43**
		Ground	0.1	0.7	0.7	**6**	<0.1	**9**
Sorghum and Barley	0.25-0.26[6]	Air	0.1	0.7	0.4	**4**	0.1	**25**
		Ground	<0.1	0.4	0.4	**4**	<0.1	**5**
Triticale and millet	0.18	Air	0.1	0.5	0.3	**3**	0.1	**18**
		Ground	<0.1	0.3	0.3	**3**	<0.1	**4**
Turf (*e.g.*, commercial and residential lawns)	0.07-0.1[7]	Granule	<0.1	0.1	0.2	**1.4**	0	0

BOLD = RQ exceeds LOC (1.0); RQs > 2 are rounded to the nearest whole number
M = monocot; D = dicot
[1] All comparisons for parent dicamba (acid equivalent).
[2] See **Appendix B** for complete list of uses associated with various application rates.
[3] RQ = EEC/IC_{50}. EECs in **Table 11-1**. IC_{50} values in **Table 6-3**. ***Monocot***: IC_{50} = 0.344 lb ae/A (seedling emergence) and IC_{50} = 0.0924 lb ae/A (vegetative vigor). ***Dicot***: IC_{50} = 0.0357 lb ae/A (seedling emergence) and IC_{50} = 0.000513 lb ae/A (vegetative vigor).
[4] RQs reported for 2 lb ae/A rate.
[5] Refined elsewhere (most recently USEPA, 2020a). Label restrictions on DT-plants (1) reduce run-off potential and risk but does not eliminate it, (2) eliminate off-site exposure from spray drift with 90% certainty of protection of non-listed plants, and (3) eliminate off-site exposure from volatility with > 95% certainty of protection of non-listed plants when considering the combined impact of all mandatory volatile emission control measures (VRA, application cut-off dates, and in-field 57-ft omnidirectional application setback). The omnidirectional buffer is mandatory in locations with listed-species concerns. The certainty of protection for non-listed plants is 89% in counties that do not have federally listed species.
[6] RQs reported for 0.26 lb ae/A rate.
[7] RQs reported for 0.1 lb ae/A rate.

Toxicity data are not available to compare plant sensitivity to several dicamba salts (*i.e.*, Na, K, DEA, IPA) to their sensitivity to dicamba acid. Nonetheless, EFED considers the risk assessment protective because risk to terrestrial plants was evaluated using the most sensitive endpoints

among the available studies (**Table 6-3; Appendix A**), which showed that two of the salts were more toxic than dicamba acid to the most sensitive species tested with all of the single ai products (*vegetative vigor*: soybean; 14X for DGA and 8X for BAMPA; *seedling emergence*: lettuce, >4X for DGA and >8X for BAMPA).[51] Dicamba salts are anticipated to rapidly disassociate to the acid; therefore, it is unclear if the salt itself or something about the combined ingredients in the formulations may in some cases increase toxicity (expressed as acid equivalent) to some tested species over that from direct exposure to dicamba acid, which may also have been impacted by other ingredients in the tested acid-based end-use product formulation. EPA anticipates that the risk conclusions are the same for all the salts; however, there is uncertainty about the magnitude of the risk estimates and potential for off-site movement without toxicity data to compare among the salts.

EFED evaluated risk based on data from single active ingredient products for the national-level screening, but also considered the relative risk posed by registered multi ai products. Dual ai formulations containing dicamba and s-metolachlor showed greater toxicity to some species than did the most toxic single ai dicamba products (*e.g.*, *see discussion in* USEPA, 2019b and 4X to 13X comparing the most sensitive species tested; *see* **Appendix A**); however, the single ai DGA-salt product (MRID 47815102; lowest IC_{25} = 0.000513 lb ae/A; soybean) resulted in the overall most sensitive endpoint available among all tested registered products and tested species. Toxicity data are also available for dicamba acid TGAI, which show comparable overall toxicity at the seedling emergence stage as the dual ai dicamba + s-metolachlor formulations; however, the TGAI study results are highly suspect because the study was conducted in a sand matrix, which may have affected plant growth and vigor, toxicity, and exposure. Nonetheless, the primary risk concern for dicamba use remains for sensitive dicot species exposed at the vegetative vigor stage of growth (*as noted above*).

The potential risk concern is supported by thousands of incidents with plants reported to date (*see* **Section 6.3** for details). Most of the incidents currently reported in the IDS database (*i.e.*, including aggregate incidents and "backlogged" incidents[52], which collectively comprise most of the total incidents in IDS) are associated with alleged wide area (*i.e.*, 10's to 100's of acres per incident) soybean damage (on and off treatment site) or localized small-scale residential use sites (*e.g.*, lawn care products). That said, incidents are reported for alleged damage to a wide range of plant species, including woody species like shrubs and trees. For plant damage associated with residential use sites, EFED expects that most of those incidents are effects on turf resulting from direct applications to lawns, as opposed to incidents associated with on or off-site effects to other non-target plants, although it is expected that some percentage of incidents at residential use sites will be the latter. In terms of non-target plant damage, there is a pronounced increase in the overall number of reported dicamba incidents associated with

[51] Comparison based on the most sensitive species tested with reliable a IC_{25} values for all three compounds (vegetative vigor: MRID 50914303, 47815102, and 48718015; seedling emergence: MRID 50931308, 47815101, and 48718014)

[52] Backlogged incidents have not yet been completely reviewed.

alleged damage to off-site soybean plants around 2016 and this increase appears to be linked to the introduction of DT-plants and OTT applications to those crops (*i.e.*, an application to emerged DT-plants). In 2020, registrants submitted reports of approximately 5,600 incidents occurring between 2017 and 2019[53] and 97% of those incidents reported off-site damage to non-dicamba resistant varieties of soybean. The reported incidents involve a variety of dicamba products applied in 2017, 2018, and 2019 after the approval of the use on DT-plants, including products that are labeled specifically for use on DT-plants. Many of the applications and observations of damage were reported as occurring in warmer months (*i.e.*, June or later), which is an indication that many of those incidents may have been associated with OTT uses on DT-plants or non-DT plants. Finally, nearly 3,500 incidents allegedly caused by dicamba have been reported for the 2021 growing season and involve damage to non-DT soybean, a variety of agricultural crops, and non-agricultural use sites. The incident analysis will be updated as new information becomes available.

The relatively large number of incidents allegedly associated with use on DT-plants may be related to a variety of factors including but not limited to relative usage, the timing of application relative to when sensitive plants (*e.g.*, non-DT soybean and other crops) may be present in nearby areas, the location of the applications (DT-soybean is likely to be planted in areas where non-DT soybean is grown nearby as well), and the timing of application relative to temperature (OTT applications are more likely to occur in warmer months when dicamba is more likely to volatilize). Finally, despite the large number of incidents reported to EPA, information available from the USDA Agricultural Research Service (USEPA, 2020b) suggests that both the number of dicamba incidents and their geographic extent are substantially greater than indicated by registrants' 6(a)(2) reporting and incidents reported by others to the Agency. Additionally, incidents of non-target plant damage may be less likely to be noticed or reported unless plants of perceived value (*e.g.*, a crop, trees, etc.) are located nearby. For example, plant damage on a nearby fallow field may not be noticed or reported.

Based on the weight of evidence, there is an identified risk concern for terrestrial plants.

Run-off Considerations

Dicamba is a soluble, mobile chemical and is expected to affect nontarget terrestrial plants in areas adjacent to treated fields if run-off occurs. EFED evaluated risk to terrestrial plants using the TerrPlant model and a screening-level run-off assumption based on the solubility of dicamba. For a very soluble chemical (*i.e.*, solubility > 100 mg/L) like dicamba (solubility > 6000 mg/L), a run-off fraction of 0.05 is used in the screening-level assessment. The model considers run-off reaching an approximately 15 cm deep, 1 ha wetland for assessing risk to semi-aquatic plants without accounting for any pesticide degradation or partitioning, nor the temporal

[53] These incidents were submitted directly to RD in 2020 to support the risk assessment of OTT use on DT-soybean and DT-cotton. It is unclear at the current time how many of these incidents are already in IDS; however, they will be incorporated into IDS in the future.

aspects of run-off associated with meteorological events (*i.e.*, run-off follows precipitation events that exceed field capacity of the soil). However, the fate characteristics of dicamba indicate that it is not environmentally persistent, meaning that TerrPlant is likely providing a highly conservative estimate of run-off loading (5% of that applied) at any given time because the processes of degradation and partitioning combined with the stochastic nature of run-off are important limiting factors for dicamba.

EPA's previously conducted risk assessments for DT-plants (*e.g.*, USEPA, 2018 and USEPA, 2020a) explored refinements to run-off potential, which resulted in using run-off fractions lower than 0.05 (*i.e.*, 0.0012 or lower, depending on the assumptions and scenario); however, those refinements are use-specific based on factors such as use site and label restrictions. Even with those refinements, in 2020 EPA concluded that there is a potential risk concern for non-target terrestrial plants due to run-off. The most recent assessment (*see* USEPA, 2020a for details) considered a refined analysis of run-off potential (*i.e.*, PWC modeling), results from a run-off study, as well as observed effects to non-target plants in off field movement (OFM) studies. In addition, labels for use on DT-plants included the restriction "*do not apply if soil is saturated with water or when rainfall that may exceed soil field capacity is forecasted to occur within 24-48 hours*". However, even with this restriction, off-site plant damage resulting from run-off occurred in a number of the off-field movement studies. That said, if applications are not made when the soil is saturated with water or when rainfall that may exceed soil field capacity is forecasted to occur within 24-48 hours, as was done with the modeling, then risk to non-target plants will be reduced. The level of reduction cannot readily be quantified due to site-specific conditions such as field size, amount of saturation in the field at the time of the event, soil-type, and hydrologic conditions.

As with use on DT-plants, the extent of run-off exposure from non-DT plant uses will be impacted by many factors including but not limited to product characteristics, use, and site-specific environmental conditions. Any quantifiable refinements to the assumption of 5% run-off would need to account for these factors for a given use. Additionally, off-site non-target plants will likely receive less exposure from run-off than indicated by the 5% assumption to the extent that a label contains restrictions that reduce run-off potential. This is because dicamba has the potential for run-off several days after application under some conditions and poorly draining, wet, or erodible soils with readily visible slopes are more prone to produce run-off (*see* USEPA, 2020a). When used on erodible soils or where adjacent to sensitive areas, best management practices can help reduce run-off.

Spray Drift Considerations

Spray drift is an important factor in characterizing the risk of dicamba to non-target plants. Although off-site movement of dicamba is anticipated from spray drift on the downwind side of the treatment field, the extent of off-site drift will vary with numerous factors such as application method, spray droplet size, wind speed, in-field buffers, and any drift reduction technologies that may be used. The RQs calculated by the screening assessment (TerrPlant model; *see* **Table 11-2**) represent exposure to non-target plants located at a distance of 235 ft

for ground applications (182 ft for aerial applications)[54] from the downwind edge of the treatment field. Distances closer to the field than 235 ft for ground applications (182 ft for aerial) would have an exposure higher than modeled by TerrPlant and distances farther than 235 ft for ground applications (182 ft for aerial) from the field would have an exposure lower than the modeled values. The screen indicates that there is a potential risk concern extending for large distances from the treatment field based on the magnitude of the RQs and the results of the AgDRIFT analysis.

EFED used AgDRIFT to estimate the distance beyond the downwind edge of the treatment field where exposure estimates are high enough after applications to non-DT plants to exceed the LOC for non-listed species. Off-field LOC exceedances extend > 1000 ft from the edge of the treatment field for ground spray applications (*i.e.*, no drift from granule uses) and > 2600 ft[55] from the edge of treatment field for aerial applications based on all modeled droplet size ranges and ground boom heights (**Table 11-3**). Off-site distances for dicots exceed those for monocots given that there is a 180X difference in toxicity between the most sensitive of the tested dicot and monocot species. In some instances, there may be interest in the distance to a no effect concentration instead of the distance to a ≤ 25% effect; for example, when there is a concern about drift to a neighboring crop. The distances to reach the no effect level for the most sensitive dicot tested (*i.e.*, soybean NOAEC = 0.00026 lb ae/A; MIRD 47815102) would be about 2X greater than the distances reported in **Table 11-3**. The extent of off-site drift from the downwind edge of the treatment field will be lower with use of ground instead of aerial applications, lower boom heights, coarser droplet ranges, in-field spray drift buffers, or drift reduction technologies. Nonetheless, products registered for use on non-DT crops generally do not include label restrictions like those on labels of products intended for use on DT-plants (*e.g.*, ultra-coarse droplets, low boom height, ground application only).

Table 11-3. Distance from the Downwind Edge of the Treatment Field Exceeding the LOC[1]

Use Pattern[2]	Single Maximum Application Rate (lb ae/A)	Air/Ground	Dicot (IC_{25} = 0.000513 lb ae/A)		
			RQ	Droplet size	Distance from edge of field (ft)
Various non-agricultural (*e.g.*, rights of way, fences, hedgerows, hay, grass grown for seed)	1.94-2[3]	Air	**195**	F-M M-C C-VC	≥2600 ≥2600 ≥2600
		Ground High boom	**39**	VF-F F-M/C	≥1000 ≥1000
		Ground Low boom	**39**	VF-F F-M/C	≥1000 ≥1000

[54] TerrPlant RQ values are based on (1) high boom and a very fine to fine droplet spectrum for ground applications and (2) a fine to medium droplet spectrum for aerial applications. Droplet spectrum is a major variable in terms of the spray drift distance.

[55] 1000 ft is the limit for ground applications and 2600 ft is the limit for aerial applications using the AgDRIFT model.

Use Pattern[2]	Single Maximum Application Rate (lb ae/A)	Air/Ground	Dicot (IC_{25} = 0.000513 lb ae/A)		
			RQ	Droplet size	Distance from edge of field (ft)
Various agricultural (*e.g.*, corn and non-DT soybean)	1	Air	**97**	F-M M-C C-VC	≥2600 ≥2600 ≥2600
		Ground High boom	**19**	VF-F F-M/C	≥1000 ≥1000
		Ground Low boom	**19**	VF-F F-M/C	≥1000 ≥1000
Asparagus	0.74	Air	**72**	F-M M-C C-VC	≥2600 ≥2600 ≥2600
		Ground High boom	**14**	VF-F F-M/C	≥1000 ≥1000
Asparagus	0.74	Ground Low boom	**14**	VF-F F-M/C	≥1000 925
DT-cotton and DT soybean	0.5	Ground Low boom	**10**	Ultra-coarse	NC*f*
Wheat	0.44	Air	**43**	F-M M-C C-VC	≥2600 ≥2600 2052
		Ground High boom	**9**	VF-F F-M/C	≥1000 715
		Ground Low boom	**9**	VF-F F-M/C	869 502
Sorghum and barley	0.25-0.26[4]	Air	**24**	F-M M-C C-VC	≥2600 2133 1287
		Ground High boom	**5**	VF-F F-M/C	835 513
		Ground Low boom	**5**	VF-F F-M/C	400 271
Triticale and millet	0.18	Air	**18**	F-M M-C C-VC	≥2600 1522 928
		Ground High boom	**4**	VF-F F-M/C	619 267
		Ground Low boom	**4**	VF-F F-M/C	355 176

VF-F – very fine to fine, F-M/C – fine to medium/coarse, F-M – fine to medium, M-C – medium to coarse, C-VC – coarse to very coarse

NC = not calculated

RQs > 2 are rounded to the nearest whole number, but the unrounded value was used for determining the distance.

[1] All comparisons for parent dicamba (acid equivalent).

[2] See **Appendix B** for complete list of uses associated with various application rates.

[3] EECs and distances reported for 2 lb ae/A rate.

[4] RQs reported for 0.26 lb ae/A rate.

f AgDRIFT does not model ultra-coarse droplets. Off-field spray drift distances have been refined accounting for specific label restrictions and product characteristics for this use (*see* USEPA, 2020a for details). In 2020, EPA

concluded that the mandatory spray drift control measures eliminate risk concerns for non-target plant effects with a 90% certainty that these non-target organisms located off the field will not be exposed to dicamba from the use of these products. The analysis was conducted with an effects measure (10% visual signs of toxicity) corresponding to a 5% reduction in an apical regulatory endpoint (dry weight) for plants (*see* USEPA, 2020a for rationale). Therefore, those conclusions are especially conservative for evaluating non-listed species under FIFRA, where the typical effect levels of concern are established at a higher 25% reduction of height, weight, or survival.

EPA revised off-site drift distances several times for use on DT-plants by using a variety of approaches (USEPA, 2014d, USEPA 2016b, USEPA 2016e, USEPA, 2020a). Despite the efforts prior to the 2020 risk assessment, off-site incidents from spray drift continued. Therefore, in 2020 EPA took a new approach (*see* USPEA, 2020a for details) and evaluated spray drift and volatile drift exposure to terrestrial plants in off-site areas using large scale OFM toxicity studies, which simulated labeled use on DT-plants (*i.e.*, specific products and drift controls on variables such as wind speed and nozzle type). Although plant height (a standard regulatory endpoint) was included as a measurement in several OFM studies, all OFM studies reported the percent of the visual symptom index (VSI) in relation to the distance from the treated field. EPA used the measurement of VSI (10%) to estimate the distance to effect for a more complete use of the available OFM studies, increasing the geographic extent, temporal timing, climatic conditions, and soybean varieties tested. Analyses showed that the distances to 10% VSI is reasonably expected to extend further from NOAEC-based distances by a factor of 2 to 5. The VSI endpoint is especially conservative for evaluating non-listed species under FIFRA, where the typical effect levels of concern are established at a higher 25% reduction of height, weight, or survival. Using these studies, EPA developed a probabilistic, distributional approach for determining a reasonable upper bound estimate for the distance from the field to plant effects. In 2020, EPA found that the labeled 240-ft in-field spray drift setback in combination with the other mandatory spray drift control measures (*e.g.*, ultra-coarse droplet size) results in no exposure (90% certainty) downwind off the treatment field, use of hooded sprayer technology with DT-soybean can reduce the in-field spray drift setback to 110 ft while still being protective of non-listed species, and inclusion of drift reducing agents in the tank mix did not have a significant impact on reducing the distance to effect. For refinement of the screening-level off-site spray-drift distances for non-DT uses (**Table 11-3**), EPA would need spray drift deposition data for product and nozzle combinations, per OCSPP Guideline 840.1200, as EFED currently does not have a mechanistic model to refine ground spray drift estimates.

Volatility Considerations

Off-site movement of dicamba, an intermediately volatile compound, may occur from volatilization and result in damage to sensitive non-target plants in the absence of appropriate control measures. It has historically been shown that dicamba use can be associated with volatility; however, volatility was recognized as a greater issue with the more recent use on DT-plants, which are later growing season applications when temperatures tend to be higher. Previous risk assessments of DT-plant use considered this exposure route specifically for products used on DT-plants (*e.g.*, USEPA, 2014d; USEPA, 2016f; and USEPA, 2020a). Those analyses considered the potential of dicamba to volatilize from the treatment site and redeposit onto sensitive non-target plants located off of the treatment field. The most recent of

those analyses (USPEA, 2020a) evaluated spray drift and volatile drift exposure to terrestrial plants in off-site areas, using large field-scale OFM toxicity studies. Those studies were specific to the products applied to DT-plants and included study design elements allowing for an evaluation of plant effects influenced solely by volatility-based exposure (off-site areas covered with tarps during application to prevent spray deposition), as well as uncovered transects exposed to dicamba through both spray drift and volatility-based exposure.

With the covered or uncovered transects, it was possible for EPA to establish distance to effect for volatility-based exposures separately from spray drift + volatility. The analysis based on the OFM studies indicated that the off-site distance to toxic effects thresholds from volatility alone was less than the off-site distance to effect from spray drift + volatility, consistent with the findings of preceding analyses using different approaches. Based on this analysis, measures designed to address spray drift should be protective of potential risk from volatility alone for off-site non-target plants located downwind from the edge of the treatment field (*see* USEPA, 2020a for details and the analysis). On the other hand, off-field vapor exposure can be omnidirectional when dicamba volatilizes from the treated field, meaning that additional considerations are needed beyond those for spray drift alone to mitigate effects of volatilization. For example, the omnidirectional nature of vapor-phase exposure is addressed on product labels for DT-plants by requiring use of a volatility reduction agent, the use of cutoff dates, and implementing omnidirectional in-field buffers in some localities (*i.e.*, those with listed species concerns; *as described in* USEPA, 2020a) (**Figure 11-1**). However, products registered for use on non-DT crops generally do not include volatile emission control measures or in-field omnidirectional buffers to mitigate off-field risk to non-target plants due to vapor exposure; thus, there is potential for off-site damage to occur to sensitive non-target plants for any use or product without volatility control requirements.

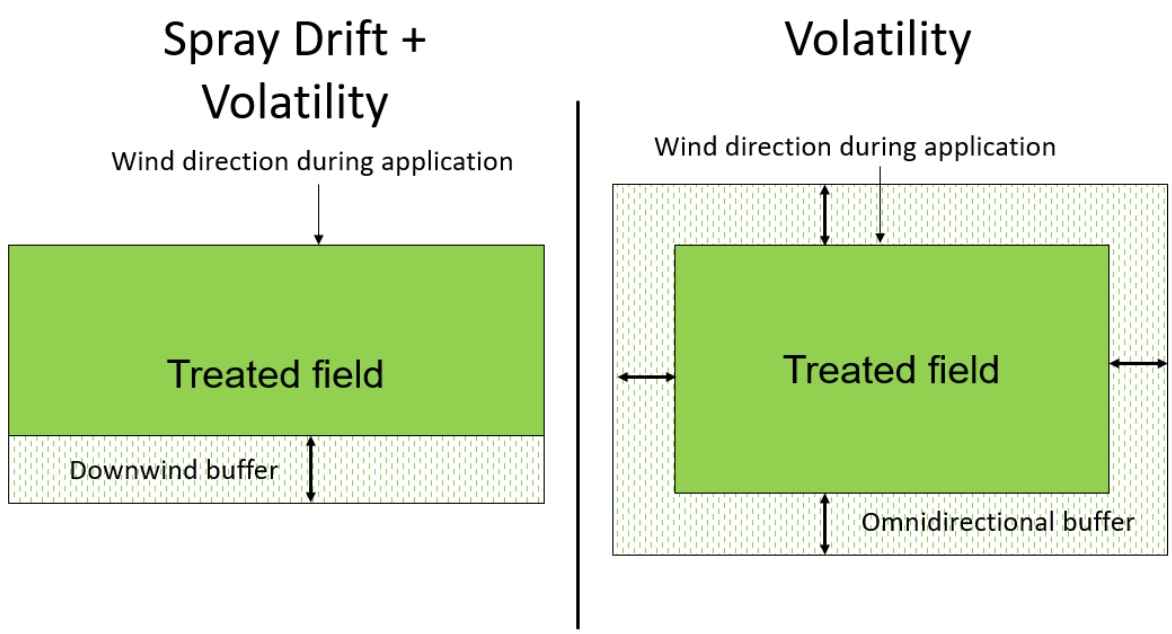

Figure 11-1. Illustration describing the conceptual diagrams of in-field spray drift "downwind" and volatility "omnidirectional" setbacks.

The results of the previous analyses suggest that spray drift is a greater driver of exposure than volatility on the downwind side of the treatment field for DT-plants, suggesting that the same would likely be the case for non-DT plant uses. In other words, spray drift from non-DT plant uses is expected to cause adverse effects to non-target plants at a greater distance from the edge of the downwind edge of the treatment field than volatilization alone. Therefore, downwind spray drift buffers for non-DT plant uses should generally be large enough to protect against movement of volatilized dicamba on the downwind side of the treatment field, whereas exposure from volatility alone would remain around the other sides of the treated field in the absence of volatility control measures or omnidirectional in-field buffers. The degree of potential off-site damage from volatilization alone is anticipated to be highly variable among non-DT plant uses and vary with factors including but not limited to application rate, product formulation characteristics, temperature at the use site, and use of or lack of volatilization emission controls (*e.g.*, VRA) and omnidirectional in-field buffers. There is potential risk concern from vapor exposure alone for non-DT plant uses which generally do not include volatile emission control measures or in-field omni-directional buffers. In contrast, in 2020 EPA concluded that the combined impact of all mandated label restrictions for applications to DT-plants (*i.e.*, use of VRA, restrictions on the timing of application tied to local temperature, and omni-directional in-field buffers; *as described in* USEPA, 2020a) eliminate off-site exposure from volatility with > 95% certainty of protection of non-listed plants[56]).

[56] The omnidirectional buffer is mandatory in locations with listed-species concerns. The certainty of protection for non-listed plants is 89% in counties that do not have federally listed species.

12 Conclusions

Consistent with past national-level risk assessments there is a potential risk concern for non-listed terrestrial plants, aquatic plants, birds (acute exposure to dicamba), mammals (chronic exposure to DCSA in DT-soybean plants), and honey bees (chronic exposure of larvae to dicamba). Recently submitted toxicity data indicate a previously unidentified potential chronic risk concern for adult honey bees from non-DT plant uses with higher application rates than DT-plant uses. In contrast, recently submitted data on chronic toxicity to birds indicate that there is not a risk concern from exposure to DCSA in DT-soybean plants (previous assessments assumed risk based on an estimated toxicity threshold). Updated exposure estimates accounting for the combined residues of DCSA and 6-CSA indicate that a previously unidentified potential chronic risk concern for non-listed fish; however, it is limited to a single use scenario. Finally, there are no risk concerns for non-listed aquatic invertebrates.

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Appendix A. Toxicity Data

This appendix provides a full list of the studies that EFED evaluated when selecting the most sensitive endpoints. It includes studies reported in the RR PF (USEPA, 2016a), more recently submitted studies reported in the most recent risk assessment (USEPA, 2020a), and all additional studies submitted to fulfill the RR DCI. The tables below include the most sensitive endpoint by taxa for available data on dicamba acid, currently registered salts (DGA, DMA, Na, K, IPA, BAPMA), and the degradation product DCSA. In addition, all studies reviewed subsequent to the RR PF are reported below (designated by "N" for date reviewed since the PF), regardless of toxicity. No data were located for DEA salt or the 6-CSA degradation product.

Table A-1. Most Sensitive Aquatic Animal and Plant Toxicity Studies for Dicamba acid, DGA salt, DMA salt, Na salt, K salt, IPA salt, BAPMA salt, and DCSA degradate

Study Type	Test Substance (% ai)	Test Species	Toxicity Value in µg ae/L (unless otherwise specified)[1]	MRID or ECOTOX Number/ Classification[2]	Comments
Freshwater Fish (Surrogates for Aquatic-phase Amphibians)					
Acute	TGAI Dicamba acid (88)	Rainbow Trout (*Oncorhynchus mykiss*)	96-h LC_{50} = 28,000	40098001 Supplemental	Slightly toxic
	TEP DGA salt (40.2)	Bluegill (*Lepomis macrochirus*)	96-h LC_{50} > 399,490[C]	00162067 Acceptable	CN-11-4962 formulation
		Rainbow Trout (*Oncorhynchus mykiss*)		00162068 Acceptable	Practically non-toxic
	TEP DMA salt (11.5)	Bluegill (*Lepomis macrochirus*)	96-h LC_{50} > 114,400[C]	0046183 Acceptable	Banvel CST formulation
		Rainbow Trout (*Oncorhynchus mykiss*)		0046184 Acceptable	Practically non-toxic
	TEP Na salt (22)	Rainbow Trout (*Oncorhynchus mykiss*)	96-h LC_{50} = 122,140[C]	0029623 Acceptable	Banvel 2S formulation Practically non-toxic
	TEP K salt (38)	Bluegill (*Lepomis macrochirus*)	96-h LC_{50} = 85,800[C]	00153150[3] Supplemental	Use for characterization only (question about solubility) CN-10-6471 formulation Slightly toxic

Study Type	Test Substance (% ai)	Test Species	Toxicity Value in µg ae/L (unless otherwise specified)[1]	MRID or ECOTOX Number/ Classification[2]	Comments
Acute	TEP IPA salt (32.5)	Bluegill (*Lepomis macrochirus*)	96-h LC_{50} >323,300[C]	00265441 Acceptable	Practically non-toxic
		Rainbow Trout (*Oncorhynchus mykiss*)		00265440 Acceptable	
	TEP BAPMA salt (48.4)	Fathead minnow (*Pimephales promelas*)	96-h LC_{50} > 56,400	48718008[N] Acceptable	BAS 183 WB H formulation Hazard classification unknown (slightly toxic at most)
Chronic (ELS)	TGAI Dicamba acid (92.9)		33 days NOAEC ≥ 9,900 LOAEC > 9,900	48718010[N] Acceptable	No effects
	TGAI DCSA (97)		32 days NOAEC = 31 µg DCSA/L LOAEC = 100 µg DCSA/L based on reduction in dry weight	50944101[N] Acceptable	Reduction in dry weight (5.5%) at LOAEC
Estuarine/Marine Fish (Surrogates for Aquatic-phase Amphibians)					
Acute	TGAI Dicamba acid (86.8)	Sheepshead minnow (*Cyprinodon variegates*)	96-h LC_{50} >180,000	00025390 Acceptable	Practically non-toxic No effects
Chronic (ELS)	TGAI Dicamba acid (93.9)		34 days NOAEC ≥ 11,000 LOAEC > 11,000	48718011[N] Acceptable	No effects
Freshwater Invertebrates (Water-Column Exposure)					
Acute	TGAI Dicamba acid (88)	Water Flea (*Daphnia magna*)	48-h LC_{50} >100,000	40094602 Supplemental	Practically non-toxic
	TEP DGA salt (40.2)		48-h LC_{50} > 399,490[C]	00162069 Supplemental	CN-11-4962 formulation Practically non-toxic
	TEP DMA salt (48.2)		48-h LC_{50} = 767,300[C]	00028283 Acceptable	Banvel formulation Practically non-toxic
	TEP Na salt (26.5)		48-h LC_{50} = 10,040[C]	00085935 Acceptable	Banvel 2S formulation Moderately toxic

Study Type	Test Substance (% ai)	Test Species	Toxicity Value in µg ae/L (unless otherwise specified)[1]	MRID or ECOTOX Number/ Classification[2]	Comments
Acute	TEP K salt (38)	Water Flea (*Daphnia magna*)	48-h LC_{50} = 285,800[C]	00153152[4] Supplemental	Use for characterization only (question about solubility) CN-10-6471 formulation Practically non-toxic
	TEP IPA salt (32.5)		48-h LC_{50} > 323,300[C]	00265442 Supplemental	Practically non-toxic
Chronic (LC)	TEP BAPMA salt (48.4)		NOAEC ≥ 42,000 LOAEC > 42,000	48718007[N] Acceptable	BAS 183 WB H formulation No effects
	TGAI DCSA (97)		NOAEC ≥ 9,710 µg DCSA/L LOAEC > 9,710 µg DCSA/L	50944102[N] Acceptable	No effects
Estuarine/Marine Invertebrates (Water-Column Exposure)					
Acute	TGAI Dicamba acid (86.8)	Grass shrimp (*Palaemonetes pugio*)	96-h EC_{50} > 100,000	00034702 Acceptable	Practically non-toxic One mortality
	TGAI Dicamba acid (99)	Eastern Oyster (*Crassostrea virginica*)	96-h IC_{50} > 94,200	50881003[N] Acceptable	Practically non-toxic
	TGAI Dicamba acid (93.9)		96-h IC_{50} > 96,000	50784605[N] Acceptable	Practically non-toxic
Chronic (LC)	TGAI Dicamba acid (93.9)	Mysid (*Americamysis bahia*)	NOAEC ≥ 11,000 LOAEC > 11,000	48718012[N] Acceptable	No effects
Aquatic Plants and Algae					
Vascular	TGAI Dicamba acid (89.5)	Duckweed (*Lemna gibba*)	14-day C_{50} >3,250	42774111 Acceptable	
	TGAI Dicamba acid (99)		7-day IC_{50} = 52,600	50881002[N] Acceptable	Frond yield

Study Type	Test Substance (% ai)	Test Species	Toxicity Value in µg ae/L (unless otherwise specified)[1]	MRID or ECOTOX Number/ Classification[2]	Comments
Vascular	TGAI Dicamba acid (98)	Parrot feather watermilfoil (*Myriophyllum aquaticum*)	7-day IC50 = 1290 µg ae/L	51610901[N] Quantitative	Tunic et al. (2015) Shoot length yield
Non-vascular	TGAI Dicamba acid (89.5)	Marine Diatom (*Skeletonema costatum*)	120-h EC_{50} = 493	42774110 Acceptable	Cell density
	TGAI Dicamba acid (89.5)	Blue-green algae (*Anabaena flos-aquae*)	120-h EC_{50} = 61	42774109 Acceptable	Cell density
	TEP Dicamba BAPMA salt (48.4)	Green algae (*Pseudokirchneriella subcapitata*)	72-h EC_{50} = 7,010	48718009[N] Acceptable	Cell density yield

TGAI=Technical Grade Active Ingredient; TEP= Typical end-use product; ai=active ingredient; ae = acid equivalent
ELS = Early life-stage; LC = Life cycle
Na = sodium salt; K = potassium salt
[N] New data reviewed since the RR PF was completed (USEPA, 2016a).
[C] Previously reported endpoint has been revised to reflect acid equivalent. An inaccurate conversion was used to calculate the reported values in the RR PF (USEPA, 2016a) or past risk assessments.
[1] NOAEC and LOAEC are reported in the same units.
[2] Study classifications of Acceptable and Supplemental indicate that the study is useful for consideration in risk assessments. Studies identified as Supplemental indicate that there was some deviation from the guideline recommendations. Supplemental studies that can be used for risk estimation unless specified for characterization purposes only.
[3] Reported as ACCN 00258932 in the RR PF (USEPA, 2016a)
[4] Reported as ACCN 00258983 in the RR PF (USEPA, 2016a)

Table A-2. Most Sensitive Terrestrial Animal and Plant Toxicity Studies for Dicamba Acid, DGA salt, DMA salt, Na salt, K salt, IPA salt, BAPMA salt, and DCSA degradate

Study Type	Test Substance (% ai)	Test Species	Toxicity Value[1]	MRID or ECOTOX Number/ Classification[2]	Comments
Birds (Surrogates for Terrestrial Amphibians and Reptiles)					
Acute Oral	TGAI Dicamba acid (86.9)	Bobwhite quail (*Colinus virginianus*)	LD_{50} = 188 mg ae/kg-bw	42918001 42774105 Acceptable	Moderately toxic
	TGAI Dicamba acid (93.6)	Zebra finch (*Taeniopygia guttata*)	LD_{50} = 207 mg ae/kg-bw	48718013[N] Acceptable	Moderately toxic
	TEP DMA salt (11.5)	Mallard duck (*Anas platyrhynchos*)	LD_{50} > 287.2 mg ae/kg-bw[C]	00046180 Acceptable	Hazard classification unknown (moderately toxic at most)
	TEP K salt (38)	Bobwhite quail (*Colinus virginianus*)	LD_{50} = 275.0 mg ae/kg-bw[C]	00261466 Supplemental	Moderately toxic
	TGAI BAPMA salt (48.4)		LD_{50} = 890.5 mg ae/kg-bw[C]	48718006[N] Acceptable	BAS 183 22 H formulation Slightly toxic
Sub-acute dietary	TGAI Dicamba acid (86.9)		LC_{50} > 10,000 mg ae/kg-diet	00025391 Acceptable	Practically non-toxic No treatment related mortality. Sublethal effects, some of which were not evident at the end of the study
	TEP DGA salt (40)		LC_{50} > 2236.7 mg ae/kg-diet[C]	00162071 Acceptable	CN-11-4962 formulation
		Mallard duck (*Anas platyrhynchos*)		00162072 Acceptable	Hazard classification unknown (slightly toxic at most)

Study Type	Test Substance (% ai)	Test Species	Toxicity Value[1]	MRID or ECOTOX Number/ Classification[2]	Comments
Sub-acute dietary	TEP DMA salt (11.5)	Bobwhite quail (*Colinus virginianus*)	LC_{50} > 643 mg ae/kg-diet[C]	00046181[3] Acceptable	Banvel CST formulation No treatment related effects Hazard classification unknown (moderately toxic at most)
	TEP DMA salt (11.5)	Mallard duck (*Anas platyrhynchos*)	LC_{50} > 643 mg ae/kg-diet[C]	00046182[3] Acceptable	Banvel CST formulation No treatment related effects Hazard classification unknown (moderately toxic at most)
	TEP Na salt (26.5)	Bobwhite quail (*Colinus virginianus*)	LC_{50} > 2636.7 mg ae/kg-diet[C]	00233292[4] Acceptable	Banvel 2S formulation Hazard classification unknown (slightly toxic at most)
	TEP K salt (38)		LC_{50} > 2135.6 mg ae/kg-diet[C]	00261465 Supplemental	CN-10-647 formulation Hazard classification unknown (slightly toxic at most)
	TEP K salt (38)	Mallard duck (*Anas platyrhynchos*)	LC_{50} > 2135.6 mg ae/kg-diet[C]	00261466 Supplemental	CN-10-647 formulation Hazard classification unknown (slightly toxic at most)
	TEP IPA salt (32.3)	Bobwhite quail (*Colinus virginianus*)	LC_{50} > 1817.3 mg ae/kg-diet	00265439 Acceptable	Hazard classification unknown (slightly toxic at most)

Study Type	Test Substance (% ai)	Test Species	Toxicity Value[1]	MRID or ECOTOX Number/ Classification[2]	Comments
Sub-acute dietary	TEP IPA salt (32.3)	Mallard duck (*Anas platyrhynchos*)	LC_{50} > 1431.2 mg ae/kg-diet	00265438 Acceptable	Hazard classification unknown (slightly toxic at most)
Chronic	TGAI Dicamba acid (86.9)		NOAEC = 695 LOAEC = 1,390 mg ae/kg-diet	43814003 Acceptable	Reduced (12-21%) number of hatchlings, 14-day hatchlings, hatchlings/eggs laid, and 14-day hatchlings/eggs laid at the LOAEC
	TGAI Dicamba acid (86.9)	Bobwhite quail (*Colinus virginianus*)	NOAEC ≥ 1,390 LOAEC > 1,390 mg ae/kg-diet	43814004 Acceptable	No effects
	TGAI DCSA (97)	Mallard duck (*Anas platyrhynchos*)	NOAEC ≥ 765 LOAEC > 765 mg DCSA/kg-diet	50944103[N] Acceptable	No effects
Mammals					
Acute Oral	TGAI Dicamba acid (99.7)	Laboratory rat (*Rattus norvegicus*)	LD_{50} = 2,740 mg ae/kg-bw (males)	00078444 Minimum	Practically non-toxic
	TEP DGA salt (11.9) + TGAI dicamba acid (39)		LD_{50} > 595 mg ae/kg-bw (females) based on DGA only	49329315 Acceptable	TEP contained DGA salt and dicamba acid TGAI. LD_{50} > 2547 mg ae/kg-bw based on total ae from both sources Hazard classification unknown (slightly toxic at most)
	TEP DMA salt (40)		LD_{50} = 858 mg ae/kg-bw	00025371 Minimum	BAS 183 06H % ai obtained from label Slightly toxic
	TEP Na salt (23)		LD_{50} > 1,062 mg ae/kg-bw	44524403 Acceptable	Hazard classification unknown (slightly toxic at most)
	TEP K salt (unknown)		LD_{50} > 4974 mg product/kg-bw	00133565 Minimum	% ai has not been confirmed

Study Type	Test Substance (% ai)	Test Species	Toxicity Value[1]	MRID or ECOTOX Number/ Classification[2]	Comments
Acute Oral	TEP BAPMA salt (48.4)	Laboratory rat (*Rattus norvegicus*)	LD_{50} > 968 mg ae/kg-bw (females)	48599303[N] Acceptable	Hazard classification unknown (slightly toxic at most)
	TGAI DCSA (99.7)		LD_{50} = 2,641 mg DCSA/kg-bw (males)	47899504[N] Acceptable	Practically non-toxic
Acute Inhalation	TEP Dicamba acid		4-hours LC_{50} > 5.3mg ae/L	00263861 Acceptable	No mortalities at limit dose
Sub-Chronic Feeding (13 week)	TGAI Dicamba acid (86.8)		NOAEL = 500 LOAEL = 1000 mg ae/kg-bw/day	00128093 Acceptable	Reduced body weight (6% to 7%) and food consumption (9% to 11%) of adults
Chronic (2-generation reproduction)	TGAI Dicamba acid (86.9)		NOAEL = 136 LOAEL = 450 mg ae/kg-bw/day	43137101 Acceptable	Decreased pup weight in F1 and F2 (6% to 30%) and delayed F1 maturation of males (2 days)
	TGAI DCSA (97.7)		NOAEL = 8 LOAEL = 78 mg DCSA/kg-bw/day	47899517 Acceptable	9% reduced pup body weight 2-3 weeks post-natal days (PND)
Terrestrial Invertebrates					
Acute contact (adult)	TEP Dicamba acid (unknown)	Honey bee (*Apis mellifera* L.)	LD_{50} > 91 µg ae/bee	00036935 Supplemental	Practically non-toxic Observed mortality (2.5%) within background and not clearly treatment related
	TGAI Dicamba acid (93.9)		LD_{50} > 100.1 µg ae/bee	50784601[N] Supplemental	Practically non-toxic Observed mortality (7%) within background and not clearly treatment related
Acute oral (adult)	TGAI Dicamba acid (98)	Honey bee (*Apis mellifera*)	LD_{50} > 92 µg ae/bee	50818801[N] Supplemental	Practically non-toxic No treatment related effects

Study Type	Test Substance (% ai)	Test Species	Toxicity Value[1]	MRID or ECOTOX Number/ Classification[2]	Comments
Acute oral (adult)	TGAI Dicamba acid (93.9)	Honey bee (*Apis mellifera* L.)	LD_{50} > 100.1 µg ae/bee	50784601[N] Supplemental	Practically non-toxic No effects
Chronic oral (adult)	TGAI Dicamba acid (93.9)		NOAEL = 19 LOAEL = 33 µg ae/bee	50784603[N] Acceptable	24% reduced food consumption. Solvent control also showed reduction in food consumption compared to negative control.
	TGAI Dicamba acid (98.4)		NOAEL < 64.8 LOAEL ≤ 64.8 µg ae/bee	50931304[N] Supplemental	44% reduced food consumption at the single treatment dose (no solvent used) Use for characterization only (NOAEL not established)
Acute oral (larval)	TGAI Dicamba acid (99)	Honey bee (*Apis mellifera*)	LD_{50} = 117 µg ae/bee	50931302[N] Acceptable	Practically non-toxic LD_{50} extrapolated slightly above the highest test concentration (96 µg ae/bee, which showed 42% mortality) from dose responsive data
Chronic oral (larval)	TGAI Dicamba acid (93.9)	Honey bee (*Apis mellifera* L)	NOAEL = 5.1 LOAEL = 10 µg ae/larvae	50784602[N] Acceptable	28% increased pupal mortality (D15) and 28% reduced adult emergence (D22)
	TGAI Dicamba acid (99)	Honey bee (*Apis mellifera*)	NOAEL = 12 LOAEL = 25 µg ae/larvae	50931303[N] Acceptable	19% increased larval mortality (D8), 28% increased pupal mortality (D15), and 28% reduced adult emergence (D22)

Study Type	Test Substance (% ai)	Test Species	Toxicity Value[1]	MRID or ECOTOX Number/ Classification[2]	Comments
Terrestrial and Wetland Plants					
Seedling Emergence	TEP Dicamba acid (39.4)	Various species (6 dicots and 4 monocots)	Dicots (soybean; dry weight): IC_{25} = 0.13 lb ae/A Monocots: IC_{25} = not calculable	50931308[N] Supplemental	Use for characterization only (low confidence in ICx values for corn, ryegrass, cabbage, and lettuce due to lack of dose response and high within group variability, poor control performance for turnip) ALB-40 formulation
	TGAI Dicamba acid (89.5)	Various species (6 dicots and 4 monocots)	Dicots (soybean; height): IC_{25} = 0.0027 lb ae/A Monocots (onion; height): IC_{25} = 0.0424 lb ae/A	42846301 Supplemental	Use for characterization only (conducted in sand, no raw data, plant stage unknown at time of application, pseudo-replication)
	TEP DGA salt (40.3)	Various species (6 dicots and 4 monocots)	Dicots (tomato; dry weight): IC_{25} = 0.123 lb ae/A[5] Monocots (onion; height): IC_{25} = 1.68 lb ae/A	47815101 Acceptable	Clarity 4.0 SL formulation

Study Type	Test Substance (% ai)	Test Species	Toxicity Value[1]	MRID or ECOTOX Number/ Classification[2]	Comments
Seedling Emergence	TEP DGA salt (12.4) + s-metolachlor (23.8)	Various species (6 dicots and 4 monocots)	Dicots (turnip; dry weight): IC_{25} = 0.0028 lb ae/A Monocots (onion; height): IC_{25} = 0.0621 lb ae/A	50102115[N] Acceptable/ Supplemental depending on species	A21472C formulation Use for characterization only (lettuce results circumspect based on combination of rangefinder results and application rates tested in the definitive test; ryegrass control performance was poor)
	TEP BAPMA salt (47.9)	Various species (6 dicots and 4 monocots)	Dicots (oilseed rape; dry weight): IC_{25} = 0.0357 lb ae/A Monocots (wheat; dry weight): IC_{25} = 0.344 lb ae/A	48718014[N] Acceptable	BAS 183 22 H formulation
Vegetative Vigor	TEP Dicamba acid (39.4)	Various species (6 dicots and 1 monocot)	Dicots (soybean; height): IC_{25} = 0.00735 lb ae/A Monocots (onion; dry weight): IC_{25} = 0.611 lb ae/A	50914303[N] Acceptable	ALB-40 formulation
	TGAI Dicamba acid (89.5)	Various species (6 dicots and 4 monocots)	Dicots (soybean; height): IC_{25} = 0.0068 lb ae/A Monocots (onion; dry weight): IC_{25} = 0.1507 lb ae/A	42846301 Supplemental	Use for characterization only (conducted in sand, no raw data, plant stage unknown at time of application, pseudo-replication)

Study Type	Test Substance (% ai)	Test Species	Toxicity Value[1]	MRID or ECOTOX Number/ Classification[2]	Comments
Vegetative Vigor	TEP DGA salt (40.3)	Various species (6 dicots and 4 monocots)	Dicots (soybean; height): IC_{25} = 0.000513 lb ae/A Monocots (onion; dry weight): IC_{25} = 0.472 lb ae/A	47815102[6] Supplemental	Clarity 4.0 SL formulation Lettuce test unreliable
	TEP DGA salt (40.2)	1 dicot	Dicots (lettuce; dry weight): IC_{25} = 0.032 lb ae/A	50888101[N] Acceptable	Vanquish formulation
	TEP DGA salt (40.7)	1 dicot	Dicots (lettuce; dry weight): IC_{25} = 0.0209 lb ae/A	50784604[N] Acceptable	BAS 183 09 H (Clarity) formulation
	TEP DGA salt (39.6) + induce surfactant	Various trees (6)	IC_{25} > 0.00053 lb ae/A	51068202[N] Acceptable	MON 54140 formulation Limit test Significant reductions in apple (10%) and American red oak (19%) sapling height
	TEP DGA salt (12.4) + s-metolachlor (23.8)	Various species (6 dicots and 4 monocots)	Dicots (tomato; dry weight): IC_{25} = 0.00208 lb ae/A Monocots (onion; dry weight): IC_{25} = 0.0248 lb ae/A	50102116[N] Acceptable	A21472C formulation
	TEP DGA salt (9.9) + glyphosate ethanolamine salt (19.2)	2 dicots (tomato and soybean)	Dicots (tomato; dry weight): IC_{25} = 0.00191 lb ae/A	49953901[N] Acceptable	MON 76832 formulation

Study Type	Test Substance (% ai)	Test Species	Toxicity Value[1]	MRID or ECOTOX Number/ Classification[2]	Comments
Vegetative Vigor	TEP DGA salt (9.9) + glyphosate ethanolamine salt (19.2)	Various species (4 dicots and 4 monocots)	Dicots (lettuce; dry weight): IC_{25} = 0.00223 lb ae/A Monocots (wheat; dry weight): IC_{25} = 0.0221 lb ae/A	50103801[N] Acceptable	MON 76832 formulation
	TEP DMA salt (39.7)	Various species (6 dicots and 1 monocot)	Dicots (soybean; dry weight): IC_{25} = 0.0135 lb ae/A Monocots (onion): IC_{25} > 1.0 lb ae/A	50931305[N] Acceptable	Unspecified formulation
	TEP BAPMA salt (47.9)	Various species (6 dicots and 4 monocots)	Dicots (soybean; height): IC_{25} = 0.000826 lb ae/A Monocots (onion; dry weight): IC_{25} = 0.0924 lb ae/A	48718015[N] Acceptable	BAS 183 22 H formulation
Vegetative Vigor (vapor exposure)	TGAI dicamba acid; TEP DGA salt; TEP DMA salt	Soybean	NOAEC = 17.7 mg ae/m^3 LOAEC = 539 mg ae/m^3 based on reduced height	49925703[N] Supplemental	
			NOAEC = 138 mg ae/m^3 LOAEC = 238 mg ae/m^3 based on reduced height	50578901[N] Supplemental	

TGAI=Technical Grade Active Ingredient; TEP= Typical end-use product; ai=active ingredient; ae = acid equivalent
Na = sodium salt; K = potassium salt
[N] New data reviewed since the RR PF was completed (USEPA, 2016a).
[C] Previously reported endpoint has been revised to reflect acid equivalent. An inaccurate conversion was used in some cases to calculate the reported values in the RR PF (USEPA, 2016a) or past risk assessments.
[1] NOAEC and LOAEC are reported in the same units.
[2] Study classifications of Acceptable and Supplemental indicate that the study is useful for consideration in risk assessments. Studies identified as Supplemental indicate that there was some deviation from the guideline recommendations. Supplemental studies that can be used for risk estimation unless specified for characterization purposes only.
[3] Reported as MRID 00034693 and 00022527 in the RR PF (USEPA, 2016a).
[4] Reported as MRID 00068785 in the RR PF (USEPA, 2016a).
[5] Soybean was erroneously reported as the most sensitive dicot in the RR PF (USEPA, 2016a).
[6] Incorrectly reported as MRID 47815101 in the RR PF (USEPA, 2016a).

Appendix B. Summary of the Maximum Labeled Use Patterns for Dicamba

Table B-1. Summary of Dicamba Use

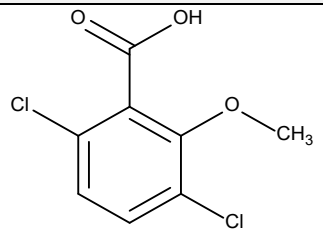
Use	Max Single App Rate (lb ae/A)	Number of Applications	Max Annual App Rate (lb ae/A)	Minimum Retreatment Interval (days)	Aerial/Ground Application	Application Timing	Comments
Agricultural Uses							
Asparagus	0.74	NS (1)	0.74	NA	Both	Pre- and post-emergent	
Barley	0.26	NS (2)	0.38	NS	Both	Post-emergent	
Barley, oat, wheat, small grains, sorghum	1.0	NS (2)	2.0	NS	Both	Pre-plant, post-plant, post-emergence, fallow	Rates reflect the maximum amount that can be applied to a field that can grow these crops, rather than the maximum amount that can be applied to the crop itself. The maximum rate (1 lb/A) only applies to the pre-plant or post-harvest/fallow field applications and the applications to the crop itself are lower, as reflected below in the rows for the individual crops.
Corn	1.0	NS (2)	2.0	NS	Ground	Pre- and post-emergent	
Cotton, non-DT	1.0	NS (2)	2.0	NS	Both	Fallow field	
Cotton, DT	0.5	4	2.0	7	Ground	Pre- and post-emergent	240 ft spray drift buffer, ultra-coarse nozzles
Oat	0.13	NS (2)	0.26	30	Both	Post-harvest	
Proso millet	0.18	NS (1)	0.18	NA	Both	Post-emergent	
Sorghum	0.25	NS (2)	0.5	NS	Both	Pre-plant, pre-emergent, post-emergent, pre-harvest	

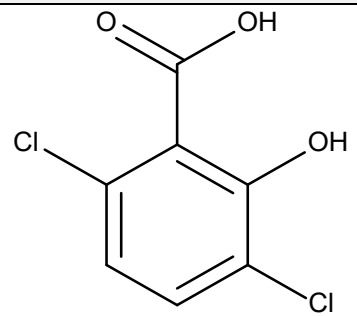
Use	Max Single App Rate (lb ae/A)	Number of Applications	Max Annual App Rate (lb ae/A)	Minimum Retreatment Interval (days)	Aerial/Ground Application	Application Timing	Comments
Soybean, non-DT	1.0	NS (2)	2.0	NS	Both	Pre-plant, pre-harvest	Pre-harvest application used to reduce weeds so as to improve harvesting and reduce staining of soybean seeds
Soybean, DT	0.5	4	2.0	7	Ground	Pre- and post-emergent	240 ft spray drift buffer, ultra-coarse nozzles
Sugarcane	1.0	NS (2)	2.0	NS	Both	Pre- and post-emergent	
Triticale	0.18	NS (1)	0.18	NA	Both	Post-emergent	
Triticale	0.12	2	NS (0.24)	NS	Both	Post-emergent	
Wheat	0.44	NS (2)	0.61	NS	Both	Post-emergent	
Non-agricultural Uses							
Fallow/Idle/Conservation Reserve	1.0	NS (2)	2.0	NS	Both	Pre-plant, post-harvest	
Commercial/industrial lawns	0.07	NS (2)	0.15	30	Ground		Granular
Forest trees	1.0	NS (1)	1.0	NA	Both		
Golf course	1.0	NS (1)	1.0	NA	Both		
Grass forage/fodder/hay	1.0	NS (1)	1.0	NA	Both		
Hay	2.0	NS (1)	2.0	NA	Both		
Grass grown for seed	1.0	NS (2)	2.0	NS	Both		
Grass grown for seed	2.0	NS (1)	2.0	NA	Ground	Post-harvest	
Pasture, rangeland	1.94	1	1.94	NA	Both		
Residential (outdoor premises, ornamentals, paved areas)	0.1	2	0.2	30	Ground		Granular
Rights of way, fences, hedgerows	1.95	NS (1)	1.95	NA	Both		
Parks, sod farms, recreational lawns	1.0	NS (2)	2.0	30	Both		

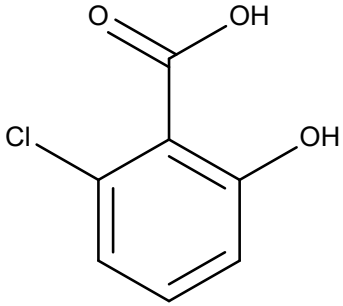
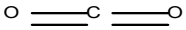
NS – not specified. Values in parenthesis were calculated based on other information provided on the label. These values are not on the label.
NA – not applicable.

Appendix C. ROCKS Table

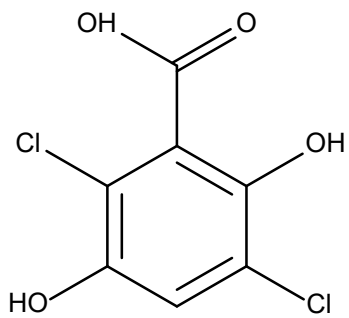
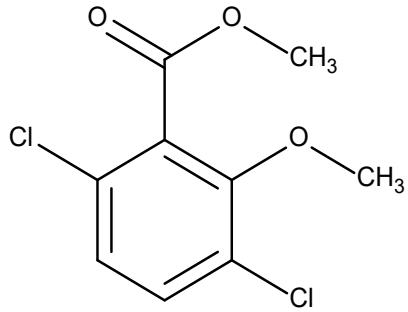
Table C-1. Chemical Names and Structures of Dicamba and its Transformation Products

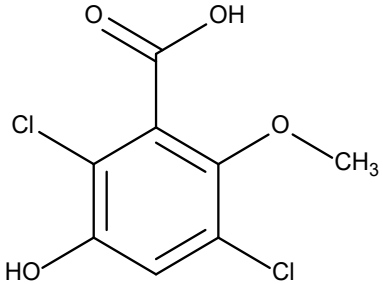
Code Name/ Synonym	Chemical Name	Chemical Structure	Study Type	MRID	Maximum %AR (day)		Final %AR (study length)
Parent							
Dicamba (dicamba acid)	**IUPAC:** 3,6-Dichloro-o-anisic acid **CAS:** 3,6-Dichloro-2-methoxybenzoic acid **CAS No.:** 1918-00-9 **Formula:** $C_8H_6Cl_2O_3$ **MW:** 221.04 g/mol **SMILES:** COc1c(Cl)ccc(Cl)c1C(O)=O		Hydrolysis	40335501	NA		≥96% (30 d)
			Aqueous photolysis	42774102	NA		54.5% (30 d)
			Soil photolysis	42774103	Silt loam		81% (30 d)
			Aerobic soil	43245207	Silt loam		0.2% (365 d)
				50931306	Loam		1.4% (120 d)
					Silt loam		0.42% (120 d)
					Sandy loam		0.87% (120 d)
					Loamy sand		0.71% (120 d)
			Aerobic aquatic	43758509	Reservoir water: loam		<1% (62 d)
				50931307	River water:silt loam		<1% (100 d)
					River water:sand		31.8% (100 d)
			Anaerobic aquatic	43245208	Pond water: loam		25% (365 d)
			TFD	42651406	Silt loam		< 0.01 mg/kg (150 d)
				43651405	Silt loam		< 0.01 mg/kg (152 d)

Code Name/ Synonym	Chemical Name	Chemical Structure	Study Type	MRID	Maximum %AR (day)		Final %AR (study length)
Dicamba **(dicamba acid)**			TFD	43651407	Loam		< 0.01 mg/kg (150 d)
				42754101	Sandy loam		≤ 0.02 mg/kg (123 d)
				42754102	Loam		< 0.01 mg/kg (120 d)
Major (>10%) transformation products							
DCSA **(3,6 dichlorosalicylic acid)**	**IUPAC:** 3,6-Dichloro-2-hydroxybenzoic acid **CAS:** 3,6-Dichloro-salicylic acid **CAS No.:** 3401-80-7 **Formula:** $C_7H_4Cl_2O_3$ **MW:** 207.01 g/mol **SMILES:** ClC1=CC=C(Cl)C(O)=C1C(O)=O		Aerobic soil	43245207	Silt loam	**14.5%** (7 d)	0.2% (365 d)
				50931306	Loam	**33.4%** (30 d)	2.7% (120 d)
					Silt loam	**29.6%** (21 d)	4.1% (120 d)
					Sandy loam	**35.6%** (14 d)	1.3% (120 d)
					Loamy sand	**26.1%** (30 d)	2.4% (120 d)
			Aerobic aquatic	43758509	Reservoir water: loam	**38.2%** (41 d)	8.1% (62 d)
				50931307	River water:silt loam	**22.1%** (60 d)	**12.4%** (100 d)
					River water:sand	**23.5%** (60 d)	**11.9%** (100 d)
			Anaerobic aquatic	43245208	Pondwater: loam	**61.6%** (365 d)	**61.6%** (365 d)
			TFD	42651406	Silt loam	0.26 mg/kg (14 d)	< 0.01 mg/kg (150 d)
				43651405	Silt loam	0.28 mg/kg (7 d)	0.036 mg/kg (152 d)

Code Name/ Synonym	Chemical Name	Chemical Structure	Study Type	MRID	Maximum %AR (day)		Final %AR (study length)
DCSA **(3,6 dichlorosalicylic acid)**			TFD	43651407	Loam	0.38 mg/kg (28 d)	0.055 mg/kg (150 d)
				42754101	Sandy loam	0.44 mg/kg (63 d)	0.30 mg/kg (123 d)
				42754102	Loam	0.17 mg/kg (17 d)	< 0.01 mg/kg (120 d)
6-CSA **(2-Chloro-6-hydroxybenzoic acid)**	**IUPAC:** 2-Chloro-6-hydroxybenzoic acid **Formula:** $C_7H_5ClO_3$ **MW:** 172.56 g/mol **SMILES:** OC1=C(C(O)=O)C(Cl)=CC=C1		Aerobic aquatic	50931307	River water:silt loam	**13.7%** (30 d)	1.8% (100 d)
					River water:sand	**24.3%** (60 d)	**13.9%** (100 d)
Carbon dioxide	**IUPAC:** Carbon dioxide **Formula:** CO_2 **MW:** 44 g/mol **SMILES:** C(=O)=O		Aqueous photolysis	42774102	NA	**15.3%** (30 d)	**15.3%** (30 d)
			Soil photolysis	42774103	Silt loam	3.1% (30 d)	3.1% (30 d)
			Aerobic soil	43245207	Silt loam	**66.9%** (365 d)	**66.9%** (365 d)
				50931306	Loam	**25.6%** (120 d)	**25.6%** (120 d)
					Silt loam	**27.3%** (120 d)	**27.3%** (120 d)
					Sandy loam	**34.2%** (120 d)	**34.2%** (120 d)
					Loamy sand	**26.1%** (120 d)	**26.1%** (120 d)

Code Name/ Synonym	Chemical Name	Chemical Structure	Study Type	MRID	Maximum %AR (day)		Final %AR (study length)
Carbon dioxide			Aerobic aquatic	50931307	River water:silt loam	**36.2%** (100 d)	**36.2%** (100 d)
					River water:sand	**19.8%** (100 d)	**19.8%** (100 d)
Unextractable residues	NA	NA	Aerobic soil	43245207	Silt loam	**11.6%** (30 d)	5.9% (365 d)
				50931306	Loam	**67.7%** (120 d)	**67.7%** (120 d)
					Silt loam	**72.2%** (120 d)	**72.2%** (120 d)
			Aerobic soil		Sandy loam	**71.0%** (30 d)	**64.6%** (120 d)
					Loamy sand	**66.2%** (120 d)	**66.2%** (120 d)
			Aerobic aquatic	50931307	River water:silt loam	**44.5%** (100 d)	**44.5%** (100 d)
					River water:sand	**35.2%** (100 d)	**35.2%** (100 d)
			Anaerobic aquatic	43245208	Pond water: loam	**24.4%** (180 d)	4.94 (365 d)

Code Name/ Synonym	Chemical Name	Chemical Structure	Study Type	MRID	Maximum %AR (day)		Final %AR (study length)
Minor (<10%) transformation products							
3,6-Dichloro-2,5-dihydroxybenzoic acid	**IUPAC:** 2,5-Dichloro-3,6-dihydroxybenzoic acid **CAS No.:** 18688-01-2 **Formula:** $C_7H_4Cl_2O_4$ **MW:** 223.01 g/mol **SMILES:** ClC1=CC(O)=C(Cl)C(C(O)=O)=C1O		Aerobic soil	43245207	2.7% (365 d)		2.7% (365 d)
				50931306	NA		NA
			Aerobic aquatic	50931307	NA		NA
			Anaerobic aquatic	43245208	Pond water: loam	3.64% (94 d)	1.58% (365 d)
Dicamba methyl ester	**IUPAC:** Methyl 3,6-dichloro-2-methoxybenzoate **Formula:** $C_9H_8Cl_2O_3$ **MW:** 235.06 g/mol **SMILES:** ClC1=CC=C(Cl)C(C(OC)=O)=C1OC		Aerobic soil	50931306	NA		NA
			Aerobic aquatic	50931307	NA		NA

Code Name/ Synonym	Chemical Name	Chemical Structure	Study Type	MRID	Maximum %AR (day)		Final %AR (study length)
Dicamba-5-hydroxy (5-hydroxydicamba)	**IUPAC:** 2,5-Dichloro-3-hydroxy-6-methoxybenzoic acid **Formula:** $C_8H_6Cl_2O_4$ **MW:** 237.03 g/mol **SMILES:** ClC1=CC(O)=C(Cl)C(C(O)=O)=C1OC		Aerobic soil	43245207	0.8% (365 d)		0.8% (365 d)
Dicamba-5-hydroxy (5-hydroxydicamba)			Aerobic soil	50931306	NA		NA
			Aerobic aquatic	43758509	ND		ND
				50931307	NA		NA
			Anaerobic aquatic	43245208	Pond water: loam	1.9% (365 d)	1.9% (365 d)

ND = not detected
NA = not assessed
AR = applied radioactivity
MW = molecular weight
LOQ = limit of quantitation
Bolded values are laboratory study values >10%AR.

Appendix D. Endocrine Disruptor Screening Program (EDSP)

As required by FIFRA and the Federal Food, Drug, and Cosmetic Act (FFDCA), EPA reviews numerous studies to assess potential adverse outcomes from exposure to chemicals. Collectively, these studies include acute, subchronic and chronic toxicity, including assessments of carcinogenicity, neurotoxicity, developmental, reproductive, and general or systemic toxicity. These studies include endpoints which may be susceptible to endocrine influence, including effects on endocrine target organ histopathology, organ weights, estrus cyclicity, sexual maturation, fertility, pregnancy rates, reproductive loss, and sex ratios in offspring. For ecological hazard assessments, EPA evaluates acute tests and chronic studies that assess growth, developmental and reproductive effects in different taxonomic groups. As part of the Draft Ecological Risk Assessment for Registration Review, EPA reviewed these data and selected the most sensitive endpoints for relevant risk assessment scenarios from the existing hazard database. However, as required by FFDCA section 408(p), dicamba is subject to the endocrine screening part of the Endocrine Disruptor Screening Program (EDSP).

EPA has developed the EDSP to determine whether certain substances (including pesticide active and other ingredients) may have an effect in humans or wildlife similar to an effect produced by a "naturally occurring estrogen, or other such endocrine effects as the Administrator may designate." The EDSP employs a two-tiered approach to making the statutorily required determinations. Tier I consists of a battery of 11 screening assays to identify the potential of a chemical substance to interact with the estrogen, androgen, or thyroid (E, A, or T) hormonal systems. Chemicals that go through Tier I screening and are found to have the potential to interact with E, A, or T hormonal systems will proceed to the next stage of the EDSP where EPA will determine which, if any, of the Tier II tests are necessary based on the available data. Tier II testing is designed to identify any adverse endocrine-related effects caused by the substance and establish a dose-response relationship between the dose and the E, A, or T effect.

Under FFDCA section 408(p), the Agency must screen all pesticide chemicals. Between October 2009 and February 2010, EPA issued test orders/data call-ins for the first group of 67 chemicals, which contains 58 pesticide active ingredients and 9 inert ingredients. A second list of chemicals identified for EDSP screening was published on June 14, 2013[57] and includes some pesticides scheduled for registration review and chemicals found in water. Neither of these lists should be construed as a list of known or likely endocrine disruptors. Dicamba is not on List 1. For further information on the status of the EDSP, the policies and procedures, the lists of chemicals, future lists, test guidelines and Tier I screening battery, please visit our website.[58]

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[57] *See* https://www.epa.gov/sites/production/files/2015-08/documents/1.pdf for the final second list of chemicals.
[58] http://www.epa.gov/endo/

Appendix E. Incidents

IDS ecological incidents that have been reviewed are reported in **Tables E-1** to **E-6**. IDS aggregate incidents are reported in **Tables E-7** to **E-11**. Backlogged ecological incidents have not been reviewed and details are not reported here.

Table E-1. Dicamba Acid (dicamba, PC code 029801) Ecological Incidents

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Mammal								
Turf, residential	I019025-039	2007	PA	Unknown	Undetermined	Possible	Rabbit	4 affected
Pollinator								
Agricultural area	I030229-00001	2017	AR	No pesticides detected	Undetermined	Possible	Honey Bee	N/R
Fish								
Agricultural Area	I010274-002[2]	2000	WI	Marksman	Undetermined	Possible	Perch	2000 affected
N/R	I000799-003	1991	NC	Banvel	Undetermined	Unlikely	Bass	Hundreds
Avian								
N/R	I000799-003	1991	NC	Banvel	Undetermined	Unlikely	Blackbird	Unknown
N/R	I000799-003	1991	NC	Banvel	Undetermined	Unlikely	Cardinal	Unknown
N/R	I000799-003	1991	NC	Banvel	Undetermined	Unlikely	Duck	Hundreds
N/R	I000799-003	1991	NC	Banvel	Undetermined	Unlikely	Turkey	Unknown
Flora								
Agricultural Area	I007898-001	1998	CO	Banvel	Registered Use	Possible	N/R	N/R
Agricultural area	I020627-020	2001	WA	N/R	Misuse (accidental)	Probable	Unknown shrub	Extensive
Agricultural area	I024464-001	2012	MO	Clarity Herbicide	Misuse (accidental)	Probable	Soybean	N/R
Agricultural area	I029094-00010	2016	MO	N/R	Undetermined	Possible	Soybean	400 acres
Alfalfa	I023703-015	2012	CA	Clarity	Misuse	Possible	Alfalfa	286 acres

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Bean	I013883-019	1997	WA	N/R	Misuse (accidental)	Probable	Bean	N/R
Canal/drain	I020459-009	2000	WA	N/R	Undetermined	Highly Probable	Apple	N/R
Corn	I009573-017	1999	WI	Northstar	Misuse (accidental)	Possible	Soybean	50% Of 135 acres
Corn	I009573-020	1999	IA	Northstar	Misuse (accidental)	Unlikely	Soybean	10 acres
Corn	I009573-021	1999	IL	Northstar	Registered Use	Possible	Soybean	N/R
Corn	I009573-022	1999	IN	Northstar	Registered Use	Possible	Soybean	All 15 acres
Corn	I009573-023	1999	IN	Northstar	Registered Use	Possible	Soybean	All 40 acres
Corn	I020627-004	2001	WA	N/R	Undetermined	Possible	Cantaloupe	N/R
Corn	I020627-004	2001	WA	N/R	Undetermined	Possible	Pepper	N/R
Corn	I020627-004	2001	WA	N/R	Undetermined	Possible	Tomato	N/R
Corn	I020627-004	2001	WA	N/R	Undetermined	Possible	Watermelon	N/R
Corn	I029190-00001	2016	KS	Dicamba (Non-Specified)	Registered Use	Probable	Corn	129 acres
Corn, field	I027872-014	N/R	NE	DiFlexx Herbicide	Undetermined	Possible	Corn	79 acres
Corn, field	I027872-012	N/R	NE	DiFlexx Herbicide	Undetermined	Possible	Corn, Field	71 acres
Corn, field	I015748-043	2004	MI	N/R	Undetermined	Unlikely	Corn, Field	1800 acres affected
Corn, field	I023082-048	2011	IL	Outlaw	Undetermined	Possible	Corn, Field	85.5% of 100 acres
Cotton	I029094-00008	2016	MO	N/R	Misuse	Possible	Cotton	50 acres
Cotton	I029094-00101	2016	MO	N/R	Misuse	Possible	Cotton	400 acres
Cotton	I029094-00101	2016	MO	N/R	Misuse	Possible	Soybean	120 acres
Field corn	I021500-070	2009	IA	NorthStar	Undetermined	Possible	Corn, Field	90 acres
Hay	I021457-021	2006	WA	N/R	Misuse	Possible	Unknown Tree	Several
Home/lawn	I009262-055	1999	MI	Step 2 Weed Control	Misuse (accidental)	Probable	Bluegrass	N/R
Home/lawn	I009262-056	1999	PA	Step 2 Weed Control	Registered Use	Probable	Grass	N/R
Home/lawn	I009262-058	1999	MA	Step 2 Weed Control	Registered Use	Probable	Grass	N/R

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Home/lawn	I009262-059	1999	PA	Step 2 Weed Control	Registered Use	Probable	Grass	N/R
Home/lawn	I009445-055	1999	MA	Step 2 Weed Control	Registered Use	Probable	Grass	75% of lawn
Home/lawn	I009445-058	1999	NJ	Winterizer Plus 2	Undetermined	Probable	Grass	80% of lawn
Home/lawn	I009445-059	1999	NY	Winterizer Plus 2	Undetermined	Probable	Grass	50% of lawn
Home/lawn	I010546-001	2000	OH	Scotts Weed + Feed	Misuse (accidental)	Probable	Bluegrass	85% of lawn
Home/lawn	I010546-002	2000	NY	Scotts Weed + Feed	Misuse (accidental)	Probable	Bluegrass	60-70% dead
Home/tree	I009445-056	1999	MA	Step 2 Weed & Feed	Registered Use	Probable	Grass	N/R
Lawn	I024867-002	N/R	FL	Weed-B-Gon Max for Southern Lawn	Undetermined	Possible	N/R	45%
N/R	I000799-003	1991	NC	Banvel	Undetermined	Unlikely	N/R	Hundreds
N/R	I014409-029	1992	WA	N/R	Undetermined	Probable	Prune	N/R
N/R	I005879-006	1997	IA	Banvel	Undetermined	Possible	Raspberry	N/R
N/R	I020627-037	2001	WA	N/R	Undetermined	Possible	Grape	N/R
N/R	I020998-011	2002	WA	N/R	Undetermined	Possible	N/R	N/R
N/R	I021276-008	2004	WA	N/R	Undetermined	Possible	Bean	N/R
N/R	I021276-008	2004	WA	N/R	Undetermined	Possible	Potato	N/R
N/R	I021457-019	2006	WA	N/R	Misuse (intentional)	Possible	Bean	many
N/R	I021457-011	2006	WA	N/R	Misuse	Possible	Grape	Vineyard
N/R	I028348-00003	2015	TX	Ortho Weed-B-Gon Weed Killer for St. Augustine	Undetermined	Possible	Grass	N/R
N/R	I029094-00006	2016	MO	N/R	Misuse	Possible	Soybean	N/R
N/R	I029094-00006	2016	MO	N/R	Misuse	Possible	Soybean	240 acres
N/R	I028970-00001	2016	MO	N/R	N/R	N/R	N/R	N/R
Peach	I029094-00022	2016	MO	N/R	Misuse	Possible	Peach	650 acres
Rangeland	I013883-006	1997	WA	N/R	Registered Use	Probable	Cherry	Unknown
Rangeland	I013883-006	1997	WA	N/R	Registered Use	Probable	Grape	Unknown
Rangeland	I013883-007	1997	WA	N/R	Registered Use	Probable	N/R	N/R

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Residential	I024272-335	2012	NY	Weed-B-Gon	Misuse	Possible	Grape	45%
Residential	I024071-174	2012	WV	N/R	Undetermined	Possible	Maple	>45% tree
Residential	I024106-008	2012	TX	Weed-B-Gon Max for Southern Lawn	Undetermined	Possible	Unknown Fruit Tree	>45% of trees
Residential	I024216-061	2012	MS	Weed-B-Gon Max for Southern Lawn	Undetermined	Possible	Unknown Plant	>45% flowers; 100 affected
Residential	I024421-018	2012	TX	Weed-B-Gon Max for Southern Lawn	Undetermined	Possible	Unknown plant	6 affected
Residential	I024106-008	2012	TX	Weed-B-Gon Max for Southern Lawn	Undetermined	Possible	N/R	>45% of herbs
Residential	I024106-017	2012	TX	Weed-B-Gon Max for Southern Lawn	Undetermined	Possible	N/R	>45% of plants
Residential	I024216-054	2012	MS	Weed-B-Gon Max for Southern Lawn	Undetermined	Possible	40 affected	N/R
Residential	I024309-031	2012	FL	Weed-B-Gon Max for Southern Lawn	Undetermined	Possible	N/R	12 plants
Residential	I029094-00020	2016	MO	N/R	Misuse	Possible	Unknown shrub	N/R
Residential	I029094-00020	2016	MO	N/R	Misuse	Possible	Unknown tree	N/R
Right-of-way	I013883-010	1997	WA	N/R	Registered Use	Probable	Bean	N/R
Right-of-way	I013884-035	1998	WA	N/R	Registered Use	Probable	Unknown tree	36 out of 55 trees
Right-of-way	I021276-022	2004	WA	N/R	Undetermined	Possible	N/R	N/R
Right-of-way, railroad	I020459-028	2000	WA	N/R	Undetermined	Possible	Arborvitae	100 affected
Right-of-way, road	I013884-021	1998	WA	N/R	Misuse	Probable	Potato	N/R
Right-of-way, road	I013587-008	1999	WA	N/R	Misuse	Possible	Pine	Unknown
Soybean	I015748-009	2003	IA	N/R	Misuse	Possible	Soybean	23 acres affected
Soybean	I015748-010	2003	IA	N/R	Misuse	Possible	Soybean	140 acres affected
Soybean	I015748-011	2003	IA	N/R	Misuse	Possible	Soybean	61 acres affected
Soybean	I015748-012	2003	IA	N/R	Misuse	Possible	Soybean	36 acres affected

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Soybean	I015748-013	2003	IA	N/R	Misuse	Possible	Soybean	102 acres affected
Soybean	I015748-014	2003	IA	N/R	Misuse	Possible	Soybean	167 acres affected
Soybean	I017841-001	2006	LA	N/R	Misuse (intentional)	Probable	Soybean	1500 acres
Soybean	I024535-001	2012	IA	Clarity	Undetermined	Possible	Soybean	10% of 0.02 acres
Soybean	I028167-00001	2015	N/R	Roundup Ready 2 XTEND Herbicide	Undetermined	Possible	Soybean	50 acres
Soybean	I029094-00018	2016	MO	N/R	Misuse	Possible	Cantaloupe	9 acres
Soybean	I029094-00060	2016	MO	N/R	Misuse	Possible	Cotton	40 acres
Soybean	I029094-00106	2016	MO	N/R	Misuse	Possible	Pea	100 acres
Soybean	I029094-00028	2016	MO	N/R	Misuse	Possible	Rice	N/R
Soybean	I029094-00028	2016	MO	N/R	Misuse	Possible	Rice	N/R
Soybean	I029094-00038	2016	MO	N/R	Misuse	Possible	Rice	454 acres
Soybean	I029094-00002	2016	MO	N/R	Undetermined	Possible	Soybean	N/R
Soybean	I029094-00002	2016	MO	N/R	Undetermined	Possible	Soybean	N/R
Soybean	I029094-00003	2016	MO	N/R	Misuse	Possible	Soybean	10 fields
Soybean	I029094-00003	2016	MO	N/R	Misuse	Possible	Soybean	10 fields
Soybean	I029094-00004	2016	MO	N/R	Misuse	Possible	Soybean	N/R
Soybean	I029094-00004	2016	MO	N/R	Misuse	Possible	Soybean	N/R
Soybean	I029094-00005	2016	MO	N/R	Misuse	Possible	Soybean	1200 acres
Soybean	I029094-00005	2016	MO	N/R	Misuse	Possible	Soybean	1200 acres
Soybean	I029094-00007	2016	MO	N/R	Misuse	Possible	Soybean	270 acres
Soybean	I029094-00007	2016	MO	N/R	Misuse	Possible	Soybean	N/R
Soybean	I029094-00009	2016	MO	N/R	Misuse	Possible	Soybean	N/R
Soybean	I029094-00009	2016	MO	N/R	Misuse	Possible	Soybean	1000 acres
Soybean	I029094-00011	2016	MO	N/R	Misuse	Possible	Soybean	1300 acres
Soybean	I029094-00012	2016	MO	N/R	Misuse	Possible	Soybean	240 acres
Soybean	I029094-00013	2016	MO	N/R	Misuse	Possible	Soybean	500 acres

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Soybean	I029094-00015	2016	MO	N/R	Misuse	Possible	Soybean	69 acres
Soybean	I029094-00016	2016	MO	N/R	Misuse	Possible	Soybean	1420 acres
Soybean	I029094-00017	2016	MO	N/R	Misuse	Possible	Soybean	80 acres
Soybean	I029094-00018	2016	MO	N/R	Misuse	Possible	Soybean	60 acres
Soybean	I029094-00019	2016	MO	N/R	Misuse	Possible	Soybean	80 acres
Soybean	I029094-00021	2016	MO	N/R	Misuse	Possible	Soybean	106 acres
Soybean	I029094-00023	2016	MO	N/R	Misuse	Possible	Soybean	200
Soybean	I029094-00023	2016	MO	N/R	Misuse	Possible	Soybean	N/R
Soybean	I029094-00024	2016	MO	N/R	Misuse	Possible	Soybean	450 acres
Soybean	I029094-00025	2016	MO	N/R	Misuse	Possible	Soybean	250 acres
Soybean	I029094-00027	2016	MO	N/R	Misuse	Possible	Soybean	150 acres
Soybean	I029094-00028	2016	MO	N/R	Misuse	Possible	Soybean	N/R
Soybean	I029094-00029	2016	MO	N/R	Misuse	Possible	Soybean	500 acres
Soybean	I029094-00031	2016	MO	N/R	Misuse	Possible	Soybean	700 acres
Soybean	I029094-00032	2016	MO	N/R	Misuse	Possible	Soybean	700 acres
Soybean	I029094-00033	2016	MO	N/R	Misuse	Possible	Soybean	120 acres
Soybean	I029094-00034	2016	MO	N/R	Misuse	Possible	Soybean	600 acres
Soybean	I029094-00035	2016	MO	N/R	Misuse	Possible	Soybean	330 acres
Soybean	I029094-00037	2016	MO	N/R	Misuse	Possible	Soybean	10 acres
Soybean	I029094-00038	2016	MO	N/R	Misuse	Possible	Soybean	1354 acres
Soybean	I029094-00039	2016	MO	N/R	Misuse	Possible	Soybean	200 acres
Soybean	I029094-00040	2016	MO	N/R	Misuse	Possible	Soybean	400 acres
Soybean	I029094-00041	2016	MO	N/R	Misuse	Possible	Soybean	600 acres
Soybean	I029094-00042	2016	MO	N/R	Misuse	Possible	Soybean	800 acres
Soybean	I029094-00043	2016	MO	N/R	Misuse	Possible	Soybean	320 acres
Soybean	I029094-00044	2016	MO	N/R	Misuse	Possible	Soybean	40 acres
Soybean	I029094-00046	2016	MO	N/R	Misuse	Possible	Soybean	160 acres
Soybean	I029094-00049	2016	MO	N/R	Misuse	Possible	Soybean	800 acres
Soybean	I029094-00050	2016	MO	N/R	Misuse	Possible	Soybean	500 acres

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Soybean	I029094-00051	2016	MO	N/R	Misuse	Possible	Soybean	600 acres
Soybean	I029094-00052	2016	MO	N/R	Misuse	Possible	Soybean	100 acres
Soybean	I029094-00053	2016	MO	N/R	Misuse	Possible	Soybean	50 acres
Soybean	I029094-00054	2016	MO	N/R	Misuse	Possible	Soybean	2300 acres
Soybean	I029094-00055	2016	MO	N/R	Misuse	Possible	Soybean	500 acres
Soybean	I029094-00055	2016	MO	N/R	Misuse	Possible	Soybean	500 acres
Soybean	I029094-00056	2016	MO	N/R	Misuse	Possible	Soybean	98 acres
Soybean	I029094-00057	2016	MO	N/R	Misuse	Possible	Soybean	550 acres
Soybean	I029094-00058	2016	MO	N/R	Misuse	Possible	Soybean	300 acres
Soybean	I029094-00059	2016	MO	N/R	Misuse	Possible	Soybean	280 acres
Soybean	I029094-00060	2016	MO	N/R	Misuse	Possible	Soybean	40 acres each
Soybean	I029094-00061	2016	MO	N/R	Misuse	Possible	Soybean	175 acres
Soybean	I029094-00062	2016	MO	N/R	Misuse	Possible	Soybean	160 acres
Soybean	I029094-00063	2016	MO	N/R	Misuse	Possible	Soybean	500 acres
Soybean	I029094-00064	2016	MO	N/R	Misuse	Possible	Soybean	320 acres
Soybean	I029094-00066	2016	MO	N/R	Misuse	Possible	Soybean	N/R
Soybean	I029094-00066	2016	MO	N/R	Misuse	Possible	Soybean	200 acres
Soybean	I029094-00067	2016	MO	N/R	Misuse	Possible	Soybean	100 acres
Soybean	I029094-00068	2016	MO	N/R	Misuse	Possible	Soybean	340 acres
Soybean	I029094-00069	2016	MO	N/R	Misuse	Possible	Soybean	60 acres
Soybean	I029094-00070	2016	MO	N/R	Misuse	Possible	Soybean	427 acres
Soybean	I029094-00098	2016	MO	N/R	Misuse	Possible	Soybean	N/R
Soybean	I029094-00100	2016	MO	N/R	Misuse	Possible	Soybean	73 acres
Soybean	I029094-00106	2016	MO	N/R	Misuse	Possible	Soybean	650 acre SB/100 acre P
Tomato	I029094-00001	2016	MO	N/R	Misuse	Possible	Tomato	2300 plants
Tomato	I029094-00014	2016	MO	N/R	Misuse	Possible	Tomato	300 plants
Tomato	I029094-00026	2016	MO	N/R	Misuse	Possible	Tomato	200 acres
Tomato	I029094-00026	2016	MO	N/R	Misuse	Possible	Watermelon	22 acres

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Turf	I020459-016	2000	WA	N/R	Misuse (accidental)	Possible	N/R	N/R
Turf, residential	I007291-001	1998	TN	N/R	Registered Use	Possible	N/R	2-mile stretch
Turf, residential	I010581-054	2000	CT	Step 2 Weed Control	Registered use	Possible	Grass	60%
Turf, residential	I010581-057	2000	VA	Step 2 Weed Control	Misuse (accidental)	Possible	Grass	75%
Turf, residential	I010581-059	2000	MN	Step 2 Weed Control	Registered use	Possible	Grass	2/3 damaged
Turf, residential	I010581-063	2000	NH	Step 2 Weed Control	Registered use	Possible	Grass	unknown
Turf, residential	I010581-087	2000	MI	Step 2 Weed Control	Registered use	Probable	Grass	70%
Turf, residential	I020627-035	2001	WA	N/R	Undetermined	Probable	Sycamore	N/R
Turf, residential	I020627-011	2001	WA	N/R	Undetermined	Possible	N/R	N/R
Turf, residential	I029601-00012	2016	FL	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Spray2	Registered use	Probable	Grass	N/R
Turf, residential	I032362-00101	2019	TX	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Spray2	Undetermined	Probable	Unknown Herbaceous Plant	Unknown
Unknown	I029094-00092	2016	MO	N/R	Misuse	Possible	Corn	N/R
Unknown	I029094-00087	2016	MO	N/R	Misuse	Possible	Green Bean	N/R
Unknown	I029094-00048	2016	MO	N/R	Misuse	Possible	Peach	50 acres
Unknown	I029094-00065	2016	MO	N/R	Misuse	Possible	Pepper, Bell	N/R
Unknown	I029094-00087	2016	MO	N/R	Misuse	Possible	Pepper, Bell	N/R
Unknown	I029094-00071	2016	MO	N/R	Misuse	Possible	Soybean	150 acres
Unknown	I029094-00072	2016	MO	N/R	Misuse	Possible	Soybean	500 acres
Unknown	I029094-00073	2016	MO	N/R	Misuse	Possible	Soybean	265 acres
Unknown	I029094-00074	2016	MO	N/R	Misuse	Possible	Soybean	110 acres

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Unknown	I029094-00075	2016	MO	N/R	Misuse	Possible	Soybean	200 acres
Unknown	I029094-00076	2016	MO	N/R	Misuse	Possible	Soybean	40 acres
Unknown	I029094-00077	2016	MO	N/R	Misuse	Possible	Soybean	200 acres
Unknown	I029094-00078	2016	MO	N/R	Misuse	Possible	Soybean	95 acres
Unknown	I029094-00079	2016	MO	N/R	Misuse	Possible	Soybean	40 acres
Unknown	I029094-00080	2016	MO	N/R	Misuse	Possible	Soybean	270 acres
Unknown	I029094-00082	2016	MO	N/R	Misuse	Possible	Soybean	70 acres
Unknown	I029094-00083	2016	MO	N/R	Misuse	Possible	Soybean	50 acres
Unknown	I029094-00084	2016	MO	N/R	Misuse	Possible	Soybean	200 acres
Unknown	I029094-00085	2016	MO	N/R	Misuse	Possible	Soybean	150 acres
Unknown	I029094-00086	2016	MO	N/R	Misuse	Possible	Soybean	300 acres
Unknown	I029094-00088	2016	MO	N/R	Misuse	Possible	Soybean	80 acres
Unknown	I029094-00089	2016	MO	N/R	Misuse	Possible	Soybean	100 acres
Unknown	I029094-00090	2016	MO	N/R	Misuse	Possible	Soybean	200 acres
Unknown	I029094-00091	2016	MO	N/R	Misuse	Possible	Soybean	700 acres
Unknown	I029094-00092	2016	MO	N/R	Misuse	Possible	Soybean	100 acres
Unknown	I029094-00093	2016	MO	N/R	Misuse	Possible	Soybean	700 acres
Unknown	I029094-00094	2016	MO	N/R	Misuse	Possible	Soybean	400 acres
Unknown	I029094-00095	2016	MO	N/R	Misuse	Possible	Soybean	200 acres
Unknown	I029094-00097	2016	MO	N/R	Misuse	Possible	Soybean	290 acres
Unknown	I029094-00099	2016	MO	N/R	Misuse	Possible	Soybean	95 acres
Unknown	I029094-00102	2016	MO	N/R	Misuse	Possible	Soybean	150 acres
Unknown	I029094-00103	2016	MO	N/R	Misuse	Possible	Soybean	1200 acres
Unknown	I029094-00104	2016	MO	N/R	Misuse	Possible	Soybean	200 acres
Unknown	I029094-00105	2016	MO	N/R	Misuse	Possible	Soybean	500 acres
Unknown	I029094-00107	2016	MO	N/R	Misuse	Possible	Soybean	1000 acres
Unknown	I029094-00108	2016	MO	N/R	Misuse	Possible	Soybean	9 acres
Unknown	I029094-00109	2016	MO	N/R	Misuse	Possible	Soybean	300 acres
Unknown	I029094-00065	2016	MO	N/R	Misuse	Possible	Tomato	100x50 ft. garden

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Unknown	I029094-00081	2016	MO	N/R	Misuse	Possible	Tomato	N/R
Unknown	I029094-00087	2016	MO	N/R	Misuse	Possible	Tomato	N/R
Unknown	I029094-00096	2016	MO	N/R	Misuse	Possible	Unknown shrub	N/R
Unknown	I029094-00096	2016	MO	N/R	Misuse	Possible	Unknown tree	N/R
Unknown	I029094-00096	2016	MO	N/R	Misuse	Possible	Unknown tree	N/R
Unknown	I029094-00065	2016	MO	N/R	Misuse	Possible	Watermelon	N/R
Wheat	I013884-032	1998	WA	N/R	Registered use	Possible	Unknown tree	N/R
Wheat	I013884-040	1998	WA	N/R	Registered use	Possible	N/R	N/R
Wheat	I029787-00001	2015	OR	WeedMaster	Misuse (accidental)	Probable	Unknown shrub	N/R

[1] **Highly probable**: pesticide was confirmed as the cause through residues analysis or other reliable evidence, or the circumstances of the incident along with the knowledge of the pesticide's toxicity or history of previous incidents give strong support that this pesticide was the cause; **Probable**: circumstances of the incident and properties of the pesticide indicate that this pesticide was the cause, but confirming evidence is lacking; **Possible**: the pesticide possibly could have causes the incident, but there are possible explanations that are at least as plausible. Often used when organisms were exposed to more than one pesticide; **Unlikely**: evidence exists that a stressor other than exposure to this pesticide caused the incident, but that evidence is not conclusive; **Unrelated**: conclusive evidence exists that a stressor other than exposure to the given pesticide caused the incident

[2] This incident is from reported use of dimethenamid, atrazine, and dicamba.

N/R- not reported

Table E-2. Diethanolamine Salt (DEA-salt, PC code 029803) Ecological Incidents

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Flora								
Residential	I023639-001	2011	VA	Weed-B-Gon Max Plus Crabgrass Killer	Misuse	Highly probable	Ivy	>45% of ivy
Residential	I024071-350	2012	UT	Weed-B-Gon Max Weed Killer	Undetermined	Possible	Dogwood	1 tree affected
Residential	I024071-350	2012	UT	Weed-B-Gon Max Weed Killer	Undetermined	Possible	Cherry	1 tree affected
Residential	I024071-350	2012	UT	Weed-B-Gon Max Weed Killer	Undetermined	Possible	Plum	1 tree affected

[1] **Highly probable**: pesticide was confirmed as the cause through residues analysis or other reliable evidence, or the circumstances of the incident along with the knowledge of the pesticide's toxicity or history of previous incidents give strong support that this pesticide was the cause; **Probable**: circumstances of the

incident and properties of the pesticide indicate that this pesticide was the cause, but confirming evidence is lacking; **Possible**: the pesticide possibly could have causes the incident, but there are possible explanations that are at least as plausible. Often used when organisms were exposed to more than one pesticide; **Unlikely**: evidence exists that a stressor other than exposure to this pesticide caused the incident, but that evidence is not conclusive; **Unrelated**: conclusive evidence exists that a stressor other than exposure to the given pesticide caused the incident

Table E-3. Diglycoamine salt (DGA-salt, PC code 128931) Ecological Incidents

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Fish								
Wheat	I021704-007	2010	CA	Clarity Herbicide	Undetermined	Possible	Unknown fish	1000 affected
Flora								
Agricultural area	I018984-004	2007	CA	Clarity	Registered use	Possible	Alfalfa	N/R
Agricultural area	I024301-001	2012	MO	Clarity Herbicide	Undetermined	Possible	Soybean	35 acres
Agricultural area	I031377-00004	2018	NE	DiFlexx Herbicide	Registered use	Probable	Corn, field	32 acres
Agricultural area	I031377-00006	2018	NE	DiFlexx Herbicide	Registered use	Possible	Corn, field	140 acres
Agricultural area	I031377-00007	2018	MN	DiFlexx Duo	Registered use	Possible	Corn, field	280 acres
Agricultural area	I032439-00006	2019	IN	DiFlexx Herbicide	Registered use	Probable	Corn	107 acres
Corn	I028344-00001	2015	N/R	DiFlexx Herbicide	Registered use	Possible	Corn, field	120 acres
Corn	I029071-00001	2016	IN	DiFlexx Herbicide	Undetermined	Probable	Corn	5 acres
Corn	I030199-00006	2017	NE	DiFlexx Herbicide	Registered use	Probable	Corn	66 acres
Corn	I030199-00003	2017	WA	DiFlexx Duo	Registered use	Probable	Corn, field	150 acres
Corn	I030199-00008	2017	MN	DiFlexx Herbicide	Registered use	Probable	Corn, field	35 acres
Corn	I032439-00005	2019	NE	DiFlexx Duo	Registered use	Probable	Corn	152 acres
Corn	I032439-00008	2019	NE	DiFlexx	Registered use	Possible	Corn	175 acres
Corn	I032439-00009	2019	NE	DiFlexx	Registered use	Probable	Corn	155 acres
Corn	I032439-00010	2019	SD	DiFlexx	Registered use	Probable	Corn	320 acres
Corn	I032439-00007	2019	NE	DiFlexx Herbicide	Registered use	Probable	Corn, field	6 acres
Corn, field	I028344-00002	2015	N/R	DiFlexx Herbicide	Undetermined	Possible	Corn, field	200 acres

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Corn, field	I029071-00013	2016	MN	DiFlexx Herbicide	Registered use	Probable	Corn	90 acres
Corn, field	I029351-00005	2016	NE	DiFlexx Herbicide	Registered use	Probable	Corn	28 acres
Corn, field	I030199-00001	2017	IA	DiFlexx Herbicide	Registered use	Probable	Corn	500 acres
Corn, field	I030199-00005	2017	NE	DiFlexx Herbicide	Registered use	Probable	Corn	66 acres
N/R	I010837-037	2000	TX	Clarity	Undetermined	Unlikely	Soybean	75.9% of 830 acres
N/R	I022286-037	2010	NM	Clarity	Misuse	Possible	Sorghum	100 of 155 acres
N/R	I023082-037	2011	IA	Sterling Blue	Undetermined	Possible	Corn, field	45 acres
Sorghum	I022217-031	2010	NM	Clarity	Misuse (intentional)	Possible	Sorghum	155 acres
Sorghum	I024431-041	2012	TX	Clarity	Registered Use	Possible	Sorghum	45 acres
Soybean	I007739-001	1998	MN	Clarity	Misuse (accidental)	Probable	Soybean	124 acres
Soybean	I024537-001	2012	MN	Clarity	Undetermined	Possible	Soybean	8 acres
Soybean	I024538-001	2012	IL	Clarity	Undetermined	Possible	Soybean	N/R
Soybean	I026579-001	N/R	MO	N/R	Undetermined	Possible	Soybean	70 acres

N/R- not reported

[1] **Highly probable**: pesticide was confirmed as the cause through residues analysis or other reliable evidence, or the circumstances of the incident along with the knowledge of the pesticide's toxicity or history of previous incidents give strong support that this pesticide was the cause; **Probable**: circumstances of the incident and properties of the pesticide indicate that this pesticide was the cause, but confirming evidence is lacking; **Possible**: the pesticide possibly could have causes the incident, but there are possible explanations that are at least as plausible. Often used when organisms were exposed to more than one pesticide; **Unlikely**: evidence exists that a stressor other than exposure to this pesticide caused the incident, but that evidence is not conclusive; **Unrelated**: conclusive evidence exists that a stressor other than exposure to the given pesticide caused the incident

Table E-4. Dimethylamine salt (DMA-salt, PC code 029802) Ecological Incidents

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Animal								
Tree farm/ plantation	I022068-001	2010	TX	Cimarron Max	Misuse (accidental)	Highly Probable	Unknown animal	1 mile long to 100 yd wide
Fish								
Athletic fields	I003826-017	1994	NC	Trimec	Undetermined	Possible	Unknown fish	Unknown

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Pollinator								
N/R	I029385-00003	2016	IN	Gordon's Trimec Lawn Weed Killer	Undetermined	Unlikely	Honey bee	N/R
Flora								
N/R	I029297-00013	2016	NR	Weed-B-Gon Plus Crabgrass Control Concentrate 2	N/R	N/R	Grass	45%
Agricultural area	I017893-021	2006	CA	Weedar	Misuse (accidental)	Possible	Alfalfa	$49, 999
Conservation reserve	I014415-001	2003	TX	Cimarron Max	Undetermined	Possible	Cotton	75% of 120 acres
Corn	I000360-016	1993	MN	Banvel	Registered Use	Possible	Corn	399 acres
Corn	I010837-021	2000	PA	Banvel	Undetermined	Possible	Corn	All 56 acres
Corn	I030199-00012	2017	IA	Durango DMA	Registered Use	Probable	Corn	40 acres
Corn/soybean	I000663-001	1992	IA	Banvel	Undetermined	Unlikely	Corn	350 acres
Corn/soybean	I000663-001	1992	IA	Banvel	Undetermined	Unlikely	Soybean	350 acres
Fence row	I012452-008	2001	PA	Spectracide Pro	Registered Use	Possible	N/R	6 affected
Garden	I032369-00014	2019	VA	Weed-B-Gon Plus Crabgrass Control Ready-To-Use 2	Undetermined	Probable	Rose	Unknown
Garden	I032369-00008	2019	NJ	Weed-B-Gon Plus Crabgrass Control Ready-To-Spray 2	Misuse (accidental)	Probable	Unknown plant	Unknown
Home/lawn	I000941-072	1994	FL	Weed-B-Gon for South	Registered Use	Probable	Grass	N/R
Home/lawn	I000941-073	1994	FL	Weed-B-Gon for South	Registered Use	Probable	Grass	N/R
Home/lawn	I000941-074	1994	FL	Weed-B-Gon for South	Registered Use	Probable	Grass	N/R
Home/lawn	I000941-077	1994	FL	Weed-B-Gon for South	Registered Use	Probable	Grass	N/R
Home/lawn	I000941-079	1994	FL	Weed-B-Gon for South	Registered Use	Probable	Grass	N/R
Home/lawn	I000941-080	1994	FL	Weed-B-Gon for South	Registered Use	Probable	Grass	N/R
Home/lawn	I000941-082	1994	FL	Weed-B-Gon for South	Registered Use	Probable	Grass	N/R
Home/lawn	I000941-084	1994	FL	Weed-B-Gon for South	Registered Use	Probable	Grass	N/R
Home/lawn	I000941-085	1994	FL	Weed-B-Gon for South	Registered Use	Probable	Grass	N/R
Home/lawn	I007340-621	1998	TX	Gordon's Trimec	Undetermined	Possible	Grass	N/R
Home/lawn	I007340-652	1998	FL	Gordon's Trimec	Undetermined	Possible	Grass	Lawn

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Home/lawn	I009262-073	1999	FL	Weed-B-Gon Lawn Weed	Undetermined	Probable	Grass	N/R
Home/lawn	I009262-077	1999	FL	Weed-B-Gon Lawn Weed	Registered Use	Probable	Grass	N/R
Home/lawn	I009262-080	1999	VA	Weed-B-Gon Lawn Weed	Undetermined	Probable	Grass	N/R
Home/lawn	I009262-081	1999	IL	Weed-B-Gon Lawn Weed	Registered Use	Probable	Grass	N/R
Home/lawn	I009262-082	1999	FL	Weed-B-Gon Lawn Weed	Misuse (accidental)	Highly Probable	Grass	N/R
Home/lawn	I009262-083	1999	VA	Weed-B-Gon Lawn Weed	Misuse (accidental)	Highly Probable	Grass	N/R
Home/lawn	I009262-084	1999	GA	Weed-B-Gon Lawn Weed	Misuse (accidental)	Probable	Grass	All spots treated
Home/lawn	I009262-085	1999	FL	Weed-B-Gon Lawn Weed	Undetermined	Probable	Grass	N/R
Home/lawn	I009262-086	1999	CA	Weed-B-Gon Lawn Weed	Undetermined	Probable	Grass	Unknown
Home/lawn	I009262-087	1999	IA	Weed-B-Gon Lawn Weed	Registered Use	Probable	Grass	Unknown
Home/lawn	I009262-103	1999	FL	Weed-B-Gon So. Lawns	Misuse (accidental)	Probable	Grass	N/R
Home/lawn	I009262-123	1999	FL	Weed-B-Gon Lawn Weed	Undetermined	Probable	Grass	300 SQ FT
Home/lawn	I009262-124	1999	CA	Weed-B-Gon Lawn Weed	Registered Use	Possible	Grass	Unknown
Home/lawn	I009262-079	1999	FL	Weed-B-Gon Lawn Weed	Misuse (accidental)	Probable	Rose	Unknown
Home/lawn	I009262-075	1999	FL	Weed-B-Gon Lawn Weed	Registered Use	Probable	St. Augustine grass	75% of lawn
Home/lawn	I009262-074	1999	FL	Weed-B-Gon Lawn Weed	Undetermined	Probable	N/R	N/R
Home/lawn	I009262-079	1999	FL	Weed-B-Gon Lawn Weed	Misuse (accidental)	Probable	N/R	Unknown
Home/lawn	I009262-088	1999	NJ	Weed-B-Gon Lawn Weed	Misuse (accidental)	Probable	N/R	Unknown
Home/lawn	I009786-014	2000	FL	Weed-B-Gon Lawn Weed	Registered Use	Probable	Grass	60% of lawn
Home/lawn	I009786-015	2000	FL	Weed-B-Gon Lawn Weed	Registered Use	Probable	Grass	50 to 60% of lawn
Home/lawn	I009786-016	2000	FL	Weed-B-Gon Lawn Weed	Registered Use	Probable	Grass	80% of lawn
Home/lawn	I009786-017	2000	FL	Weed-B-Gon Lawn Weed	Registered Use	Possible	Grass	Unknown

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Home/lawn	I009786-018	2000	FL	Weed-B-Gon Lawn Weed	Registered Use	Probable	Grass	Where applied
Home/lawn	I009916-017	2000	FL	Bonus S Weed & Feed	Registered Use	Probable	Grass	95% of lawn
Home/lawn	I009916-018	2000	FL	Weed-B-Gon Lawn Weed	Registered Use	Probable	Grass	Unknown
Home/lawn	I009916-019	2000	FL	Weed-B-Gon Lawn Weed	Undetermined	Possible	Grass	Unknown
Home/lawn	I009916-020	2000	FL	Weed-B-Gon Lawn Weed	Undetermined	Probable	Grass	90% of lawn
Home/lawn	I010017-013	2000	FL	Weed-B-Gon Lawn Weed	Registered Use	Probable	Grass	80% of the lawn
Home/lawn	I010017-014	2000	FL	Weed-B-Gon Lawn Weed	Registered Use	Probable	Grass	50% of lawn
Lawn	I021781-001	2009	NE	Provoz Vessel	Registered Use	Possible	Grape	1 acre
N/R	I029297-00003	2016	NR	Weed-B-Gon Max Plus Crabgrass Control	Undetermined	Possible	Grass	45%
N/R	I029297-00005	2016	NR	Weed-B-Gon Plus Crabgrass Control Concentrate 2	Undetermined	Possible	Grass	100%
N/R	I029297-00008	2016	NR	Weed-B-Gon Plus Crabgrass Control Concentrate 2	Undetermined	Possible	Grass	100%
N/R	I029297-00011	2016	NR	Ortho Weed-B-Gon Plus Crabgrass Control Concentrate 2	N/R	N/R	Grass	45%
N/R	I029297-00017	2016	NR	Weed-B-Gon Plus Crabgrass Control Concentrate 2	Undetermined	Possible	Grass	45%
N/R	I029297-00018	2016	NR	Weed-B-Gon Plus Crabgrass Control Concentrate 2	Undetermined	Possible	Grass	100%
N/R	I029297-00019	2016	NR	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Spray 2	Undetermined	Possible	Grass	65%
N/R	I029297-00023	2016	NR	Ortho Weed-B-Gon Plus Crabgrass Control Concentrate 2	Undetermined	Possible	Grass	45%
N/R	I029297-00026	2016	NR	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Spray 2	Undetermined	Possible	Grass	45%
N/R	I029297-00029	2016	NR	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Spray 2	N/R	N/R	Grass	45%

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
N/R	I029297-00032	2016	NR	Weed-B-Gon Plus Crabgrass Control Concentrate 2	N/R	N/R	Grass	45% lawn
N/R	I029493-00005	2016	CA	Ortho Weed-B-Gon Plus Crabgrass Control Concentrate 2	N/R	N/R	Grass	100%
Ornamental	I023931-075	2012	TN	Weed-B-Gon Weed Killer / Lawn	Undetermined	Possible	N/R	>45%
Residential	I024272-170	2012	MO	Weed-B-Gon Max Weed Killer	Undetermined	Possible	Bean	>45%
Residential	I024216-037	2012	MA	Weed-B-Gon Max Plus Crabgrass	Undetermined	Possible	Cherry	1 affected
Residential	I024071-364	2012	IL	Weed-B-Gon Weed Killer	Undetermined	Possible	Hydrangea	3 affected
Residential	I024179-115	2012	MI	Weed-B-Gon Max Plus Crabgrass Control	Undetermined	Possible	Maple	1 tree
Residential	I024179-177	2012	MN	Weed-B-Gon Max Weed Killer	Undetermined	Possible	Oak	1 tree
Residential	I024179-313	2012	KY	Weed-B-Gon Weed Killer for Lawn	Registered Use	Possible	Plum	1 tree
Residential	I024272-234	2012	MO	Weed-B-Gon Weed Killer for Lawn	Undetermined	Possible	Tomato	>45% tomato
Residential	I024272-340	2012	MD	Weed-B-Gon Max Weed Killer	Undetermined	Possible	Unknown plant	45% of plants
Residential	I023832-026	2012	TX	Weed-B-Gon Max Weed Killer	Undetermined	Possible	Unknown tree	1 affected
Residential	I024106-023	2012	IL	Weed-B-Gon Max Plus Crabgrass Control	Undetermined	Possible	Unknown tree	Some
Residential	I024106-033	2012	TX	Weed-B-Gon Max Plus Crabgrass Control	Undetermined	Possible	Unknown tree	>45% of trees
Residential	I024179-104	2012	GA	Weed-B-Gon Weed Killer for Lawn	Undetermined	Possible	Unknown tree	1 tree
Residential	I024179-243	2012	WI	Weed-B-Gon Weed Killer for Lawn	Undetermined	Possible	Unknown tree	1 tree
Residential	I024179-340	2012	IL	Weed-B-Gon Max Plus Crabgrass Control	Undetermined	Possible	Unknown tree	1 damage
Residential	I024421-014	2012	VA	Weed-B-Gon Max Plus Crabgrass	Undetermined	Possible	Unknown tree	>45%
Residential	I023832-011	2012	CA	WBG Max Weed Killer RTU	Undetermined	Possible	N/R	> 45%
Residential	I024071-326	2012	MO	Weed-B-Gon Max Weed Killer	Undetermined	Possible	N/R	6 affected

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Residential	I024071-335	2012	IL	Weed-B-Gon Max Weed Killer	Undetermined	Possible	N/R	>45% of plants
Residential	I024106-022	2012	IL	Weed-B-Gon Max Plus Crabgrass Control	Undetermined	Possible	N/R	>45% of plants
Residential	I024106-023	2012	IL	Weed-B-Gon Max Plus Crabgrass Control	Undetermined	Possible	N/R	>45% of plants
Residential	I024179-217	2012	MA	Weed-B-Gon Max Weed Killer	Undetermined	Possible	N/R	1 bed
Residential	I024179-257	2012	WY	Weed-B-Gon Max Weed Killer	Undetermined	Possible	N/R	>45% trees
Residential	I024272-164	2012	NY	Weed-B-Gon Max Weed Killer	Undetermined	Possible	N/R	>45% bushes
Residential	I024272-170	2012	MO	Weed-B-Gon Max Weed Killer	Undetermined	Possible	N/R	>45% plants
Residential	I024272-178	2012	OH	Weed-B-Gon Max Weed Killer	Undetermined	Possible	N/R	>45% plants
Residential	I024272-339	2012	NY	Weed-B-Gon Max Weed Killer	Undetermined	Possible	N/R	45%
Residential	I024309-009	2012	MS	Weed-B-Gon Max Plus Crabgrass	Undetermined	Possible	N/R	>45% flower
Residential	I024309-015	2012	CA	Weed-B-Gon Max Plus Crabgrass	Undetermined	Possible	N/R	>45% of flowers
Residential	I024309-021	2012	NC	Weed-B-Gon Max Plus Crabgrass	Undetermined	Possible	N/R	>45% shrub
Residential	I024309-021	2012	NC	Weed-B-Gon Max Plus Crabgrass	Undetermined	Possible	N/R	>45% flowers
Residential	I024421-006	2012	CA	Weed-B-Gon Max Plus Crabgrass	Undetermined	Possible	N/R	>45% plants
Residential	I024272-320	2012	NY	Weed-B-Gon Max Weed Killer	Undetermined	Possible	Hydrangea	>45% plants
Residential	I024272-320	2012	NY	Weed-B-Gon Max Weed Killer	Undetermined	Possible	Unknown plant	0.45%
Tree farm/ plantation	I022068-001	2010	TX	Cimarron Max	Misuse (accidental)	Highly Probable	Unknown plant	1 mi lg to 100 yd w
Turf, residential	I029297-00010	2016	NR	Weed-B-Gon Plus Crabgrass Control Concentrate 2	Registered Use	Possible	Grass	45%
Turf, residential	I029297-00014	2016	NR	Weed-B-Gon Plus Crabgrass Control Concentrate 2	Registered Use	Possible	Grass	N/R
Turf, residential	I029297-00027	2016	NR	Weed-B-Gon Plus Crabgrass Control Concentrate 2	Undetermined	Possible	Grass	45%

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Turf, residential	I029297-00028	2016	NR	Weed-B-Gon Plus Crabgrass Control Concentrate 2	Registered Use	Possible	Grass	100%
Turf, residential	I029297-00030	2016	NR	Weed-B-Gon Plus Crabgrass Control Concentrate 2	Registered Use	Possible	Grass	45%
Turf, residential	I029297-00031	2016	NR	Weed-B-Gon Plus Crabgrass Control Concentrate 2	Registered Use	Possible	Grass	45% lawn
Turf, residential	I029297-00033	2016	NR	Weed-B-Gon Plus Crabgrass Control Concentrate 2	Registered Use	Possible	Grass	45% lawn
Turf, residential	I029601-00007	2016	TX	Ortho Weed-B-Gon Max Ready Spray	Registered Use	Possible	Unknown tree	1 affected
Unknown	I032369-00010	2019	CO	Weed-B-Gon Plus Crabgrass Control Ready-To-Spray 2	Undetermined	Probable	Unknown tree	1 affected

N/R- not reported

[1] **Highly probable**: pesticide was confirmed as the cause through residues analysis or other reliable evidence, or the circumstances of the incident along with the knowledge of the pesticide's toxicity or history of previous incidents give strong support that this pesticide was the cause; **Probable**: circumstances of the incident and properties of the pesticide indicate that this pesticide was the cause, but confirming evidence is lacking; **Possible**: the pesticide possibly could have causes the incident, but there are possible explanations that are at least as plausible. Often used when organisms were exposed to more than one pesticide; **Unlikely**: evidence exists that a stressor other than exposure to this pesticide caused the incident, but that evidence is not conclusive; **Unrelated**: conclusive evidence exists that a stressor other than exposure to the given pesticide caused the incident

Table E-5. Potassium salt (K-salt, PC code 129043) Ecological Incidents

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species Affected	Magnitude/ Other Notes
Flora								
Agricultural Area	I010274-002	2000	WI	Marksman	Undetermined	Possible	Perch	2000 fish
Fish								
Corn	I012525-001	2001	IN	Marksman	Registered use	Possible	Corn	246 acres
Corn, field	I014702-048	2003	IN	Marksman	Registered Use	Probable	Corn, field	130 of 228 acres

[1] **Highly probable**: pesticide was confirmed as the cause through residues analysis or other reliable evidence, or the circumstances of the incident along with the knowledge of the pesticide's toxicity or history of previous incidents give strong support that this pesticide was the cause; **Probable**: circumstances of the incident and properties of the pesticide indicate that this pesticide was the cause, but confirming evidence is lacking; **Possible**: the pesticide possibly could have causes the incident, but there are possible explanations that are at least as plausible. Often used when organisms were exposed to more than one

pesticide; **Unlikely**: evidence exists that a stressor other than exposure to this pesticide caused the incident, but that evidence is not conclusive; **Unrelated**: conclusive evidence exists that a stressor other than exposure to the given pesticide caused the incident

Table E-6. Sodium salt (Na-salt, PC code 029806) Ecological Incidents

Use Site	Incident Number	Year	State	Product	Legality	Certainty Index[1]	Species	Magnitude/ Other Notes
Flora								
Corn	I016904-001	2005	ND	Distinct	Registered Use	Unlikely	Corn	150 acres
Corn	I016814-001	2005	IL	Northstar Herbicide	Registered Use	Unlikely	Corn	10-30 acres
Corn	I014597-036	N/R	ND	Northstar Custom Pack	Registered Use	Possible	Corn	150 acres
Corn, field	I017603-001	2006	KS	BASF Distinct Herbicide	Undetermined	Possible	Corn	30 acres
Corn, field	I022286-047	2010	PA	Status	Undetermined	Possible	Corn	45 acres
Corn, field	I022082-029	2010	IA	Status	Undetermined	Possible	Corn, field	36 acres
Corn, field	I028250-00021	2014	N/R	Northstar Herbicide	Registered Use	Possible	Corn, field	125 acres
Corn, field	I028344-00001	2015	N/R	Status Herbicide	Registered Use	Possible	Corn, field	120 acres
Hay	I009573-042	1999	TX	Rave	Registered Use	Probable	N/R	133 acres
N/R	I013554-042	2001	IA	Northstar	Misuse	Probable	Soybean	110 acres
N/R	I013554-041	2001	MN	Northstar	Undetermined	Probable	Soybean	40 acres
N/R	I013554-046	2002	SD	Northstar	Misuse	Probable	Sorghum	68 acres
N/R	I013554-050	2002	IA	Northstar	Misuse	Probable	Soybean	480 acres
N/R	I013554-051	2002	MN	Northstar	Misuse	Probable	Soybean	112 acres
N/R	I013554-044	2002	KS	Northstar	Undetermined	Probable	Soybean	40 acres
N/R	I013554-048	2002	WI	Northstar	Misuse	Probable	Soybean	65 acres
N/R	I013554-047	2002	IL	Northstar	Misuse	Probable	Soybean	160 acres
N/R	I013554-049	2002	MN	Northstar	Undetermined	Probable	Soybean	30 acres
N/R	I013554-045	2002	MI	Northstar	Undetermined	Probable	Sugar beet	36 acres
N/R	I013554-043	2002	MI	Northstar	Undetermined	Possible	Sugar beet	120 acres
N/R	I028344-00001	2015	N/R	Status Herbicide	N/R	N/R	Corn, field	120 acres
Soybeans	I014597-035	2003	MI	Northstar Custom Pack	Misuse	Probable	Soybean	300 acres
Sugar beets	I014597-037	2003	MI	Northstar Custom Pack	Misuse	Probable	Sugar beet	43 acres

N/R- not reported

[1] **Highly probable**: pesticide was confirmed as the cause through residues analysis or other reliable evidence, or the circumstances of the incident along with the knowledge of the pesticide's toxicity or history of previous incidents give strong support that this pesticide was the cause; **Probable**: circumstances of the incident and properties of the pesticide indicate that this pesticide was the cause, but confirming evidence is lacking; **Possible**: the pesticide possibly could have causes the incident, but there are possible explanations that are at least as plausible. Often used when organisms were exposed to more than one pesticide; **Unlikely**: evidence exists that a stressor other than exposure to this pesticide caused the incident, but that evidence is not conclusive; **Unrelated**: conclusive evidence exists that a stressor other than exposure to the given pesticide caused the incident

Table E-7. Dicamba acid (dicamba, PC code 029801) Aggregate Incidents

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
003620 - 00204	002217-00660-000239	Weed-B-Gon Xtra Green	031501, 030001, 029801	Mecoprop, dichlorophenoxyacetic acid, dicamba (ANSI)	5/1/1996	5/31/1996	0	4	0
004197 - 00215	002217-00660-000239	Weed-B-Gon Xtra Green	031501, 029801, 030001	Mecoprop, dicamba (ANSI), dichlorophenoxyacetic acid	8/1/1996	8/31/1996	0	7	0
004417 - 00123	002217-00660-000239	Weed-B-Gon Xtra Green	029801, 030001, 031501	Dicamba (ANSI), dichlorophenoxyacetic acid, mecoprop	9/1/1996	9/30/1996	0	1	0
004417 - 00121	002217-00660-000239	Weed-B-Gon Xtra Green	031501, 030001, 029801	Mecoprop, dichlorophenoxyacetic acid, dicamba (ANSI)	9/1/1996	9/30/1996	0	1	0
004558 - 00120	002217-00660-000239	Weed-B-Gon Xtra Green	029801, 030001, 031501	Dicamba (ANSI), dichlorophenoxyacetic acid, mecoprop	10/1/1996	10/31/1996	0	1	0
005299 - 00189	002217-00660-000239	Weed-B-Gon Xtra Green	031501, 030001, 029801	Mecoprop, dichlorophenoxyacetic acid, dicamba (ANSI)	4/1/1997	4/30/1997	0	1	0
005672 - 00232	002217-00660-000239	Weed-B-Gon Xtra Green	029801, 031501, 030001	Dicamba (ANSI), mecoprop, dichlorophenoxyacetic acid	6/1/1997	6/30/1997	0	3	0
005916 - 00247	002217-00660-000239	Weed-B-Gon Xtra Green	030001, 029801, 031501	Dichlorophenoxyacetic acid, dicamba (ANSI), mecoprop	7/1/1997	7/31/1997	0	1	0
006165 - 00182	002217-00660-000239	Weed-B-Gon Xtra Green	030001, 031501, 029801	Dichlorophenoxyacetic acid, Mecoprop, dicamba (ANSI)	9/1/1997	9/30/1997	0	1	0
007898 - 00002	N/R	Banvel	029801	Banvel	6/1/1998	10/31/1998	0	1	1
007957 - 00014	000538-00175	Weed & Feed (Club)	030001, 031501 029801	Dichlorophenoxyacetic acid, mecoprop, dicamba (ANSI)	6/16/1998	9/13/1998	0	4	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
007957 - 00010	000538-00009	Lawn Weed Control	029801, 030001	Dicamba (ANSI), dichlorophenoxyacetic acid	6/16/1998	9/13/1998	0	1	0
007957 - 00008	000538-00175	Step 2	030001, 029801 031501	Dichlorophenoxyacetic acid, dicamba (ANSI), mecoprop	6/16/1998	9/13/1998	0	19	0
007957 - 00003	000538-00175-062355	Miracle-Gro Weed & Feed	029801, 030001, 031501	Dicamba (ANSI), dichlorophenoxyacetic acid, mecoprop	6/16/1998	9/13/1998	0	23	0
007932 - 00005	000264-00415	Weedone Super D Pro Amine Herbicide	030016, 029801	Diethanolamine (2,4-dichlorophenoxy)acetate, dicamba (ANSI)	6/16/1998	9/30/1998	0	1	0
008050 - 00105	002217-00660-000239	Weed-B-Gon Xtra Green	031501, 030001, 029801	Mecoprop, dichlorophenoxyacetic acid, dicamba (ANSI)	7/1/1998	9/30/1998	0	1	0
008050 - 00050	002217-00660-000239	Weed-B-Gon Xtra Green	029801, 031501, 030001	Dicamba (ANSI), mecoprop, dichlorophenoxyacetic acid	7/1/1998	9/30/1998	0	1	0
008254 - 00007	000538-00175	Step 2	031501, 030001, 029801	Mecoprop, dichlorophenoxyacetic acid, dicamba (ANSI)	9/14/1998	11/30/1998	0	1	0
008254 - 00006	000538-00175	Super Winterizer Plus 2	030001, 029801, 031501	Dichlorophenoxyacetic acid, dicamba (ANSI), mecoprop	9/14/1998	11/30/1998	0	2	0
008554 - 00006	000538-00175	Weed & Feed for Lawns	030001, 031501, 029801	Dichlorophenoxyacetic acid, mecoprop, dicamba (ANSI)	12/1/1998	2/28/1999	0	1	0
009861 - 00012	N/R	Unknown M, Dichloroprop & dicamba Product	030501, 029801, 031401	MCPA, dicamba (ANSI), dichlorprop	1/1/1999	12/31/1999	0	1	0
008977 - 00015	000538-00175	Step 2 Weed Control Plus Fertilizer	031501, 029801, 030001	Mecoprop, dicamba (ANSI), dichlorophenoxyacetic acid	3/1/1999	5/31/1999	0	33	0
008977 - 00013	002217-00660-000538	Weed & Feed (Sold to Membership Clubs)	031501, 030001, 029801	Mecoprop, dichlorophenoxyacetic acid, dicamba (ANSI)	3/1/1999	5/31/1999	0	1	0
008964 - 00006	000228-00317	Cool Power	030564, 029801, 116004	MCPA, 2-ethylhexyl ester, dicamba (ANSI), butoxyethyl triclopyr	3/1/1999	5/31/1999	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
009445 - 00113	002217-00660-000538	Weed & Feed (Sold to Membership Clubs)	031501, 030001, 029801	Mecoprop, dichlorophenoxyacetic acid, dicamba (ANSI)	6/1/1999	8/31/1999	0	1	0
009445 - 00108	000538-00175	Step 2 Weed Control Plus Fertilizer	030001, 029801, 031501	Dichlorophenoxyacetic acid, dicamba (ANSI), mecoprop	6/1/1999	8/31/1999	0	35	0
009445 - 00106	000538-00009	Lawn Weed Control	029801, 030001	Dicamba (ANSI), dichlorophenoxyacetic acid	6/1/1999	8/31/1999	0	1	0
009167 - 00008	007969-00148	Optil	029801, 129051	Dicamba (ANSI), dimethenamid	7/9/1999	8/31/1999	0	1	0
009727 - 00006	002217-00819	Parker's Premium Weed & Feed	029801, 030001, 031501	Dicamba (ANSI), dichlorophenoxyacetic acid, mecoprop	9/1/1999	11/30/1999	0	1	0
009786 - 00021	000538-00175	Step 2 Weed Control Plus Fertilizer	030001, 029801, 031501	Dichlorophenoxyacetic acid, dicamba (ANSI), mecoprop	9/1/1999	11/30/1999	0	1	0
010419 - 00009	002217-00660-000538	Scotts Weed and Feed 22-3-3	031501, 029801, 030001	Mecoprop, dicamba (ANSI), dichlorophenoxyacetic acid	3/1/2000	5/31/2000	0	5	0
010490 - 00268	000538-00175	Lawn Pro Weed and Feed/Step 2 Weed Control Plus Fertilizer	029801, 030001, 031501	Dicamba (ANSI), dichlorophenoxyacetic acid, mecoprop	3/1/2000	5/31/2000	0	11	0
010800 - 00103	000538-00175	Lawn Pro Weed and Feed	029801, 030001, 031501	Dicamba (ANSI), dichlorophenoxyacetic acid, mecoprop	6/1/2000	8/31/2000	0	23	0
010727 - 00009	002217-00660-000538	Scotts Landscaper Lawn Fertilizer with Weed Control	031501, 029801, 030001	Mecoprop, dicamba (ANSI), dichlorophenoxyacetic acid	6/1/2000	8/31/2000	0	2	0
011094 - 00032	000538-00175	Step 2 Weed Control Plus Fertilizer	031501, 030001, 029801	Mecoprop, dichlorophenoxyacetic acid, dicamba (ANSI)	9/1/2000	11/30/2000	0	1	0
011094 - 00029	000538-00175-062355	Miracle-Gro Lawn Food Plus Weed Control	030001, 031501, 029801	Dichlorophenoxyacetic acid, mecoprop, dicamba (ANSI)	9/1/2000	11/30/2000	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
011545 - 00186	N/R	Weed-B-Gon Lawn Weed Killer2	031501, 030001, 029801	Mecoprop, 2,4-D, dicamba (ANSI)	1/1/2001	3/31/2001	0	2	0
011545 - 00185	N/R	Weed B-Gon For Southern Lawns Formula II	030001, 031501, 029801	2,4-D, mecoprop, dicamba (ANSI)	1/1/2001	3/31/2001	0	1	0
012530 - 00002	000228-00317	Riverdale Cool Power	116004, 029801, 030564	Butoxyethyl triclopyr, dicamba (ANSI), MCPA, 2-ethylhexyl ester	4/1/2001	6/30/2001	0	1	0
011944 - 00580	000538-00009	Lawn Weed Control	029801, 030001	Dicamba (ANSI), dichlorophenoxyacetic acid	4/1/2001	6/30/2001	0	1	0
011944 - 00565	000538-00175	Lawn Pro Weed & Feed/Lawn Pro Step 2	031501, 030001, 029801	Mecoprop, dichlorophenoxyacetic acid, dicamba (ANSI)	4/1/2001	6/30/2001	1	32	0
011944 - 00524	002217-00660-000538	Weed and Feed/Poly-S Weed & Feed North	030001, 029801, 031501	Dichlorophenoxyacetic acid, dicamba (ANSI), mecoprop	4/1/2001	6/30/2001	0	1	0
012193 - 00064	009688-00138	Chemsico Brush Killer Concentrate	031463, 030063, 029801	Isooctyl 2-(2,4-dichlorophenoxy)propionate, acetic acid, (2,4-Dichlorophenoxy)-, 2-ethylhexyl ester, dicamba (ANSI)	7/1/2001	9/30/2001	0	1	0
012391 - 00014	007969-00148	Optill Herbicide	129051, 029801	Dimethenamid, dicamba (ANSI)	7/1/2001	10/31/2001	0	1	0
012339 - 00254	000538-00175	Lawn Pro Step 2	029801, 031501, 030001	Dicamba (ANSI), mecoprop, dichlorophenoxyacetic acid	7/1/2001	9/30/2001	0	29	0
012339 - 00253	000538-00175	Lawn Pro Weed & Feed	031501, 029801, 030001	Mecoprop, dicamba (ANSI), dichlorophenoxyacetic acid	7/1/2001	9/30/2001	0	2	0
013056 - 00018	002217-00819-008660	Vigoro Weed and Feed 28-3-3	031501, 029801, 030001	Mecoprop, dicamba (ANSI), dichlorophenoxyacetic acid	3/31/2002	5/31/2002	0	1	0
013243 - 00400	000538-00175	Lawn Pro Step 2	129046, 030001, 029801	Mecoprop-P, dichlorophenoxyacetic acid, dicamba (ANSI)	4/1/2002	6/30/2002	0	7	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
013243 - 00399	000538-00175	Lawn Pro Step 2	029801, 030001, 129046	Dicamba (ANSI), dichlorophenoxyacetic acid, mecoprop-P	4/1/2002	6/30/2002	0	7	0
013307 - 00004	002217-00819-008660	Superfine Sears Hardware Stores Lawn Weed & Feed	031501, 030001, 029801	Mecoprop, dichlorophenoxyacetic acid, dicamba (ANSI)	6/1/2002	8/31/2002	0	7	0
013510 - 00305	000538-00175	Lawn Pro Step 2	129046, 029801, 030001	Mecoprop-P, dicamba (ANSI), dichlorophenoxyacetic acid	7/1/2002	9/30/2002	0	12	0
013690 - 00012	002217-00835	Speedzone St. Augustine Formula Broadleaf Herbicide	029801, 129046, 128712, 030063	Dicamba, mecoprop-P, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester	9/1/2002	11/30/2002	0	24	0
013794 - 00063	000538-00175	Lawn Pro Step 2	030001, 129046, 029801	Dichlorophenoxyacetic acid, mecoprop-P, dicamba (ANSI)	10/1/2002	12/31/2002	0	2	0
014028 - 00266	000538-00175	Lawn Pro Step 2	129046, 030001, 029801	Mecoprop-P, dichlorophenoxyacetic acid, dicamba (ANSI)	1/1/2003	3/31/2003	0	1	0
014283 - 00059	002217-00579-072155	Triple Action Lawn Fertilizer Plus Weed Control (16 Lb)	030001, 029801, 031501	Dichlorophenoxyacetic acid, dicamba (ANSI), mecoprop	4/1/2003	6/30/2003	0	14	0
014317 - 00684	000538-00175	Lawn Pro Step 2	030001, 029801, 129046	Dichlorophenoxyacetic acid, dicamba (ANSI), mecoprop-P	4/1/2003	6/30/2003	0	10	0
014317 - 00623	002217-00660-062355	Lawn Fertilizer Plus Weed Control	129046, 029801, 030001	Mecoprop-P, dicamba (ANSI), dichlorophenoxyacetic acid	4/1/2003	6/30/2003	0	29	0
014317 - 00622	002217-00660-000538	Weed and Feed	030001, 129046, 029801	Dichlorophenoxyacetic acid, mecoprop-P, dicamba (ANSI)	4/1/2003	6/30/2003	0	1	0
014620 - 00049	002217-00579-072155	Lawn Fertilizer & Weed Control	029801, 030001, 031501	Dicamba (ANSI), dichlorophenoxyacetic acid, mecoprop	7/1/2003	9/3/2003	0	14	0
014644 - 00118	N/R	2,4-D, MCPP & dicamba	031501, 030001, 029801	MCPP, 2,4-D, dicamba (ANSI)	7/1/2003	9/30/2003	0	3	0
014644 - 00291	000538-00175	Super Plus 2 For Grass	129046, 029801, 030001	Mecoprop-P, dicamba (ANSI), dichlorophenoxyacetic acid	7/1/2003	9/30/2003	0	13	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
014644 - 00232	002217-00660-062355	Lawn Fertilizer Plus Weed Control	029801, 030001, 129046	Dicamba (ANSI), dichlorophenoxyacetic acid, mecoprop-P	7/1/2003	9/30/2003	0	9	0
014644 - 00231	002217-00660-000538	Weed & Feed	129046, 029801, 030001	Mecoprop-P, dicamba (ANSI), dichlorophenoxyacetic acid	7/1/2003	9/30/2003	0	1	0
014868 - 00122	000538-00175	Lawn Pro Step 2	129046, 030001, 029801	Mecoprop-P, dichlorophenoxyacetic acid, dicamba (ANSI)	10/3/2003	12/3/2003	0	1	0
015045 - 00002	002217-00579-072155	Winterizer Fertilizer & Weed Control	031501, 030001, 029801	Mecoprop, dichlorophenoxyacetic acid, dicamba (ANSI)	1/1/2004	3/31/2004	0	2	0
015405 - 00027	002217-00579-072155	Lawn Fertilizer & Weed Control	129046, 029801, 030001	(+)-(R)-2-(4-Chloro-2-methylphenoxy)propanoic acid, dicamba, 2,4-D	4/1/2004	6/30/2004	0	14	0
015419 - 00684	000538-00175	Lawn Pro Step 2	030001, 129046, 029801	2,4-D, (+)-(R)-2-(4-Chloro-2-methylphenoxy)propanoic acid, dicamba	4/1/2004	6/30/2004	1	7	0
015521 - 00032	N/R	2,4-D, MCPP & dicamba	029801, 031501, 030001	Dicamba, MCPP, 2,4-D	4/1/2004	6/30/2004	0	9	0
015680 - 00027	002217-00579-072155	Lawn Fertilizer with Weed Control	029801, 030001, 129046	Dicamba, 2,4-D, (+)-(R)-2-(4-Chloro-2-methylphenoxy)propanoic acid	7/1/2004	9/30/2004	0	12	0
015714 - 00331	N/R	2,4-D, MCPP & dicamba	031501, 029801, 030001	MCPP, dicamba, 2,4-D	7/1/2004	9/30/2004	0	9	0
015714 - 00323	N/R	Killex Lawn Weed Killer	029801, 030001, 031501	Dicamba, 2,4-D, MCPP	7/1/2004	9/30/2004	0	9	0
015714 - 00300	000538-00175	Lawn Pro Step 2	129046, 030001, 029801	(+)-(R)-2-(4-Chloro-2-methylphenoxy)propanoic acid, 2,4-D, dicamba	7/1/2004	9/30/2004	0	18	0
015974 - 00151	000538-00175	Lawn Pro Step 2	029801, 030001, 129046	Dicamba, 2,4-D, (+)-(R)-2-(4-Chloro-2-methylphenoxy)propanoic acid	10/1/2004	12/31/2004	0	2	0

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015974 - 00112	N/R	2,4-D, MCPP and dicamba	031501, 029801, 030001	MCPP, dicamba, 2,4-D	10/1/2004	12/31/2004	0	1	0
016065 - 00001	042750-00068	Outlaw	030063, 029801	2,4-D, 2-ethylhexyl ester, dicamba	11/1/2004	3/21/2005	0	1	0
016270 - 00419	000538-00175	Lawn Pro Step 2	029801, 129046, 030001	Dicamba, (+)-(R)-2-(4-Chloro-2-methylphenoxy)propanoic acid, 2,4-D	1/1/2005	3/31/2005	0	1	0
016530 - 00835	N/R	Killex Liquid Weed Killer	031501, 029801, 030001	MCPP, dicamba, 2,4-D	4/1/2005	6/30/2005	0	19	0
016530 - 00807	000538-00175	Lawn Pro Step 2	030001, 129046, 029801	2,4-D, mecoprop-P, dicamba,	4/1/2005	6/30/2005	0	36	0
016530 - 00746	002217-00660-000538	Phosphorus-Free Lawn Fertilizer with Weed Control	029801, 030001, 129046	Dicamba, 2,4-D, mecoprop-P	4/1/2005	6/30/2005	0	7	0
016603 - 00013	002217-00833	Speedzone Broadleaf Herbicide	128712, 129046, 029801, 030063	Carfentrazone-ethyl, mecoprop-P, dicamba, 2,4-D, 2-ethylhexyl ester	4/1/2005	6/30/2005	0	2	0
016603 - 00009	002217-00660	Gordon's Trimec Weed & Feed 33 1/2	030001, 129046, 029801	2,4-D, mecoprop-P, dicamba	4/1/2005	6/30/2005	0	49	0
016965 - 00014	002217-00833	Speedzone Broadleaf Herbicide	129046, 030063, 128712, 029801	Mecoprop-P, 2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl, dicamba	7/1/2005	9/30/2005	0	1	1
016965 - 00009	002217-00660-062335	Scotts Lawn Fertilizer Plus Weed Control	030001, 129046, 029801	2,4-D, mecoprop-P, dicamba,	7/1/2005	9/30/2005	0	5	0
016885 - 00123	N/R	2,4-D & MCPP & dicamba (Canada)	031501, 030001, 029801	MCPP, 2,4-D, dicamba	7/1/2005	9/30/2005	0	13	0
016885 - 00344	000538-00009	Lawn Weed Control	029801, 030001	Dicamba, 2-4,D	7/1/2005	9/30/2005	0	1	0
016885 - 00323	000538-00175	Lawn Pro Step 2	129046, 029801, 030001	Mecoprop-P, dicamba, 2,4-D	7/1/2005	9/30/2005	0	12	0

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017068 - 00031	009688-00138	Chemsico Brush Killer Concentrate	031465, 030063, 029801	2-Ethylhexyl (R)-2-(2,4-dichlorophenoxy)propionate, 2,4-D, 2-ethylhexyl ester, dicamba	10/1/2005	12/31/2005	0	1	0
017391 - 00080	000538-00175	Lawn Pro Step 2	030001, 129046, 029801	2,4-D, mecoprop-P, dicamba	1/1/2006	3/31/2006	0	1	0
017774 - 00028	002217-00833	Speedzone Broadleaf Herbicide	030063, 029801, 128712, 129046	2,4-D, 2-ethylhexyl ester, dicamba, carfentrazone-ethyl, mecoprop-P	4/1/2006	6/30/2006	0	4	0
017747 - 00861	000538-00175	Lawn Pro Step 2	129046, 030001, 029801	Mecoprop-P, 2,4-D, dicamba	4/1/2006	6/30/2006	0	6	0
017747 - 00774	N/R	2,4-D, MCPP & dicamba	030001, 029801, 031501	2,4-D, dicamba, MCPP	4/1/2006	6/30/2006	0	18	0
017989 - 00009	002217-00660	Weed and Feed	129046, 030001, 029801	Mecoprop-P, 2,4-D, dicamba	7/1/2006	9/30/2006	0	1	0
018089 - 00287	000538-00175	Lawn Pro Step 2	029801, 129046, 030001	Dicamba, mecoprop-P, 2,4-D	7/1/2006	9/30/2006	0	23	0
018089 - 00226	N/R	2,4-D, MCPP & dicamba	031501, 029801, 030001	MCPP, dicamba, 2,4-D	7/1/2006	9/30/2006	0	14	0
018320 - 00124	000538-00175	Lawn Pro Step 2	030001, 129046, 029801	2,4-D, mecoprop-P, dicamba	10/1/2006	12/31/2006	0	1	0
018507 - 00350	000538-00175	Lawn Pro Step 2	029801, 030001, 031501, 129046	Dicamba, 2,4-D, MCPP, mecoprop-P	1/1/2007	3/31/2007	0	2	0
018818 - 00706	000538-00175	Lawn Pro Step 2	129046, 029801, 030001	Mecoprop-P, dicamba, 2,4-D	4/1/2007	6/30/2007	1	16	0
018830 - 00024	N/R	Banvel (non-Dupont Product)	029801	Dicamba	4/1/2007	6/30/2007	0	1	0
018856 - 00031	002217-00835	Speedzone Southern Broadleaf Herbicide for Turf	029801, 129046, 030063, 128712	Dicamba, mecoprop-P, 2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl	4/1/2007	6/30/2007	0	50	0
018856 - 00030	002217-00833	EH1381 Herbicide	129046, 030063, 128712, 029801	Mecoprop-P, 2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl, dicamba	4/1/2007	6/30/2007	0	6	0

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018856 - 00014	002217-00660	Weed and Feed (Unspecified)	129046, 029801, 030001	Mecoprop-P, dicamba, 2,4-D	4/1/2007	6/30/2007	0	3	0
018976 - 00012	007969-00136	Marksman	080803, 129043, 029801	Atrazine, 3,6-dichloro-2-methoxybenzoic acid, potassium salt, dicamba	6/1/2007	9/1/2007	0	2	0
019142 - 00332	000538-00175	Lawn Pro Step 2	030001, 029801, 129046	2,4-D, dicamba, mecoprop-P	7/1/2007	9/30/2007	0	13	0
019178 - 00027	002217-00865	EH1404 Herbicide	129046, 128712, 030564, 029801	Mecoprop-P, carfentrazone-ethyl, MCPA, 2-ethylhexyl ester, dicamba	7/1/2007	9/30/2007	0	1	0
019178 - 00025	002217-00834	Power Zone Broadleaf Herbicide for Turf	029801, 128712, 030564, 129046	Dicamba, carfentrazone-ethyl, MCPA, 2-ethylhexyl ester, mecoprop-P	7/1/2007	9/30/2007	0	1	0
019178 - 00024	002217-00833	Speed Zone Broadleaf Herbicide	030063, 128712, 029801, 129046	2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl, dicamba, mecoprop-P	7/1/2007	9/30/2007	0	1	0
019405 - 00132	000538-00175	Lawn Pro Step 2	129046, 030001, 029801	Mecoprop-P, 2,4-D, dicamba	10/1/2007	12/31/2007	0	2	0
019681 - 00287	000538-00175	Lawn Pro Step 2 Weed & Feed	030001, 129046, 029801	2,4-D, mecoprop-P, dicamba	1/1/2008	3/31/2008	0	1	0
020308 - 00151	000538-00175	Lawn Pro Step 2 Weed & Feed	030001, 129046, 029801	2,4-D, mecoprop-P, dicamba	7/1/2008	9/30/2008	0	39	0
020308 - 00109	N/R	Killex Lawn Weed Killer PNS (Canada-27811)	031501, 029801, 030001	MCPP, dicamba, 2,4-D	7/1/2008	9/30/2008	0	1	0
020308 - 00108	N/R	Killex Lawn Weed Killer RS (Canada-27809)	029801, 031501, 030001	Dicamba, MCPP, 2,4-D	7/1/2008	9/30/2008	0	2	0
020308 - 00107	N/R	Killex Lawn Weed Killer Concentrate (Canada-27801)	029801, 031501, 030001	Dicamba, MCPP, 2,4-D	7/1/2008	9/30/2008	0	1	0
020308 - 00106	N/R	Killex Lawn Weed Killer RTU (Canada-27799)	031501, 030001, 029801	MCPP, 2,4-D, dicamba	7/1/2008	9/30/2008	0	1	0

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020308 - 00102	N/R	Feedex Liquid Weed N Feed (Canada-2004021c)	031501, 029801, 030001	MCPP, dicamba, 2,4-D	7/1/2008	9/30/2008	1	1	0
020391 - 00041	002217-00884-008845	Sta-Green Phosphorus-Free Weed & Feed 29-0-4	029801, 030063, 129046	Dicamba, 2,4-D, 2-ethylhexyl ester, mecoprop-P	7/1/2008	9/30/2008	0	2	0
020391 - 00025	002217-00819	EH1352 Weed & Feed	030001, 129046, 029801	2,4-D, mecoprop-P, dicamba	7/1/2008	9/30/2008	0	1	0
020391 - 00018	002217-00660-062355	Miracle-Gro Lawn Fertilizer Plus Weed Control	029801, 030001, 129046	Dicamba, 2,4-D, mecoprop-P	7/1/2008	9/30/2008	0	1	0
020578 - 00135	000538-00175	Step 2	129046, 030001, 029801	Mecoprop-P, 2,4-D, dicamba	10/1/2008	12/31/2008	0	1	0
020813 - 00326	002217-00905	Weed-B-Gon Max for Southern Lawns RTU	129046, 128712, 030063, 029801	Mecoprop-P, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester, dicamba	1/1/2009	3/31/2009	0	2	0
020813 - 00325	002217-00910	Weed-B-Gon Max for Southern Lawns Ready Spray	029801, 030063, 128712, 129046	Dicamba, 2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl, mecoprop-P	1/1/2009	3/31/2009	0	1	0
020813 - 00324	002217-00910	Weed-B-Gon for Southern Lawns Concentrate	030063, 129046, 029801, 128712	2,4-D, 2-ethylhexyl ester, mecoprop-P, dicamba, carfentrazone-ethyl	1/1/2009	3/31/2009	0	1	0
021092 - 00668	000538-00175	Step 2	030001, 129046, 029801	2,4-D, mecoprop-P, dicamba	4/1/2009	6/30/2009	1	54	0
021092 - 00717	N/R	Ortho Killex RTU (Canada-27799)	030001, 031501, 029801	2,4-D, MCPP, dicamba	4/1/2009	6/30/2009	0	1	0
021092 - 00716	N/R	Ortho Killex Ready Spray (Canada-27809)	029801, 031501, 030001	Dicamba, MCPP, 2,4-D	4/1/2009	6/30/2009	0	1	0
021092 - 00715	N/R	Ortho Killex Concentrate (Canada-27801)	029801, 031501, 030001	Dicamba, MCPP, 2,4-D	4/1/2009	6/30/2009	0	1	0

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021092 - 00714	N/R	Killex Lawn Weed Killer Ready Spray (Canada-27809)	030001, 031501, 029801	2,4-D, MCPP, dicamba	4/1/2009	6/30/2009	0	1	0
021092 - 00695	002217-00905	Weed-B-Gon Max for Southern Lawns RTU	129046, 128712, 030063, 029801	Mecoprop-P, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester, dicamba	4/1/2009	6/30/2009	0	6	0
021092 - 00694	002217-00910	Weed-B-Gon Max for Southern Lawns Ready Spray	029801, 129046, 030063, 128712	Dicamba, mecoprop-P, 2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl	4/1/2009	6/30/2009	0	9	0
021092 - 00693	002217-00910	Weed-B-Gon Max for Southern Lawns Concentrate	128712, 030063, 029801, 129046	Carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester, dicamba, mecoprop-P	4/1/2009	6/30/2009	0	7	0
021384 - 00369	N/R	Killex Lawn Weed Killer RTU 709mi (Canada 27800)	030001, 031501, 029801	2,4-D, MCPP, dicamba	7/1/2009	9/30/2009	0	1	0
021384 - 00359	002217-00905	Weed-B-Gon Max for Southern Lawns RTU	030063, 128712, 029801, 129046	2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl, dicamba, mecoprop-P	7/1/2009	9/30/2009	0	6	0
021384 - 00358	002217-00910	Weed-B-Gon Max for Southern Lawns Ready Spray	029801, 129046, 030063, 128712	Dicamba, mecoprop-P, 2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl	7/1/2009	9/30/2009	0	10	0
021384 - 00357	002217-00910	Weed-B-Gon Max for Southern Lawns Concentrate	128712, 030063, 029801, 129046	Carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester, dicamba, mecoprop-P	7/1/2009	9/30/2009	0	4	0
021384 - 00335	000538-00175	Step 2	029801, 030001, 129046	Dicamba, 2,4-D, mecoprop-P	7/1/2009	9/30/2009	0	18	0
021661 - 00202	N/R	2,4-D, Mecoprop, Dicamba	031501, 030001, 029801	Mecoprop, 2,4-D, dicamba	10/1/2009	12/31/2009	0	1	0
021661 - 00195	N/R	Killex Lawn Weed Killer RTU 709mi (Canada 626761244509)	029801, 030001, 031501	Dicamba, 2,4-D, MCPP	10/1/2009	12/31/2009	0	1	0

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021661 - 00168	000538-00175	Step 2	029801, 030001, 129046	Dicamba, 2,4-D, mecoprop-P	10/1/2009	12/31/2009	0	18	0
021661 - 00116	002217-00910	Weed-B-Gon Max for Southern Lawns Ready Spray	030063, 128712, 029801, 129046	2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl, dicamba, mecoprop-P	10/1/2009	12/31/2009	0	10	0
021661 - 00115	002217-00910	Weed-B-Gon Max for Southern Lawns Concentrate	030063, 029801, 128712, 129046	2,4-D, 2-ethylhexyl ester, dicamba, carfentrazone-ethyl, mecoprop-P	10/1/2009	12/31/2009	0	4	0
021661 - 00114	002217-00905	Weed-B-Gon Max for Southern Lawns	129046, 029801, 030063, 128712	Mecoprop-P, dicamba, 2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl	10/1/2009	12/31/2009	0	6	0
021916 - 00317	002217-00910	Weed-B-Gon Max for Southern Lawns Ready Spray	128712, 030063, 129046, 029801	Carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester, mecoprop-P, dicamba	1/1/2010	3/31/2010	0	3	0
021916 - 00316	002217-00905-000239	Weed-B-Gon Max for Southern Lawns RTU	129046, 128712, 030063, 029801	Mecoprop-P, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester, dicamba	1/1/2010	3/31/2010	0	2	0
022225 - 00842	002217-00910	Weed-B-Gon Max for Southern Lawns Ready Spray	029801, 030063, 128712, 129046	Dicamba, 2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl, mecoprop-P	4/1/2010	6/30/2010	0	25	0
022225 - 00841	002217-00905-000239	Weed-B-Gon Max for Southern Lawns RTU	030063,128712, 029801,129046	2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl, dicamba, mecoprop-P	4/1/2010	6/30/2010	0	9	0
022225 - 00914	N/R	2,4-D, MCPP & dicamba (Canada 27801)	030001,029801, 031501	2,4-D, dicamba, MCPP	4/1/2010	6/30/2010	0	1	0
022225 - 00913	N/R	2,4-D, MCPP & dicamba (Canada 27800)	029801, 030001, 031501	Dicamba, 2,4-D, MCP	4/1/2010	6/30/2010	0	1	0
022225 - 00879	000538-00175	Step 2	029801, 030001, 129046	Dicamba, 2,4-D, mecoprop-P	4/1/2010	6/30/2010	0	52	0
022239 - 00026	002217-00833	Speed Zone Broadleaf Herbicide	029801, 128712, 129046, 030063	Dicamba, carfentrazone-ethyl, mecoprop-P, 2,4-D, 2-ethylhexyl ester	4/1/2010	6/30/2010	0	1	0

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022477 - 00345	N/R	Ortho Killex RTU (Canada 27800)	029801, 031501, 030001	Dicamba, MCPP, 2,4-D	7/1/2010	9/30/2010	0	1	0
022477 - 00325	000538-00175	STEP 2	030001, 029801, 129046	2,4-D, dicamba, mecoprop-P	7/1/2010	9/30/2010	0	26	0
022477 - 00290	002217-00910	Weed-B-Gon Max for Southern Lawns Ready Spray	030063, 128712, 129046, 029801	2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl, mecoprop-P, dicamba	7/1/2010	9/30/2010	0	6	0
022477 - 00289	002217-00905-000239	Weed-B-Gon Max for Southern Lawns RTU	030063, 029801, 129046, 128712	2,4-D, 2-ethylhexyl ester, dicamba, mecoprop-P, carfentrazone-ethyl	7/1/2010	9/30/2010	0	3	0
022477 - 00347	N/R	ORTHO KILLEX RTU (CANADA 27811)	029801, 031501, 030001	Dicamba, MCPP, 2,4-D	7/1/2010	9/30/2010	0	1	0
022477 - 00346	N/R	ORTHO KILLEX ready spray (CANADA 27809)	029801, 030001, 031501	Dicamba, 2,4-D, MCPP	7/1/2010	9/30/2010	0	1	0
022675 - 00012	002217-00884-073327	BANDINI 26-3-5 Weed & Feed	129046, 030063, 029801,	Mecoprop-P, 2,4-D, 2-ethylhexyl ester, dicamba	10/1/2010	12/31/2010	0	3	0
022712 - 00096	000538-00175	Step 2 Weed & Feed	029801, 129046, 030001	Dicamba, mecoprop-P, 2,4-D	10/1/2010	12/31/2010	0	1	0
022712 - 00112	N/R	Ortho Killex RTU (Canada 27800)	031501, 029801, 030001	MCPP, dicamba, 2,4-D	10/1/2010	12/31/2010	0	1	0
022712 - 00114	N/R	Ortho Killex RTU (Canada 27811)	031501, 029801, 030001	MCPP, dicamba, 2,4-D	10/1/2010	12/31/2010	0	1	0
022712 - 00113	N/R	Ortho Killex Ready Spray (Canada 27809)	031501, 030001, 029801	MCPP, 2,4-D, dicamba	10/1/2010	12/31/2010	0	1	0
024333 - 00056	N/R	Dicamba	029801	Dicamba	12/1/2010	11/30/2011	0	1	0
022957 - 00014	002217-00905-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	129046, 029801, 128712, 030063	Mecoprop-P, dicamba, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester	1/1/2011	3/31/2011	0	1	0
022957 - 00015	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Concentrate	128712, 029801, 030063, 129046	Carfentrazone-ethyl, dicamba, 2,4-D, 2-ethylhexyl ester, mecoprop-P	1/1/2011	3/31/2011	0	2	0

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022957 - 00007	002217-00884-073327	Vigoro Ultra Turf Phosphorus-Free Weed & Feed	030063, 029801, 129046	2,4-D, 2-ethylhexyl ester, dicamba, mecoprop-P	1/1/2011	3/31/2011	0	2	0
022933 - 00292	N/R	Ortho Killex RTU (Canada 27811)	031501, 030001, 029801	MCPP, 2,4-D, dicamba	1/1/2011	3/31/2011	0	1	0
022933 - 00291	N/R	Ortho Killex Ready Spray (Canada 27809)	029801, 030001, 031501	Dicamba, 2,4-D, MCPP	1/1/2011	3/31/2011	0	1	0
022933 - 00290	N/R	Ortho Killex RTU (Canada 27800)	030001, 029801, 031501	2,4-D, dicamba, MCPP	1/1/2011	3/31/2011	0	1	0
023203 - 00696	N/R	Ortho Killex ready spray (Canada 27809)	031501, 029801, 030001	MCPP, dicamba, 2,4-D	4/1/2011	6/30/2011	0	2	0
023203 - 00695	N/R	Ortho Killex RTU (Canada 27799)	030001, 029801, 031501	2,4-D, dicamba, MCPP	4/1/2011	6/30/2011	0	1	0
023052 - 00061	N/R	Glyphosate, dicamba (Unknown product)	029801, 103601	Dicamba, glyphosate-isopropylammonium	4/1/2011	6/30/2011	0	1	0
023160 - 00005	002217-00856-008845	Vigoro Super Green Lawn Fertilizer with Extended Weed Control	128994, 029801, 129046, 030001	Dithiopyr, dicamba, mecoprop-P, 2,4-D	4/1/2011	6/30/2011	0	1	0
023160 - 00007	002217-00884-073327	Vigoro Ultra Turf Phosphorus Free Weed and Feed 28-0-3	029801, 129046, 030063	Dicamba, mecoprop-P, 2,4-D, 2-ethylhexyl ester	4/1/2011	6/30/2011	0	26	0
023160 - 00004	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	030063, 029801, 128712, 129046	2,4-D, 2-ethylhexyl ester, dicamba, carfentrazone-ethyl, mecoprop-P,	4/1/2011	6/30/2011	0	11	0
023160 - 00003	002217-00905-000239	Weed-B-Gon Max for Southern Lawns Ready-To-Use	030063, 128712, 129046, 029801	2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl, mecoprop-P, dicamba	4/1/2011	6/30/2011	0	5	0

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023160 - 00008	002217-00884-008845	Vigoro Ultra Turf Weed and Feed	030063, 129046, 029801	2,4-D, 2-ethylhexyl ester, mecoprop-P, dicamba	4/1/2011	6/30/2011	0	2	0
023427 - 00048	002217-00905-000239	Weed-B-Gon Max for Southern Lawns Ready-To-Use	129046, 030063, 029801, 128712	Mecoprop-P, 2,4-D, 2-ethylhexyl ester, dicamba, carfentrazone-ethyl	7/1/2011	9/30/2011	0	1	0
023427 - 00049	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	030063, 129046, 029801, 128712	2,4-D, 2-ethylhexyl ester, mecoprop-P, dicamba, carfentrazone-ethyl	7/1/2011	9/30/2011	0	5	0
023427 - 00052	002217-00834	Powerzone Broadleaf Herbicide for Turf	029801, 129046, 030564, 128712	Dicamba, mecoprop-P, MCPA, 2-ethylhexyl ester, carfentrazone-ethyl	7/1/2011	9/30/2011	0	1	0
023427 - 00050	002217-00884-073327	Vigoro Ultra Turf Phosphorus Free Weed and Feed 28-0-3	000018, 129046, 029801, 030063	Milorganite, mecoprop-P, dicamba, 2,4-D, 2-ethylhexyl ester	7/1/2011	9/30/2011	0	6	0
023469 - 00156	N/R	Ortho Killex Concentrate (Canada 27801)	029801, 031501, 030001	Dicamba, MCPP, 2,4-D	7/1/2011	9/30/2011	0	1	0
023469 - 00157	N/R	Ortho Killex Ready Spray (Canada 27809)	031501, 030001, 029801	MCPP, 2,4-D, dicamba	7/1/2011	9/30/2011	0	2	0
023646 - 00026	002217-00884-073327	Vigoro Ultra Turf Phosphorus Free Weed and Feed 28-0-3	030063, 029801, 129046	2,4-D, 2-ethylhexyl ester, dicamba, mecoprop-P	10/1/2011	12/31/2011	0	2	0
023646 - 00025	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	129046, 128712, 030063, 029801	Mecoprop-P, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester, dicamba	10/1/2011	12/31/2011	0	6	0
023996 - 00031	002217-00905-000239	Weed-B-Gon Max For Southern Lawns Ready-To-Use	129046, 128712, 030063, 029801	Mecoprop-P, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester, dicamba	1/1/2012	3/31/2012	0	2	0

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023996 - 00032	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	129046, 128712, 029801, 030063	Mecoprop-P, carfentrazone-ethyl, dicamba, 2,4-D, 2-ethylhexyl ester	1/1/2012	3/31/2012	0	4	0
023996 - 00033	002217-00884-073327	Vigoro Ultra Turf Phosphorus Free Weed and Feed 23-0-3	029801, 129046, 030063	Dicamba, mecoprop-P, 2,4-D, 2-ethylhexyl ester	1/1/2012	3/31/2012	0	1	0
024338 - 00079	002217-00833	Speed Zone Broadleaf Herbicide	128712, 129046, 030063, 029801	Carfentrazone-ethyl, mecoprop-P, 2,4-D, 2-ethylhexyl ester, dicamba	4/1/2012	6/30/2012	0	1	0
024338 - 00077	002217-00884-073327	Vigoro Ultra Turf Phosphorus Free Weed and Feed 28-0-3	030063, 029801, 129046	2,4-D, 2-ethylhexyl ester, dicamba, mecoprop-P	4/1/2012	6/30/2012	0	27	0
024338 - 00074	002217-00905-000239	Weed-B-Gon Max for Southern Lawns Ready-To-Use	128712, 030063, 029801, 129046	Carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester, dicamba, mecoprop-P	4/1/2012	6/30/2012	0	2	0
024338 - 00075	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	129046, 029801, 030063, 128712	Mecoprop-P, dicamba, 2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl	4/1/2012	6/30/2012	0	13	0
024402 - 00251	N/R	Ortho Killex RTU (Canada 27800)	029801, 030001, 129046	Dicamba, 2,4-D, mecoprop-P	4/1/2012	6/30/2012	0	1	0
024402 - 00252	N/R	Ortho Killex Concentrate (Canada 27801)	129046, 030001, 029801	Mecoprop-P, 2,4-D, dicamba	4/1/2012	6/30/2012	0	1	0
024402 - 00253	N/R	Ortho Killex Ready Spray (Canada 27809)	029801, 031501, 030001	Dicamba, MCPP, 2,4-D	4/1/2012	6/30/2012	0	1	0
024583 - 00055	002217-00905-000239	Weed-B-Gon Max for Southern Lawns Ready-To-Use	128712, 129046, 030063, 029801	Carfentrazone-ethyl, mecoprop-P, 2,4-D, 2-ethylhexyl ester, dicamba	7/1/2012	9/30/2012	0	1	0

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024583 - 00051	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Spray	129046, 030063, 029801, 128712	Mecoprop-P, 2,4-D, 2-ethylhexyl ester, dicamba, carfentrazone-ethyl	7/1/2012	9/30/2012	0	4	0
024583 - 00053	002217-00884-073327	Vigoro Ultra Turf Phosphorus Free Weed and Feed 28-0-3	030063, 129046, 029801	2,4-D, 2-ethylhexyl ester, mecoprop-P, dicamba	7/1/2012	9/30/2012	0	22	0
024707 - 00207	N/R	Ortho Killex RTU (Canada 27800)	029801, 129046, 030001	Dicamba, mecoprop-P, 2,4-D	7/1/2012	9/30/2012	0	1	0
024707 - 00145	000228-00424-000239	Weed-B-Gon Lawn Weed Killer Ready Spray	029801, 030516, 116002	Dicamba, MCPA, dimethylamine salt, triclopyr, triethylamine salt	7/1/2012	9/30/2012	0	10	0
024707 - 00208	N/R	Ortho Killex Ready Spray (27809)	031501, 030001, 029801	MCPP, 2,4-D, dicamba	7/1/2012	9/30/2012	0	1	0
024868 - 00017	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	129046, 029801, 128712, 030063	Mecoprop-P, dicamba, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester	10/1/2012	12/31/2012	0	5	0
024868 - 00019	002217-00884-073327	Vigoro Ultra Turf Phosphorus Free Weed and Feed 28-0-3	030063, 129046, 029801	2,4-D, 2-ethylhexyl ester, mecoprop-P, dicamba	10/1/2012	12/31/2012	0	2	0
025200 - 00024	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	129046, 030063, 029801, 128712	Mecoprop-P, 2,4-D, 2-ethylhexyl ester, dicamba, carfentrazone-ethyl	1/1/2013	3/31/2013	0	2	0
025200 - 00023	002217-00905-000239	Weed-B-Gon Max for Southern Lawns Ready-To-Use	029801, 030063, 129046, 128712	Dicamba, 2,4-D, 2-ethylhexyl ester, mecoprop-P, carfentrazone-ethyl	1/1/2013	3/31/2013	0	1	0
025200 - 00025	002217-00884-073327	Vigoro Ultra Turf Phosphorus Free Weed and Feed 28-0-3	129046, 030063, 029801	Mecoprop-P, 2,4-D, 2-ethylhexyl ester, dicamba	1/1/2013	3/31/2013	0	2	0

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025597 - 00005	000228-00317	Cool Power Selective Herbicide	116004, 029801, 030564	Triclopyr, butoxyethyl ester, dicamba, MCPA, 2-ethylhexyl ester	4/1/2013	6/30/2013	0	3	0
025490 - 00066	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	029801, 129046, 128712, 030063	Dicamba, mecoprop-P, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester	4/1/2013	6/30/2013	0	5	0
025490 - 00067	002217-00884-073327	Vigoro Ultra Turf Phosphorus Free Weed and Feed 28-0-3	030063, 129046, 029801	2,4-D, 2-ethylhexyl ester, mecoprop-P, dicamba	4/1/2013	6/30/2013	0	14	0
025490 - 00065	002217-00905-000239	Weed-B-Gon Max for Southern Lawns Ready-To-Use	029801, 030063, 129046, 128712	Dicamba, 2,4-D, 2-ethylhexyl ester, mecoprop-P, carfentrazone-ethyl	4/1/2013	6/30/2013	0	2	0
025836 - 00051	002217-00884-073327	Vigoro Ultra Turf Phosphorus Free Weed and Feed 28-0-3	029801, 129046, 030063	Dicamba, mecoprop-P, 2,4-D, 2-ethylhexyl ester	7/1/2013	9/30/2013	0	13	0
025836 - 00050	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	128712, 129046, 029801, 030063	Carfentrazone-ethyl, mecoprop-P, dicamba, 2,4-D, 2-ethylhexyl ester	7/1/2013	9/30/2013	0	2	0
025836 - 00049	002217-00905-000239	Weed-B-Gon Max for Southern Lawns Ready-To-Use	129046, 029801, 128712, 030063	Mecoprop-P, dicamba, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester	7/1/2013	9/30/2013	0	2	0
025883 - 00024	N/R	Ortho Killex Concentrate (Canada 27801)	129046, 030001, 029801	Mecoprop-P, 2,4-D, dicamba	7/1/2013	9/30/2013	0	1	0
025883 - 00025	N/R	Ortho Killex Ready Spray(Canada 27809)	029801, 030001, 031501	Dicamba, 2,4-D, MCPP	7/1/2013	9/30/2013	0	1	0
026134 - 00016	002217-00920	T-Zone Broadleaf Herbicide for Tough Weeds	030063, 129081, 029801, 116004	2,4-D, 2-ethylhexyl ester, sulfentrazone, dicamba, triclopyr, butoxyethyl ester	10/1/2013	12/31/2013	0	1	0

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026134 - 00015	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	129046, 029801, 128712, 030063	Mecoprop-P, dicamba, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester	10/1/2013	12/31/2013	0	1	0
026134 - 00013	002217-00884-073327	Vigoro Ultra Turf Phosphorus-Free Weed and Feed 28-0-3	029801, 129046, 030063	Dicamba, mecoprop-P, 2,4-D, 2-ethylhexyl ester	10/1/2013	12/31/2013	0	2	0
026134 - 00008	002217-00833	Speedzone Broadleaf Herbicide for Turf	029801, 129046, 030063, 128712	Dicamba, mecoprop-P, 2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl	10/1/2013	12/31/2013	0	1	0
026400 - 00016	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	029801, 030063, 128712, 129046	Dicamba, 2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl, mecoprop-P	1/1/2014	3/31/2014	0	2	0
026400 - 00011	002217-00884-073327	Vigoro Ultra Turf Phosphorus Free Weed & Feed 28-0-3	129046, 029801, 030063	Mecoprop-P, dicamba, 2,4-D, 2-ethylhexyl ester	1/1/2014	3/31/2014	0	1	0
026822 - 00003	002217-00884-059144	Sta-Green Phosphorus-Free Weed & Feed	029801, 030063, 129046	Dicamba, 2,4-D, 2-ethylhexyl ester, mecoprop-P	4/1/2014	6/30/2014	0	1	0
026837 - 00006	N/R	Ortho Killex Concentrate (Canada, PCP 27801)	029801, 129046, 030001	Dicamba, mecoprop-P, 2,4-D	4/1/2014	6/30/2014	0	1	0
026837 - 00005	N/R	Ortho Killex RTU (Canada, PCP 27800)	030001, 129046, 029801	2,4-D, mecoprop-P, dicamba	4/1/2014	6/30/2014	0	1	0
026837 - 00042	000538-00270-073327	Vigoro Weed & Feed	129046, 030001, 029801	Mecoprop-P, 2,4-D, dicamba	4/1/2014	6/30/2014	0	7	0
026844 - 00026	002217-00833	Speed Zone Broadleaf Herbicide for Turf	128712, 030063, 129046, 029801	Carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester, mecoprop-P, dicamba	4/1/2014	6/30/2014	0	1	0

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026844 - 00044	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	030063, 129046, 029801, 128712	2,4-D, 2-ethylhexyl ester, mecoprop-P, dicamba, carfentrazone-ethyl	4/1/2014	6/30/2014	0	1	0
026844 - 00038	002217-00884-073327	Vigoro Ultra Turf Phosphorus-Free Weed & Feed 28-0-3	129046, 029801, 030063	Mecoprop-P, dicamba, 2,4-D, 2-ethylhexyl ester	4/1/2014	6/30/2014	0	3	0
026844 - 00043	002217-00905-000239	Weed-B-Gon Max for Southern Lawns Ready-To-Use	029801, 128712, 030063, 129046	Dicamba, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester, mecoprop-P	4/1/2014	6/30/2014	0	4	0
026844 - 00028	002217-00835	Speed Zone Southern Broadleaf Herbicide for Turf	128712, 029801, 129046, 030063	Carfentrazone-ethyl, dicamba, mecoprop-P, 2,4-D, 2-ethylhexyl ester	4/1/2014	6/30/2014	0	1	0
027217 - 00172	000538-00270-073327	Vigoro Weed & Feed for Bahia & Mixed Lawns	030001, 029801, 129046	2,4-D, dicamba, mecoprop-P	7/1/2014	9/30/2014	0	16	0
027187 - 00041	002217-00905-000239	Weed-B-Gon Max for Southern Lawns Ready-To-Use	129046, 030063, 029801, 128712	Mecoprop-P, 2,4-D, 2-ethylhexyl ester, dicamba, carfentrazone-ethyl	7/1/2014	9/30/2014	0	1	0
027187 - 00035	002217-00884-073327	Vigoro Ultra Turf Phosphorus-Free Weed and Feed 28-0-3	029801, 030063, 129046	Dicamba, 2,4-D, 2-ethylhexyl ester, mecoprop-P	7/1/2014	9/30/2014	0	1	0
027187 - 00042	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	029801, 128712, 030063, 12904	Dicamba, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester, mecoprop-P	7/1/2014	9/30/2014	0	1	0
027439 - 00014	N/R	2,4-D, Mecoprop-P & dicamba	030001, 029801, 129046	2,4-D, dicamba, mecoprop-P	10/1/2014	12/31/2014	0	4	0
027935 - 00011	000961-00418	Preen Weed Control	129046, 029801, 030001	Mecoprop-P, dicamba, 2,4-D	4/1/2015	6/30/2015	1	0	0

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027945 - 00045	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	030063, 128712, 129046, 029801	2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl, mecoprop-P, dicamba	4/1/2015	6/30/2015	0	1	0
027945 - 00037	002217-00884-073327	Vigoro Ultra Turf Phosphorus-Free Weed and Feed 28-0-3	030063, 029801, 129046	2,4-D, 2-ethylhexyl ester, dicamba, mecoprop-P	4/1/2015	6/30/2015	0	2	0
027945 - 00043	002217-00905-000239	Weed-B-Gon Max for Southern Lawns Ready-To-Use	029801, 129046, 030063, 128712	Dicamba, mecoprop-P, 2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl	4/1/2015	6/30/2015	0	2	0
027958 - 00017	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	030019, 029801, 031520	2,4-D, dimethylamine salt, dicamba, MCPP-P, DMA salt	4/1/2015	6/30/2015	0	16	0
027958 - 00001	N/R	Ortho Killex Ready-To-Spray Lawn Weed Control	030001, 031520, 029801	2,4-D, MCPP-P, DMA salt, dicamba	4/1/2015	6/30/2015	0	2	0
027958 - 00016	000228-00553-000239	Ortho Weed-B-Gon Weed Killer for Lawns Concentrate2	029801, 031520, 030019	Dicamba, MCPP-P, DMA salt, 2,4-D, dimethylamine salt	4/1/2015	6/30/2015	0	10	0
027958 - 00041	000961-00415	Vigoro Weed & Feed	129046, 030063, 029801	Mecoprop-P, 2,4-D, 2-ethylhexyl ester, dicamba,	4/1/2015	6/30/2015	0	17	0
028169 - 00028	002217-00905-000239	Weed-B-Gon Max for Southern Lawns Ready-To-Use	029801, 129046, 030063, 128712	Dicamba, mecoprop-P, 2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl	7/1/2015	9/30/2015	0	1	0
028169 - 00030	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	030063, 029801, 129046, 128712	2,4-D, 2-ethylhexyl ester, dicamba, mecoprop-P, carfentrazone-ethyl	7/1/2015	9/30/2015	0	2	0

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028372 - 00011	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Spray	128712, 029801, 129046, 030063	Carfentrazone-ethyl, dicamba, mecoprop-P, 2,4-D, 2-ethylhexyl ester	10/1/2015	12/31/2015	0	2	0
028460 - 00040	000228-00553-000239	Ortho Weed-B-Gon Weed Killer for Lawns Concentrate 2	031520, 030019, 029801	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba	10/1/2015	12/31/2015	0	4	0
028460 - 00041	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	030019, 029801, 031520	2,4-D, dimethylamine salt, dicamba, MCPP-P, DMA salt	10/1/2015	12/31/2015	0	5	0
028460 - 00051	N/R	Unknown	030019, 029801, 129046	2,4-D, dimethylamine salt, dicamba, mecoprop-P	10/1/2015	12/31/2015	0	2	0
028830 - 00012	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Spray	029801, 129046, 128712, 030063	Dicamba, mecoprop-P, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester	1/1/2016	3/31/2016	0	1	0
029574 - 00048	000228-00553-000239	N/R	029801, 031520, 030019	Dicamba, MCPP-P, DMA salt, 2,4-D, dimethylamine salt	1/1/2016	3/31/2016	0	1	0
029574 - 00049	000228-00555-000239	N/R	030019, 031520, 029801	2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba	1/1/2016	3/31/2016	0	10	0
029173 - 00041	002217-00905-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	029801, 129046, 030063, 128712	Dicamba, mecoprop-P, 2,4-D, 2-ethylhexyl ester, carfentrazone-ethyl	4/1/2016	6/30/2016	0	1	0
029183 - 00016	000228-00553-000239	Ortho Weed-B-Gon Weed Killer for Lawns Concentrate2	030019, 031520, 029801	2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba	4/1/2016	6/30/2016	0	16	0
029183 - 00017	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	029801, 030019, 031520	Dicamba, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	4/1/2016	6/30/2016	0	14	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
028225 - 00035	000538-00270-023327	N/R	030001, 029801, 129046	2,4-D, dicamba, mecoprop-P	7/1/2016	9/30/2016	0	25	0
028225 - 00002	N/R	PCP# 27801 Canada	029801, 129046, 030001	Dicamba, mecoprop-P, 2,4-D	7/1/2016	9/30/2016	0	1	0
028225 - 00016	N/R	Unknown	029801, 129046, 030001	Dicamba, mecoprop-P, 2,4-D	7/1/2016	9/30/2016	0	1	0
028225 - 00015	000228-00553-000239	N/R	030019, 031520, 029801	2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba	7/1/2016	9/30/2016	0	5	0
028225 - 00017	000228-00555-000239	N/R	029801, 031520, 030019	Dicamba, MCPP-P, DMA salt, 2,4-D, dimethylamine salt	7/1/2016	9/30/2016	0	10	0
028225 - 00001	N/R	PCP# 27800 Canada	129046, 030001, 029801	Mecoprop-P, 2,4-D, dicamba	7/1/2016	9/30/2016	0	1	0
029415 - 00026	002217-00905-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	030063, 029801, 128712, 129046	2,4-D, 2-ethylhexyl ester, dicamba, carfentrazone-ethyl, mecoprop-P	7/1/2016	9/30/2016	0	2	0
029415 - 00027	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Spray	128712, 030063, 029801, 129046	Carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester, dicamba, mecoprop-P	7/1/2016	9/30/2016	0	1	0
029415 - 00021	002217-00884-073327	Vigoro Ultra Turf Phosphorus-Free Weed & Feed 28-0-3	129046, 029801, 030063	Mecoprop-P, dicamba, 2,4-D, 2-ethylhexyl ester	7/1/2016	9/30/2016	0	1	0
029452 - 00094	000228-00553-000239	N/R	031520, 030019, 029801	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba	7/1/2016	9/30/2016	0	10	0
029452 - 00095	000228-00555-000239	N/R	030019, 029801, 031520	2,4-D, dimethylamine salt, dicamba, MCPP-P, DMA salt	7/1/2016	9/30/2016	0	16	0
029687 - 00010	000538-00270-073327	Crabgrass Preventer Plus Lawn Food	129046, 029801, 030001	Mecoprop-P, dicamba, 2,4-D	10/1/2016	12/31/2016	0	3	0
029687 - 00001	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	031520, 029801, 030019	MCPP-P, DMA salt, dicamba, 2,4-D, dimethylamine salt	10/1/2016	12/31/2016	0	5	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
029993 - 00063	000228-00553-000239	Ortho Weed-B-Gon Weed Killer for Lawns Concentrate2	031520, 030019, 029801	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba	1/1/2017	3/31/2017	0	1	0
030299 - 00110	000538-00270-073327	Crabgrass Preventer Plus Lawn Food	029801, 030001, 129046	Dicamba, 2,4-D, mecoprop-P	4/1/2017	6/30/2017	0	25	0
030299 - 00094	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	029801, 030019, 031520	Dicamba, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	4/1/2017	6/30/2017	0	43	0
030325 - 00001	N/R	Xtendimax With Vaporgrip Technology (Canada PMRA# 31896)	029801	Dicamba	4/1/2017	6/30/2017	0	2	0
030325 - 00002	N/R	M1691 (Canada PMRA#31198)	029801	Dicamba	4/1/2017	6/30/2017	0	1	0
030325 - 00003	N/R	Unknown Product	029801	Dicamba	4/1/2017	6/30/2017	0	2	0
030259 - 00053	002217-00920	T-Zone Broadleaf Herbicide for Tough Weeds	129081, 029801, 030063, 116004	Sulfentrazone, dicamba, 2,4-D, 2-ethylhexyl ester, triclopyr, butoxyethyl ester	4/1/2017	6/30/2017	0	1	0
030592 - 00003	N/R	Ortho Killex Concentrate (Canada PMRA# 27801)	029801, 030001, 129046	Dicamba, 2,4-D, mecoprop-P	7/1/2017	9/30/2017	0	2	0
030592 - 00004	N/R	Ortho Killex Ready Spray (Canada PMRA# 27809)	031501, 030001, 029801	MCPP, 2,4-D, dicamba	7/1/2017	9/30/2017	0	1	0
030592 - 00111	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	030019, 031520, 029801	2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba	7/1/2017	9/30/2017	0	52	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
030588 - 00002	N/R	Roundup Xtend with Vaporgrip Technology (Canada PMRA# 32274)	029801	Dicamba	7/1/2017	9/30/2017	0	2	0
030769 - 00058	000228-00553-000239	Ortho Weed-B-Gon Weed Killer for Lawns Concentrate2	030019, 031520, 029801	2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba	10/1/2017	12/31/2017	0	3	0
030769 - 00055	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	030019, 031520, 029801	2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba	10/1/2017	12/31/2017	0	9	0
030903 - 00005	000228-00412	Viper Weed and Feed (18#/5m)	029801, 129046, 030063, 030001	Dicamba, mecoprop-P, 2,4-D, 2-ethylhexyl ester, 2,4-D	10/1/2017	12/31/2017	0	1	0
031037 - 00012	002217-00905-000239	Weed-B-Gon Max for Southern Lawns Ready-To-Use	128712, 030063, 029801, 129046	Carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester, dicamba, mecoprop-P	1/1/2018	3/31/2018	0	1	0
031037 - 00006	002217-00833	Speed Zone Broadleaf Herbicide for Turf	029801, 129046, 128712, 030063	Dicamba, mecoprop-P, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester	1/1/2018	3/31/2018	0	1	0
031045 - 00057	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	029801, 031520, 030019	Dicamba, MCPP-P, DMA salt, 2,4-D, dimethylamine salt	1/1/2018	3/31/2018	0	6	0
031045 - 00060	000228-00553-000239	Ortho Weed-B-Gon Weed Killer for Lawns Concentrate2	029801, 031520, 030019	Dicamba, MCPP-P, DMA salt, 2,4-D, dimethylamine salt	1/1/2018	3/31/2018	0	2	0
031283 - 00042	002217-00905-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	129046, 128712, 029801, 030063	Mecoprop-P, carfentrazone-ethyl, dicamba, 2,4-D, 2-ethylhexyl ester	4/1/2018	6/30/2018	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
031283 - 00050	002217-00976	TZone SE Broadleaf Herbicide for Tough Weeds	030063, 029801, 116004, 129081	2,4-D, 2-ethylhexyl ester, dicamba, triclopyr, butoxyethyl ester, sulfentrazone	4/1/2018	6/30/2018	0	1	0
031341 - 00008	000228-00553-000239	Ortho Weed-B-Gon Weed Killer for Lawns Concentrate2	029801, 031520, 030019	Dicamba, MCPP-P, DMA salt, 2,4-D, dimethylamine salt	4/1/2018	6/30/2018	0	13	0
031341 - 00003	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	031520, 030019, 029801	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba	4/1/2018	6/30/2018	0	47	0
031341 - 00037	000538-00175	Super Plus 2 for Grass	030001, 129046, 029801	2,4-D, mecoprop-P, dicamba	4/1/2018	6/30/2018	0	1	0
031462 - 00002	N/R	Xtendimax with Vaporgrip Technology (Canada31896)	029801	Dicamba	4/1/2018	6/30/2018	0	2	0
031677 - 00031	002217-00910-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	128712, 030063, 029801, 129046	Carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester, dicamba, mecoprop-P	7/1/2018	9/30/2018	0	1	0
031624 - 00112	000228-00553-000239	Ortho Weed-B-Gon Weed Killer for Lawns Concentrate2	031520, 030019, 029801	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba	7/1/2018	9/30/2018	0	11	0
031624 - 00095	N/R	Ortho Killex RTU (Canada PMRA# 27800)	029801, 030001, 129046	Dicamba, 2,4-D, mecoprop-P	7/1/2018	9/30/2018	0	1	0
031624 - 00109	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	031520, 029801, 030019	MCPP-P, DMA salt, dicamba, 2,4-D, dimethylamine salt	7/1/2018	9/30/2018	0	30	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
031850 - 00060	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	030019, 031520, 029801	2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba	10/1/2018	12/31/2018	0	10	0
032138 - 00062	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	029801, 030019, 031520	Dicamba, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	1/1/2019	3/31/2019	0	1	0
032138 - 00056	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	031520, 030019, 029801	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba	1/1/2019	3/31/2019	0	1	0
032138 - 00059	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	030019, 029801, 031520	2,4-D, dimethylamine salt, dicamba, MCPP-P, DMA salt	1/1/2019	3/31/2019	0	1	0
032138 - 00061	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	031520, 029801, 030019	MCPP-P, DMA salt, dicamba, 2,4-D, dimethylamine salt	1/1/2019	3/31/2019	0	1	0
032138 - 00060	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	030019, 031520, 029801	2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba	1/1/2019	3/31/2019	0	1	0
032138 - 00053	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	031520, 030019, 029801	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba	1/1/2019	3/31/2019	0	2	0
032138 - 00057	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	031520, 030019, 029801	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba	1/1/2019	3/31/2019	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
032138 - 00054	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	029801, 031520, 030019	Dicamba, MCPP-P, DMA salt, 2,4-D, dimethylamine salt	1/1/2019	3/31/2019	0	2	0
032138 - 00058	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	030019, 031520, 029801	2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba	1/1/2019	3/31/2019	0	1	0
032138 - 00055	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	031520, 029801, 03001	MCPP-P, DMA salt, dicamba, 2,4-D, dimethylamine salt	1/1/2019	3/31/2019	0	1	0
032445 - 00108	000228-00553-000239	Ortho Weed-B-Gon Weed Killer for Lawns Concentrate2	029801, 030019, 031520	Dicamba, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	4/1/2019	6/30/2019	0	10	0
032445 - 00103	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	030019, 029801, 031520	2,4-D, dimethylamine salt, dicamba, MCPP-P, DMA salt	4/1/2019	6/30/2019	0	22	0
032400 - 00030	002217-00884-000538	Scotts Weed Control for Lawns	029801, 129046, 030063	Dicamba, mecoprop-P, 2,4-D, 2-ethylhexyl ester	4/1/2019	6/30/2019	0	1	0
032400 - 00050	002217-00910-000239	Weed-B-Gon Max for Southern Lawns Ready-To-Spray	029801, 129046, 128712, 030063	Dicamba, mecoprop-P, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester	4/1/2019	6/30/2019	0	1	0
032700 - 00101	000228-00553-000239	Ortho Weed-B-Gon Weed Killer for Lawns Concentrate2	029801, 030019, 031520	Dicamba, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	7/1/2019	9/30/2019	0	9	0
032700 - 00096	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	030019, 029801, 031520	2,4-D, dimethylamine salt, dicamba, MCPP-P, DMA salt	7/1/2019	9/30/2019	0	17	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
032767 - 00014	002217-00905-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	029801, 129046, 128712, 030063	Dicamba, mecoprop-P, carfentrazone-ethyl, 2,4-D, 2-ethylhexyl ester	7/1/2019	9/30/2019	0	1	0
033013 - 00055	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	030019, 029801, 031520	2,4-D, dimethylamine salt, dicamba, MCPP-P, DMA salt	10/1/2019	12/31/2019	0	5	0
033013 - 00060	000228-00553-000239	Ortho Weed-B-Gon Weed Killer for Lawns Concentrate2	031520, 030019, 029801	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba	10/1/2019	12/31/2019	0	2	0
033222 - 00062	000228-00553-000239	Ortho Weed-B-Gon Weed Killer for Lawns Concentrate2	031520, 029801, 030019	MCPP-P, DMA salt, dicamba, 2,4-D, dimethylamine salt	1/1/2020	3/31/2020	0	1	0
033222 - 00057	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	031520, 030019, 029801	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba	1/1/2020	3/31/2020	0	5	0
033486 - 00010	002217-00858-008845	Spectracide Weed Stop for Lawns Crabgrass Preventer & Broadleaf Weed Killer	129046, 030001, 128994, 029801	Mecoprop-P, 2,4-D, Dithiopyr, dicamba	4/1/2020	6/30/2020	0	2	0
033486 - 00011	002217-00884-008845	Vigoro Ultra Turf Weed & Feed 28-3-3	129046, 029801, 030063	Mecoprop-P, dicamba, 2,4-D, 2-ethylhexyl ester	4/1/2020	6/30/2020	0	1	0
033699 - 00071	000228-00553-000239	Ortho Weed-B-Gon Weed Killer for Lawns Concentrate2	029801, 031520, 030019	Dicamba, MCPP-P, DMA salt, 2,4-D, dimethylamine salt	7/1/2020	9/30/2020	0	16	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
033699 - 00069	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	030019, 029801, 031520	2,4-D, dimethylamine salt, dicamba, MCPP-P, DMA salt	7/1/2020	9/30/2020	0	16	0
033700 - 00005	002217-00858-008845	Spectracide Weed Stop for Lawns Crabgrass Preventer & Broadleaf Weed Killer Granules	129046, 029801, 128994, 030001	Mecoprop-P, dicamba, Dithiopyr, 2,4-D	7/1/2020	9/30/2020	0	2	0
033700 - 00006	002217-00884-000538	Scotts Weed Control for Lawns	129046, 029801, 030063	Mecoprop-P, dicamba, 2,4-D, 2-ethylhexyl ester	7/1/2020	9/30/2020	0	2	0
033887 - 00034	000228-00555-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Use2	029801, 030019, 031520	Dicamba, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	10/1/2020	12/31/2020	0	4	0
033887 - 00033	000228-00553-000239	Ortho Weed-B-Gon Weed Killer for Lawns Concentrate2	030019, 031520, 029801	2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba	10/1/2020	12/31/2020	0	4	0
033881 - 00006	002217-00905-000239	Ortho Weed-B-Gon Max for Southern Lawns Ready-To-Use	030063, 029801, 129046, 128712	2,4-D, 2-ethylhexyl ester, dicamba, mecoprop-P, carfentrazone-ethyl	10/1/2020	12/31/2020	0	1	0
033881 - 00004	002217-00858-008845	Spectracide Weed Stop for Lawns Crabgrass Preventer & Broadleaf Weed Killer Granules	129046, 128994, 029801, 030001	Mecoprop-P, dithiopyr, dicamba, 2,4-D	10/1/2020	12/31/2020	0	2	0
033896 - 00046	000432-01507	Celsius WG	015804, 029801, 122021	Thiencarbazone-methyl, dicamba, iodosulfuron-methylmethanaminehyl-sodium	10/1/2020	12/31/2020	0	1	0

N/R- not reported
WB = minor ‘wildlife’ incidents; PB = minor ‘plant damage’ incidents, ONT = ‘other nontarget’ incidents

Table E-8. Diglycoamine salt (DGA-salt, PC code 128931) Aggregate Incidents

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
008947 - 00002	007969-00137	Clarity	128931	Dicamba, diglycolamine salt	6/8/1999	7/8/1999	0	4	0
009167 - 00003	007969-00137	Clarity	128931	Dicamba, diglycolamine salt	7/9/1999	8/31/1999	0	23	0
009678 - 00004	007969-00137	Clarity	128931	Dicamba, diglycolamine salt	9/1/1999	11/30/1999	0	1	0
010790 - 00003	007969-00137	Clarity	128931	Dicamba, diglycolamine salt	7/1/2000	10/1/2000	0	38	0
011250 - 00007	007969-00137	Clarity	128931	Dicamba, diglycolamine salt	10/1/2000	1/1/2001	0	1	0
012391 - 00004	007969-00137	Clarity Herbicide	128931	Dicamba, diglycolamine salt	7/1/2001	10/31/2001	0	14	0
013492 - 00005	007969-00137	Clarity	128931	Dicamba, diglycolamine salt	7/1/2002	10/1/2002	0	13	0
014582 - 00005	007969-00137	Clarity	128931	Dicamba, diglycolamine salt	6/1/2003	9/30/2003	0	2	0
015653 - 00003	007969-00137	Clarity	128931	3,6-dichloro-2-methoxybenzoic acid, compd with 2-(2-aminoethoxy)ethanol (1:1)	6/1/2004	9/1/2004	0	4	0
016743 - 00003	007969-00137	Clarity	128931	3,6-dichloro-2-methoxybenzoic acid, compd with 2-(2-aminoethoxy)ethanol (1:1)	6/1/2005	9/1/2005	0	5	0
017995 - 00005	007969-00137	Clarity	128931	3,6-dichloro-2-methoxybenzoic acid, compd with 2-(2-aminoethoxy)ethanol (1:1)	6/1/2006	9/1/2006	0	5	0
018976 - 00005	007969-00137	Clarity	128931	3,6-dichloro-2-methoxybenzoic acid, compd with 2-(2-aminoethoxy)ethanol (1:1)	6/1/2007	9/1/2007	0	3	0
020182 - 00003	007969-00137	Clarity	128931	3,6-dichloro-2-methoxybenzoic acid, compd with 2-(2-aminoethoxy)ethanol (1:1)	6/1/2008	9/1/2008	0	8	0
024588 - 00034	007969-00137	Clarity	128931	3,6-dichloro-2-methoxybenzoic acid, compd with 2-(2-aminoethoxy)ethanol (1:1)	8/16/2012	10/18/2012	0	7	0
027232 - 00034	007969-00137	Clarity	128931	Dicamba, diglycolamine salt	7/18/2014	10/21/2014	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
027463 - 00003	007969-00137	Clarity Herbicide	128931	Dicamba, diglycolamine salt	10/1/2014	12/31/2014	0	2	0
027968 - 00011	000264-01173	DiFlexx Herbicide	128931	Dicamba, diglycolamine salt	4/1/2015	6/30/2015	0	9	0
028246 - 00016	000264-01173	DiFlexx Herbicide	128931	Dicamba, diglycolamine salt	7/1/2015	9/30/2015	0	5	0
028447 - 00005	000524-00582	M1691 HERBICIDE	128931	Dicamba, diglycolamine salt	10/1/2015	12/31/2015	0	1	0
029191 - 00010	000264-01173	DiFlexx Herbicide	128931	Dicamba, diglycolamine salt	4/1/2016	6/30/2016	0	2	0
029457 - 00010	000264-01173	DiFlexx Herbicide	128931	Dicamba, diglycolamine salt	7/1/2016	9/30/2016	0	5	0
030304 - 00010	000352-00913	Dupont Fexapan Herbicide Plus Vaporgrip Technology	128931	Dicamba, diglycolamine salt	4/1/2017	6/30/2017	0	1	0
030325 - 00004	000524-00617	Xtendimax With Vaporgrip Technology	128931	Dicamba, diglycolamine salt	4/1/2017	6/30/2017	0	102	0
030333 - 00038	000264-01173	DiFlexx Herbicide	128931	Dicamba, diglycolamine salt	4/1/2017	6/30/2017	0	1	0
030333 - 00039	000264-01184	DiFlexx Duo	012801, 128931	Tembotrione, dicamba, diglycolamine salt	4/1/2017	6/30/2017	0	2	0
030588 - 00001	N/R	Xtendimax With Vaporgrip Technology (Canada PMRA# 31896)	128931	Dicamba, diglycolamine salt	7/1/2017	9/30/2017	0	11	0
030588 - 00003	000524-00617	Xtendimax With Vaporgrip Technology	128931	Dicamba, diglycolamine salt	7/1/2017	9/30/2017	0	1390	0
030596 - 00022	000264-01184	DiFlexx Duo	012801, 128931	Tembotrione, dicamba, diglycolamine salt	7/1/2017	9/30/2017	0	1	0
030596 - 00021	000264-01173	DiFlexx Herbicide	128931	Dicamba, diglycolamine salt	7/1/2017	9/30/2017	0	2	0
030629 - 00008	000352-00913	Dupont Fexapan Herbicide	128931	Dicamba, diglycolamine salt	7/1/2017	9/30/2017	0	1	0
030868 - 00021	000352-00913	Dupont Fexapan Herbicide Plus Vaporgrip Technology	128931	Dicamba, diglycolamine salt	7/1/2017	9/30/2017	0	8	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
030869 - 00001	000352-00913	Dupont Fexapan Herbicide Plus Vaporgrip Technology	128931	Dicamba, diglycolamine salt	10/1/2017	12/31/2017	0	142	0
031062 - 00004	000524-00617	Xtendimax with Vaporgrip Technology	128931	Dicamba, diglycolamine salt	10/1/2017	12/31/2017	0	48	0
031344 - 00002	000352-00913	Dupont Fexapan Herbicide	128931	Dicamba, diglycolamine salt	4/1/2018	6/30/2018	0	6	0
031376 - 00008	000264-01173	DiFlexx Herbicide	128931	Dicamba, diglycolamine salt	4/1/2018	6/30/2018	0	14	0
031376 - 00009	000264-01184	DiFlexx Duo	128931, 012801	Dicamba, diglycolamine salt, tembotrione	4/1/2018	6/30/2018	0	3	0
031462 - 00012	000524-00617	Xtendimax with Vaporgrip Technology	128931	Dicamba, diglycolamine salt	4/1/2018	6/30/2018	0	130	0
031617 - 00004	000352-00913	Dupont Fexapan Herbicide	128931	Dicamba, diglycolamine salt	7/1/2018	9/30/2018	0	5	0
031623 - 00007	000264-01184	DiFlexx Duo	128931, 012801	Dicamba, diglycolamine salt, tembotrione	7/1/2018	9/30/2018	0	4	0
031623 - 00006	000264-01173	DiFlexx Herbicide	128931	Dicamba, diglycolamine salt	7/1/2018	9/30/2018	0	12	0
031647 - 00011	000524-00617	Xtendimax with Vaporgrip Technology	128931	Dicamba, diglycolamine salt	7/1/2018	9/30/2018	0	377	0
031893 - 00005	000264-01173	DiFlexx Herbicide	128931	Dicamba, diglycolamine salt	10/1/2018	12/31/2018	0	1	0
032438 - 00064	000264-01173	DiFlexx Herbicide	128931	Dicamba, diglycolamine salt	4/1/2019	6/30/2019	0	2	0
032438 - 00072	000264-01184	DiFlexx Duo Herbicide	128931, 012801	Dicamba, diglycolamine salt, tembotrione	4/1/2019	6/30/2019	0	1	0
032483 - 00072	000264-01184	DiFlexx Duo Herbicide	128931, 012801	Dicamba, diglycolamine salt, tembotrione	4/1/2019	6/30/2019	0	1	0
032483 - 00064	000264-01173	DiFlexx Herbicide	128931	Dicamba, diglycolamine salt	4/1/2019	6/30/2019	0	2	0
032707 - 00021	000264-01184	DiFlexx Duo	012801, 128931	Tembotrione, dicamba, diglycolamine salt	7/1/2019	9/30/2019	0	2	0
032707 - 00022	000264-01173	DiFlexx Herbicide	128931	Dicamba, diglycolamine salt	7/1/2019	9/30/2019	0	2	0
033480 - 00010	000264-01173	DiFlexx Herbicide	128931	Dicamba, diglycolamine salt	4/1/2020	6/30/2020	0	1	0

N/R- not reported

WB = minor 'wildlife' incidents; PB = minor 'plant damage' incidents, ONT = 'other nontarget' incidents

Table E-9. Dimethylamine salt (DMA-salt, PC code 029802) Aggregate Incidents

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
002078 - 00106	002217-00570-000239	Weed-B-Gon for Southern Lawns 3	030019, 029802, 031519	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	3/1/1995	3/31/1995	0	2	0
002289 - 00195	002217-00540-000239	Weed-B-Gon(R) Lawn Weeder	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	5/1/1995	5/31/1995	0	1	0
002289 - 00196	002217-00570-000239	Weed-B-Gon for Southern Lawns 3	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	5/1/1995	5/31/1995	0	1	0
003620 - 00203	002217-00570-000239	Weed-B-Gon for Southern Lawns 3	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	5/1/1996	5/31/1996	0	7	0
003620 - 00202	002217-00540-000239	Weed-B-Gon(R) Lawn Weeder	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	5/1/1996	5/31/1996	0	14	0
004197 - 00214	002217-00570-000239	Weed-B-Gon for Southern Lawns 3	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	8/1/1996	8/31/1996	0	8	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
004197 - 00212	002217-00540-000239	Weed-B-Gon(R) Lawn Weeder	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	8/1/1996	8/31/1996	0	8	0
004417 - 00122	002217-00570-000239	Weed-B-Gon for Southern Lawns Formula II	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	9/1/1996	9/30/1996	0	5	0
004417 - 00120	002217-00540-000239	Weed-B-Gon(R) Lawn Weeder	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	9/1/1996	9/30/1996	0	2	0
004558 - 00118	002217-00540-000239	Weed-B-Gon(R) Lawn Weeder	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	10/1/1996	10/31/1996	0	5	0
004558 - 00119	002217-00570-000239	Weed-B-Gon for Southern Lawns Formula II	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	10/1/1996	10/31/1996	0	2	0
004624 - 00091	002217-00570-000239	Weed-B-Gon for Southern Lawns Formula II	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	11/1/1996	11/30/1996	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
005116 - 00124	002217-00540-000239	Weed-B-Gon(R) Lawn Weeder	030019, 029802, 031519	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	3/1/1997	3/31/1997	0	2	0
005299 - 00187	002217-00540-000239	Weed-B-Gon(R) Lawn Weeder	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	4/1/1997	4/30/1997	0	5	0
005299 - 00188	002217-00570-000239	Weed-B-Gon for Southern Lawns Formula II	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	4/1/1997	4/30/1997	0	10	0
005463 - 00239	002217-00570-000239	Weed-B-Gon for Southern Lawns Formula II	030019, 029802, 031519	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	5/1/1997	5/31/1997	0	1	0
005463 - 00233	002217-00540-000239	Weed-B-Gon(R) Lawn Weeder	030019, 029802, 031519	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	5/1/1997	5/31/1997	0	15	0
005463 - 00234	002217-00570-000239	Weed-B-Gon for Southern Lawns Formula II	030019, 029802, 031519	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	5/1/1997	5/31/1997	0	17	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
005672 - 00230	002217-00540-000239	Weed-B-Gon(R) Lawn Weeder	030019, 031519, 02980	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	6/1/1997	6/30/1997	0	13	0
005672 - 00231	002217-00570-000239	Weed-B-Gon for Southern Lawns Formula II	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	6/1/1997	6/30/1997	0	22	0
005916 - 00246	002217-00570-000239	Weed-B-Gon for Southern Lawns Formula II	030019, 031519, 02980	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	7/1/1997	7/31/1997	0	11	0
005916 - 00245	002217-00540-000239	Weed-B-Gon(R) Lawn Weeder	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	7/1/1997	7/31/1997	0	2	0
005951 - 00222	002217-00570-000239	Weed-B-Gon for Southern Lawns 3	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	8/1/1997	8/31/1997	0	8	0
005951 - 00221	002217-00540-000239	Weed-B-Gon(R) Lawn Weeder	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	8/1/1997	8/31/1997	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
006165 - 00181	002217-00570-000239	Weed-B-Gon for Southern Lawns Formula II	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	9/1/1997	9/30/1997	0	5	0
006165 - 00180	002217-00540-000239	Weed-B-Gon(R) Lawn Weeder	030019, 029802, 031519	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	9/1/1997	9/30/1997	0	2	0
006307 - 00164	002217-00540-000239	Weed-B-Gon(R) Lawn Weeder	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	10/1/1997	10/31/1997	0	3	0
006307 - 00165	002217-00570-000239	Weed-B-Gon for Southern Lawns 3	030019, 029802, 031519	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	10/1/1997	10/31/1997	0	3	0
010708 - 00011	010404-00044	Bentgrass Selective (Lesco)	029802, 030019, 031519	Dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	6/16/1998	10/9/2000	0	1	0
010708 - 00045	000228-00313-010404	Eliminate (Riverdale)	029802, 030516, 116002	Dicamba, dimethylamine salt, MCPA, dimethylamine salt, triethylamine triclopyr	6/16/1998	10/9/2000	0	2	0
010708 - 00008	010404-00043	Three-Way (Lesco)	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	6/16/1998	10/9/2000	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
008050 - 00048	002217-00570-000239	Ortho Chickweed, Spurge & Oxalis Killer D	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	7/1/1998	9/30/1998	0	1	0
008050 - 00049	002217-00570-000239	Ortho Chickweed, Spurge & Oxalis Killer D	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	7/1/1998	9/30/1998	0	39	0
008050 - 00104	002217-00570-000239	Ortho Chickweed, Spurge & Oxalis Killer D	030019, 029802, 031519	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	7/1/1998	9/30/1998	0	39	0
008050 - 00103	002217-00570-000239	Ortho Chickweed, Spurge & Oxalis Killer D	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	7/1/1998	9/30/1998	0	1	0
008265 - 00055	009688-00109	Chemsico Spot Weed Killer A	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	8/1/1998	11/30/1998	0	1	0
008265 - 00030	000478-00121	Real-Kill Broadleaf Weed Killer	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	8/1/1998	11/30/1998	0	3	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
008294 - 00004	000802-00588	Lilly/Miller Ultragreen Weed and Feed	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	9/1/1998	11/30/1998	0	1	0
008406 - 00015	002217-00570-000239	Ortho Chickweed, Spurge & Oxalis Killer D	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	1/1/1999	1/31/1999	0	9	0
008406 - 00014	002217-00570-000239	Ortho Chickweed, Spurge & Oxalis Killer D	029802, 030019, 031519	Dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	1/1/1999	1/31/1999	0	1	0
008697 - 00002	051036-00289	Banvel Herbicide	029802	Dicamba, dimethylamine salt	1/1/1999	3/31/1999	0	1	0
008693 - 00170	002217-00570-000239	Weed-B-Gon Lawn Weed Killer 2	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	1/1/1999	3/31/1999	0	12	0
008889 - 00017	000478-00121	Real-Kill Broadleaf Weed Killer	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	3/1/1999	5/31/1999	0	3	0
008889 - 00043	009688-00109	Chemsico Spot Weed Killer A	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	3/1/1999	5/31/1999	0	3	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
009153 - 00194	000239-02664	Weed-B-Gon Ready Spray Lawn Weed Killer	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	4/1/1999	6/30/1999	0	25	0
009153 - 00170	002217-00540-000239	Weed-B-Gon Lawn Weed Killer	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	4/1/1999	6/30/1999	0	12	0
009153 - 00173	002217-00570-000239	Weed-B-Gon Lawn Weed Killer 2	129046, 029802, 030019	(+)-(R)-2-(4-Chloro-2-methylphenoxy)propanoic acid, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	4/1/1999	6/30/1999	0	61	0
009392 - 00058	009688-00109	Chemsico Spot Weed Killer A	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	6/1/1999	8/31/1999	0	11	0
009392 - 00029	000478-00121	Real-Kill Broadleaf Weed Killer	029802, 030019, 031519	Dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	6/1/1999	8/31/1999	0	2	0
009609 - 00278	002217-00570-000239	Weed-B-Gon Lawn Weed Kill 2 / Weed-B-Gon Lawn Weed Killer	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	7/1/1999	9/30/1999	0	28	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
009609 - 00279	002217-00570-000270	Weed-Be-Gon Lawn Weed Kill2	029802, 030019, 031519	Dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	7/1/1999	9/30/1999	0	48	0
009678 - 00001	007969-00131	Banvel	029802	Dicamba, dimethylamine salt	9/1/1999	11/30/1999	0	1	0
009768 - 00021	000478-00121	Real-Kill Broadleaf Weed Killer	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	9/1/1999	11/30/1999	0	7	0
009916 - 00079	002217-00570-000239	Weed-B-Gon Lawn Weed Killer & Weed-B-Gon Lawn Weed Kill2	029802, 030019, 031519	Dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	10/1/1999	12/31/1999	0	9	0
010062 - 00002	002217-00570-046515	K-Gro Broadleaf Weed Killer-Southern Formula ll	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	12/1/1999	2/29/2000	0	1	0
010062 - 00008	002217-00694-008845	Spectracide Pro Broadleaf Weed Herbicide	029802, 030019, 031519	Dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	12/1/1999	2/29/2000	0	1	0
010065 - 00004	000478-00121	Real-Kill Broadleaf Weed Killer	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	12/1/1999	2/29/2000	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
010250 - 00190	002217-00570-000239	Weed-B-Gon Lawn Weed Kill2	030019, 029802, 031519	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	1/1/2000	3/31/2000	0	4	0
010250 - 00189	002217-00570-000239	Weed-B-Gon Lawn Weed Killer	029802, 030019, 031519	Dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	1/1/2000	3/31/2000	0	1	0
010104 - 00002	000228-00312-002935	Wilbur Ellis' Wil-Gro Tricep	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	1/1/2000	3/31/2000	0	1	0
010271 - 00001	007969-00131	Banvel	029802	Dicamba, dimethylamine salt	3/1/2000	6/1/2000	0	1	0
010462 - 00015	000478-00121	Real-Kill Broadleaf Weed Killer	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	3/1/2000	5/30/2000	0	1	0
010581 - 00305	002217-00570-000239	Weed-B-Gon Lawn Weed Kill2	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	4/1/2000	6/30/2000	0	72	0
010574 - 00004	000228-00323	Riverdale Tru-Power	029802, 117403, 030516	Dicamba, dimethylamine salt, Clopyralid (ANSI), MCPA, dimethylamine salt	4/1/2000	6/30/2000	0	1	1

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
010898 - 00163	002217-00570-000239	Weed-B-Gon Lawn Weed Kill2	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	7/1/2000	9/30/2000	0	43	0
011093 - 00005	000478-00121	Real-Kill Broadleaf Weed Killer	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	10/1/2000	12/31/2000	0	3	0
011190 - 00125	002217-00570-000239	Weed-B-Gon for Southern Lawns Formula ll	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	10/1/2000	12/31/2000	0	15	0
011667 - 00001	000228-00313-010404	Riverdale Horsepower Selective Herbicide Aka - Lesco Eliminate Liquid Selective Herbicide	030516, 029802, 116002	MCPA, dimethylamine salt, dicamba, dimethylamine salt, triethylamine triclopyr	10/1/2000	12/31/2000	0	1	0
011545 - 00184	002217-00570-000239	Weed-B-Gon Lawn Weed Killer 2	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	1/1/2001	3/31/2001	0	3	0
011425 - 00012	000478-00121	Real-Kill Broadleaf Weed Killer	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	1/1/2001	2/28/2001	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
011508 - 00028	072155-00004	Southern Weed Killer for Lawns	029802, 030019, 031519	Dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	1/1/2001	3/31/2001	0	1	0
011944 - 00520	002217-00570-000239	Weed-B-Gon Lawn Weed Killer2	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	4/1/2001	6/30/2001	0	28	0
011944 - 00523	002217-00570-000239	Weed-B-Gon Lawn Weed Killer2 for Lock 'N Spray	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	4/1/2001	6/30/2001	0	3	0
011945 - 00045	072155-00005	All in One Weed Killer for Lawns	030019, 013803, 029802, 031520	Dimethylamine 2,4-dichlorophenoxyacetate, MSMA, dicamba, dimethylamine salt, dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate	4/1/2001	6/30/2001	0	2	0
011945 - 00041	072155-00001	All in One Weed Killer for Lawns	030019, 013803, 031520, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, MSMA, Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	4/1/2001	6/30/2001	0	7	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
011944 - 00522	002217-00570-000239	Weed-B-Gon Lawn Weed Killer 2	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	4/1/2001	6/30/2001	0	26	0
011945 - 00042	072155-00002	Southern Weed Killer for Lawns	030019, 029802, 031519	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	4/1/2001	6/30/2001	0	3	0
011944 - 00521	002217-00570-000239	Weed-B-Gon Weed Killer 2 for Lock 'N Spray	029802, 030019, 031519	Dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	4/1/2001	6/30/2001	0	6	0
011931 - 00020	000478-00121	Real-Kill Broadleaf Weed Killer	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	4/1/2001	6/30/2001	0	9	0
011945 - 00044	072155-00004	Southern Weed Killer for Lawns	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	4/1/2001	6/30/2001	0	2	0
012193 - 00048	009688-00109	Chemsico Spot Weed Killer A	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	7/1/2001	9/30/2001	0	5	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
012339 - 00197	002217-00570-000239	Weed-B-Gon Lawn Weed Killer 2	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	7/1/2001	9/30/2001	0	50	0
012339 - 00199	002217-00570-000239	Weed-B-Gon Lawn Weed Killer 2 for Lock 'N Spray	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	7/1/2001	9/30/2001	0	5	0
012193 - 00024	000478-00121	Real-Kill Broadleaf Weed Killer	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	7/1/2001	9/30/2001	0	4	0
012339 - 00198	002217-00570-000239	Weed-B-Gon for Southern Lawns Formula ll	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	7/1/2001	9/30/2001	0	1	0
012339 - 00200	002217-00570-073327	Broadleaf Weed Killer Concentrate	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	7/1/2001	9/30/2001	0	1	0
012639 - 00024	002217-00570-000239	Weed-B-Gon Lawn Weed Killer 2	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	10/1/2001	12/31/2001	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
012639 - 00025	002217-00570-000239	Weed-B-Gon Weed Killer 2 for Lock 'N Spray	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	10/1/2001	12/31/2001	0	4	0
012639 - 00027	002217-00570-000239	Weed-B-Gon Lawn Weed Killer for Lock 'N Spray	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	10/1/2001	12/31/2001	0	2	0
012639 - 00026	002217-00570-000239	Weed-B-Gon Lawn Weed Killer 2	030019, 029802, 031519	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	10/1/2001	12/31/2001	0	8	0
012568 - 00011	000478-00121	Real-Kill Broadleaf Weed Killer	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	10/1/2001	12/31/2001	0	3	0
012568 - 00027	009688-00109	Chemsico Spot Weed Killer A	030019, 029802, 031519	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	10/1/2001	12/31/2001	0	1	0
012575 - 00025	072155-00005	All in One Weed Killer for Lawns Concentrate	029802, 030019, 013803, 031520	Dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate, MSMA, Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate	10/1/2001	12/31/2001	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
012890 - 00019	072155-00002	Advanced Southern Weed Killer for Lawns	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	1/1/2002	3/31/2002	0	1	0
012875 - 00228	002217-00570-000239	Weed-B-Gon Weed Killer 2 for Lawns Lock 'N Spray	029802, 030019, 031519	Dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	1/1/2002	3/31/2002	0	1	0
012875 - 00230	002217-00570-000239	Weed-B-Gon Lawn Weed Killer 2	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	1/1/2002	3/31/2002	0	7	0
012845 - 00035	009688-00139	Chemsico Lawn Weed Killer Concentrate	030019, 029802, 031519	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	1/1/2002	3/31/2002	0	1	0
012875 - 00229	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	1/1/2002	3/31/2002	0	1	0
013139 - 00040	009688-00109	Chemsico Spot Weed Killer A	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	4/1/2002	6/30/2002	0	4	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
013243 - 00390	000239-02664	Weed-B-Gon Weed Killer for Lawns	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	4/1/2002	6/30/2002	0	12	0
013243 - 00326	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	4/1/2002	6/30/2002	0	20	0
013243 - 00327	002217-00570-000239	Weed-B-Gon Lawn Weed Killer2	030019, 029802, 031519	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	4/1/2002	6/30/2002	0	35	0
013243 - 00325	002217-00570-000239	Weed-B-Gon Lawn Weed Killer2 for Lock 'N Spray	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	4/1/2002	6/30/2002	0	1	0
013139 - 00018	000478-00121	Real-Kill Broadleaf Weed Killer	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	4/1/2002	6/30/2002	0	5	0
013307 - 00003	002217-00811-057131	Forevergreen Lawn Builder Winterizer & Weed Control	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	6/1/2002	8/31/2002	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
013510 - 00243	002217-00570-000239	Weed-B-Gon Lawn Weed Killer2	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	7/1/2002	9/30/2002	0	35	0
013510 - 00242	002217-00570-000239	Ortho Weed-B-Gon Weed Killer for Lawns Concentrate	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	7/1/2002	9/30/2002	0	11	0
013510 - 00295	000239-02664	Weed-B-Gon Weed Killer for Lawns	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	7/1/2002	9/30/2002	0	12	0
013510 - 00244	002217-00570-000239	Weed-B-Gon Lawn Weed Killer2 for Lock 'N Spray	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	7/1/2002	9/30/2002	0	4	0
013413 - 00020	000478-00121	Real-Kill Broadleaf Weed Killer	031520, 029802, 030019	Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	7/1/2002	9/30/2002	0	6	0
013794 - 00040	002217-00570-000239	Weed-B-Gon Weed Killer2	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	10/1/2002	12/31/2002	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
013794 - 00057	000239-02664	Weed-B-Gon Weed Killer for Lawns	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	10/1/2002	12/31/2002	0	7	0
013672 - 00010	000478-00121	Real-Kill Broadleaf Weed Killer	030019, 029802, 031520	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate	10/1/2002	12/31/2002	0	10	0
013672 - 00034	009688-00109	Chemsico Spot Weed Killer A	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	10/1/2002	12/31/2002	0	2	0
013672 - 00013	000478-00044	Real-Kill Spot Weed Killer	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	10/1/2002	12/31/2002	0	1	0
014028 - 00236	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	1/1/2003	3/31/2003	0	5	0
013981 - 00010	000478-00121	Real-Kill Broadleaf Weed Killer	029802, 030019, 031520	Dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate, Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate	1/1/2003	3/31/2003	0	4	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
014028 - 00237	002217-00570-000239	Weed-B-Gon Weed Killer 2	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	1/1/2003	3/31/2003	0	5	0
014028 - 00263	000239-02664	Weed-B-Gon Weed Killer for Lawns	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	1/1/2003	3/31/2003	0	2	0
013981 - 00028	009688-00109	Chemsico Spot Weed Killer A	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	1/1/2003	3/31/2003	0	1	0
014028 - 00238	002217-00570-000239	Weed-B-Gon Lawn Weed Killer2 for Lock 'N Spray	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	1/1/2003	3/31/2003	0	1	0
014028 - 00264	000239-02682	Weed-B-Gon Ready-To-Use	030019, 029802, 031520	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate	1/1/2003	3/31/2003	0	4	0
014283 - 00005	072155-00003	All in One Killer for Lawns (Concentrate)	013803, 030019, 031520, 029802	MSMA, dimethylamine 2,4-dichlorophenoxyacetate, Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	4/1/2003	6/30/2003	0	12	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
014283 - 00046	072155-00004	Southern Weed Killer for Lawns (Concentrate)	031520, 029802, 030019	Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	4/1/2003	6/30/2003	0	6	0
014309 - 00021	000478-00121	Real-Kill Broadleaf Weed Killer	031520, 030019, 029802	Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	4/1/2003	6/30/2003	0	2	0
014283 - 00003	072155-00001	All in One Killer for Lawns (1 Gal Ready-To-Use)	030019, 013803, 031520, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, MSMA, Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	4/1/2003	6/30/2003	0	1	0
014317 - 00621	002217-00570-000239	Weed-B-Gon Lawn Weed Killer 2/Weed Killer for Lawns/Lawn Weed Killer 2 for Lock 'N Spray	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	4/1/2003	6/30/2003	2	76	0
014283 - 00045	072155-00002	Southern Weed Killer for Lawns (24 Oz. Ready-To-Use)	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	4/1/2003	6/30/2003	0	3	0
014317 - 00668	000239-02664	Weed-B-Gon Weed Killer for Lawns	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	4/1/2003	6/30/2003	0	62	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
014283 - 00044	072155-00002	Southern Weed Killer for Lawns (1 Gallon Ready-To-Use)	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	4/1/2003	6/30/2003	0	1	0
014283 - 00004	072155-00001	All in One Killer for Lawns (24 Oz. Ready-To-Use)	029802, 030019, 013803, 031520	Dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate, MSMA, Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate	4/1/2003	6/30/2003	0	3	0
014317 - 00670	000239-02682	Weed-B-Gon Ready-To-Use	031520, 029802, 030019	Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	4/1/2003	6/30/2003	0	81	0
014620 - 00021	072155-00001	All-In-One Weed Killer for Lawns Ready-To-Use (24 Oz)	029802, 031520, 013803, 030019	Dicamba, dimethylamine salt, Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate, MSMA, dimethylamine 2,4-dichlorophenoxyacetate	7/1/2003	9/3/2003	0	13	0
014521 - 00025	000478-00121	Real-Kill Broadleaf Weed Killer	031520, 029802, 030019	Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	7/1/2003	9/30/2003	0	5	0
014644 - 00278	000239-02682	Weed-B-Gon Ready-To-Use	030019, 031520, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	7/1/2003	9/30/2003	0	70	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
014521 - 00056	009688-00109	Chemsico Spot Weed Killer A	029802, 030019, 031519	Dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	7/1/2003	9/30/2003	0	2	0
014620 - 00074	072155-00002	Southern Weed Killer for Lawns Concentrate (24 Oz)	031519, 029802, 030019	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	7/1/2003	9/3/2003	0	4	0
014644 - 00230	002217-00570-073327	Broadleaf Weed Killer Concentrate	030019, 031519, 029802	Dimethylamine 2,4-dichlorophenoxyacetate, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt	7/1/2003	9/30/2003	0	2	0
014620 - 00020	072155-00005	All-In-One Weed Killer for Lawns Concentrate (32 Oz)	030019, 029802, 013803, 031520	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, MSMA, Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate	7/1/2003	9/3/2003	0	42	0
014620 - 00073	072155-00004	Southern Weed Killer for Lawns Concentrate (32 Oz)	031520, 030019, 029802	Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	7/1/2003	9/3/2003	0	4	0
014644 - 00229	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns Concentrate	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	7/1/2003	9/30/2003	0	69	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
014644 - 00273	000239-02664	Weed-B-Gon Weed Killer for Lawns	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	7/1/2003	9/30/2003	0	20	0
014773 - 00030	009688-00109	Chemsico Spot Weed Killer A	031519, 030019, 029802	Dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	10/1/2003	12/31/2003	0	3	0
014773 - 00012	000478-00121	Real-Kill Broadleaf Weed Killer	031520, 030019, 029802	Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt	10/1/2003	12/31/2003	0	3	0
014868 - 00115	000239-02664	Weed-B-Gon Ready-Spray	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	10/3/2003	12/3/2003	0	5	0
014868 - 00086	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns	030019, 029802, 031519	Dimethylamine 2,4-dichlorophenoxyacetate, dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate	10/3/2003	12/3/2003	0	4	0
014868 - 00116	000239-02682	Weed-B-Gon Ready-To-Use	031520, 029802, 030019	Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate, dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate	10/3/2003	12/3/2003	0	8	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
015126 - 00322	002217-00570-000239	Weed-B-Gon Lawn Weed Killer 2	029802, 031519, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, mecoprop, dimethylamine salt, 2,4-D, dimethylamine salt	1/1/2004	3/31/2004	0	9	0
015003 - 00010	000478-00121	Real-Kill Broadleaf Weed Killer	029802, 030019, 031520	Dicamba, dimethylamine salt, dimethylamine 2,4-dichlorophenoxyacetate, Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate	1/1/2004	3/31/2004	0	2	0
015045 - 00003	072155-00002	Southern Weed Killer for Lawns Ready-To-Use	029802, 031519, 030019	Dicamba, dimethylamine salt, dimethylamine 2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	1/1/2004	3/31/2004	0	4	0
015126 - 00350	000239-02682	Weed-B-Gon Ready-To-Use	030019, 029802, 031520	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	1/1/2004	3/31/2004	0	8	0
015045 - 00004	072155-00004	Southern Weed Killer for Lawns Concentrate	029802, 031520, 030019	Dicamba, dimethylamine salt, Dimethylamine (R)-2-(2-methyl-4-chlorophenoxy)propionate, dimethylamine 2,4-dichlorophenoxyacetate	1/1/2004	3/31/2004	0	1	0
015126 - 00346	000239-02664	Weed-B-Gon Weed Killer	030019, 031519, 029802	2,4-D, dimethylamine salt, mecoprop, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	1/1/2004	3/31/2004	0	3	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
015419 - 00619	002217-00570-000239	Weed-B-Gon Weed Killer	030019, 129046, 029802	2,4-D, dimethylamine salt, (+)-(R)-2-(4-Chloro-2-methylphenoxy)propanoic acid, 3,6-Dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2004	6/30/2004	3	110	0
015419 - 00666	000239-02664	Weed-B-Gon Weed Killer for Lawns	030019, 029802, 031519	2,4-D, dimethylamine salt, 3,6-Dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, mecoprop, dimethylamine salt	4/1/2004	6/30/2004	0	58	0
015419 - 00668	000239-02682	Weed-B-Gon Power Shot	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-Dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2004	6/30/2004	0	142	0
015405 - 00049	072155-00004	Southern Weed Killer for Lawns Ready-To-Spread	030019, 029802, 031520	2,4-D, dimethylamine salt, 3,6-Dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	4/1/2004	6/30/2004	0	3	0
015405 - 00050	072155-00002	Southern Weed Killer for Lawns Ready-To-Use	030019, 029802, 031519	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, mecoprop, dimethylamine salt	4/1/2004	6/30/2004	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
015419 - 00620	002217-00570-073327	Broadleaf Weed Killer Concentrate	129046, 030019, 029802	(+)-(R)-2-(4-Chloro-2-methylphenoxy)propanoic acid, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2004	6/30/2004	0	1	0
015295 - 00022	000478-00121	Real-Kill Broadleaf Weed Killer	030019, 029802, 031520	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	4/1/2004	6/1/2004	0	4	0
015405 - 00006	072155-00005	All-In-One Weed Killer for Lawns Concentrate	030019, 029802, 013803, 031520	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, MSMA (and salts), propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	4/1/2004	6/30/2004	0	34	0
015405 - 00008	072155-00003	All-In-One Weed Killer II for Lawns Concentrate	029802, 031520, 013803, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, MSMA (and salts), 2,4-D, dimethylamine salt	4/1/2004	6/30/2004	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
015405 - 00007	072155-00001	All-In-One Weed Killer for Lawns Ready-To-Use	031520, 030019, 029802, 013803	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, MSMA (and salts)	4/1/2004	6/30/2004	0	10	0
015295 - 00040	009688-00109	Chemsico Spot Weed Killer A	031519, 030019, 029802	Mecoprop, dimethylamine salt, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2004	6/1/2004	0	2	0
015714 - 00287	000239-02682	Weed-B-Gon Ready-To-Use	029802, 030019, 031520	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	7/1/2004	9/30/2004	0	86	0
015714 - 00284	000239-02665	Weed-B-Gon Weed Killer for Lawns with Lawnguard	029802, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2004	9/30/2004	0	4	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
015680 - 00011	072155-00001	All-In-One Weed Killer for Lawns Ready-To-Use 1 Gal	030019, 013803, 031520, 029802	2,4-D, dimethylamine salt, MSMA (and salts), propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2004	9/30/2004	0	11	0
015679 - 00019	000478-00121	Real-Kill Broadleaf Weed Killer	029802, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2004	9/30/2004	0	4	0
015679 - 00033	009688-00109	Chemsico Spot Weed Killer A	029802, 030019, 031519	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, mecoprop, dimethylamine salt	7/1/2004	9/30/2004	0	2	0
015679 - 00063	009688-00206	Chemsico Herbicide Concentrate DFC (Alternate II)	032201, 122809, 029802	6,7-Dihydrodipyrido(1, 2-a:2', 1'-c)pyrazinediium dibromide, propanoic acid, 2-(4-((5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)-, , 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2004	9/30/2004	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
015680 - 00010	072155-00005	All-In-One Weed Killer for Lawns Concentrate	031520, 029802, 013803, 030019	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, MSMA (and salts), 2,4-D, dimethylamine salt	7/1/2004	9/30/2004	0	35	0
015714 - 00283	000239-02664	Weed-B-Gon Weed Killer for Lawns with Lawnguard	030019, 031519, 029802	2,4-D, dimethylamine salt, mecoprop, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2004	9/30/2004	0	49	0
015680 - 00042	072155-00004	Southern Weed Killer for Lawns Concentrate 32 Oz	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2004	9/30/2004	0	5	0
015714 - 00240	002217-00570-000239	Weed-B-Gon for Southern Lawns Formula II	129046, 030019, 029802	(+)-(R)-2-(4-Chloro-2-methylphenoxy)propanoic acid, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2004	9/30/2004	2	80	0
015680 - 00012	072155-00003	All-In-One Weed Killer II for Lawns Concentrate 32 Oz.	030019, 013803, 031520, 029802	2,4-D, dimethylamine salt, MSMA (and salts), propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2004	9/30/2004	0	3	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
015680 - 00043	072155-00002	Southern Weed Killer for Lawns Ready-To-Use 1 Gal	030019, 031519, 029802	2,4-D, dimethylamine salt, mecoprop, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2004	9/30/2004	0	2	0
015946 - 00043	072155-00002	Southern Weed Killer for Lawns Ready-To-Use 1 Gal	029802, 030019, 031519	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, mecoprop, dimethylamine salt	10/1/2004	12/31/2004	0	2	0
015974 - 00142	000239-02664	Weed-B-Gon Weed Killer for Lawns with Lawnguard	030019, 029802, 031519	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, mecoprop, dimethylamine salt	10/1/2004	12/31/2004	0	9	0
015946 - 00007	072155-00005	All-In-One Weed Killer for Lawns Concentrate 32 Oz	029802, 030019, 031520, 013803	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, MSMA (and salts)	10/1/2004	12/31/2004	0	2	0
015946 - 00042	072155-00004	Southern Weed Killer for Lawns Concentrate 32 Oz	030019, 029802, 031520	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	10/1/2004	12/31/2004	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
015974 - 00144	000239-02682	Weed-B-Gon Max Ready-To-Use	029802, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt	10/1/2004	12/31/2004	0	9	0
015974 - 00122	002217-00570-000239	Weed-B-Gon Lawn Weed Killer2	030019, 129046, 029802	2,4-D, dimethylamine salt, (+)-(R)-2-(4-Chloro-2-methylphenoxy)propanoic acid, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	10/1/2004	12/31/2004	0	11	0
015840 - 00016	000478-00121	Real-Kill Broadleaf Weed Killer	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	10/1/2004	12/31/2004	0	10	0
015840 - 00030	009688-00109	Chemsico Spot Weed Killer A	030019, 029802, 031519	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, mecoprop, dimethylamine salt	10/1/2004	12/31/2004	0	2	0
016270 - 00386	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns with Lawnguard	129046, 030019, 029802	(+)-(R)-2-(4-Chloro-2-methylphenoxy)propanoic acid, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	1/1/2005	3/31/2005	0	4	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
016270 - 00408	000239-02665	Weed-B-Gon Weed Killer for Lawns with Lawnguard	029802, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt	1/1/2005	3/31/2005	0	1	0
016241 - 00005	000478-00121	Real-Kill Broadleaf Weed Killer	031520, 029802, 03001	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	1/1/2005	3/31/2005	0	5	0
016241 - 00016	009688-00109	Chemsico Spot Weed Killer A	031519, 030019, 029802	Mecoprop, dimethylamine salt, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	1/1/2005	3/31/2005	0	4	0
016270 - 00410	000239-02682	Weed-B-Gon Ready-To-Use	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	1/1/2005	3/31/2005	0	22	0
016270 - 00389	000228-00424-000239	Weed-B-Gon Max	029802, 116002, 030516	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, acetic acid, ((3,5,6-trichloro-2-pyridinyl)oxy)-, compd. with N, N-diethylethaneamine, MCPA, dimethylamine salt,	1/1/2005	3/31/2005	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
016379 - 00035	009688-00109	Chemsico Spot Weed Killer A	031519, 030019, 029802	Mecoprop, dimethylamine salt, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2005	6/30/2005	0	3	0
016530 - 00750	000228-00424-000239	Weed-B-Gon Max Concentrate	116002, 030516, 029802	Acetic acid, ((3,5,6-trichloro-2-pyridinyl)oxy)-, compd. with N, N-diethylethaneamine, MCPA, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2005	6/30/2005	0	90	0
016530 - 00788	000239-02665	Weed-B-Gon Weed Killer for Lawns with Lawnguard	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2005	6/30/2005	0	3	0
016379 - 00068	009688-00208	Chemsico Herbicide Rtu DFC	029802, 122809, 032201	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-((5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)-, 6, 7-Dihydrodipyrido(1, 2-a:2', 1'-c)pyrazinediium dibromide	4/1/2005	6/30/2005	0	1	0
016379 - 00022	000478-00121	Real-Kill Broadleaf Weed Killer	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2005	6/30/2005	0	8	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
016530 - 00792	000239-02682	Weed-B-Gon Max Ready-To-Use	030019, 029802, 031520	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	4/1/2005	6/30/2005	0	275	0
016603 - 00010	002217-00709	Trimec Plus	031520, 030019, 029802, 013803	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, MSMA (and salts)	4/1/2005	6/30/2005	0	1	0
016530 - 00787	000239-02664	Weed-B-Gon Weed Killer for Lawns with Lawnguard	030019, 031519, 029802	2,4-D, dimethylamine salt, mecoprop, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2005	6/30/2005	0	18	0
016530 - 00745	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns	029802, 129046, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, mecoprop-P, 2,4-D, dimethylamine salt	4/1/2005	6/30/2005	0	57	0
016885 - 00307	000239-02665	Weed-B-Gon Weed Killer for Lawns with Lawnguard	031520, 029802, 030019	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2005	9/30/2005	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
016965 - 00011	002217-00709	Gordon's Trimec Plus Crabgrass and Broadleaf Weed Killer	013803, 031520, 030019, 02980	MSMA (and salts), propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2005	9/30/2005	0	1	0
016885 - 00255	002217-00570-000239	Ortho Chickweed, Spurge & Oxalis Killer D	029802, 030019, 129046	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, mecoprop-P	7/1/2005	9/30/2005	0	17	0
016965 - 00017	002217-00875-008445	Spectracide Weed Stop 2x for Lawns Concentrate	029802, 129081, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, sulfentrazone, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2005	9/30/2005	0	2	0
016836 - 00073	009688-00208	Chemsico Herbicide RTU DFC	029802, 122809, 032201	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-((5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)-, 6, 7-Dihydrodipyrido(1, 2-a:2', 1'-c)pyrazinediium dibromide	7/1/2005	9/30/2005	0	1	0
016885 - 00259	000228-00424-000239	Ortho Weed-B-Gon Max Concentrate	030516, 116002, 029802	MCPA, dimethylamine salt, acetic acid, ((3,5,6-trichloro-2-pyridinyl)oxy)-, compd. with N, N-diethylethaneamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2005	9/30/2005	0	60	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
016885 - 00310	000239-02682	Weed-B-Gon Max Pull 'N Spray & RTU / Weed-B-Gon Power Shot Refill & RTU & RTU PNS	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2005	9/30/2005	0	109	0
016836 - 00024	000478-00121	Real-Kill Broadleaf Weed Killer	029802, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2005	9/30/2005	0	1	0
016885 - 00306	000239-02664	Weed-B-Gon Weed Killer for Lawns with Lawnguard	029802, 031519, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, mecoprop, dimethylamine salt, 2,4-D, dimethylamine salt	7/1/2005	9/30/2005	0	4	0
017190 - 00059	000239-02682	Weed-B-Gon Max Pull 'N Spray, Ready-To-Use	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	10/1/2005	12/31/2005	0	10	0
017190 - 00038	000228-00424-000239	Weed-B-Gon Max Concentrate	030516, 116002, 029802	MCPA, dimethylamine salt, acetic acid, ((3,5,6-trichloro-2-pyridinyl)oxy)-, ompd. with N, N-diethylethaneamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	10/1/2005	12/31/2005	0	5	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
017068 - 00014	000478-00121	Real-Kill Broadleaf Weed Killer	030019, 029802, 031520	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	10/1/2005	12/31/2005	0	2	0
017391 - 00048	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns; Weed-B-Gon for Southern Lawns Formula II	029802, 030019, 129046	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, mecoprop-P	1/1/2006	3/31/2006	0	1	0
017391 - 00072	000239-02682	Weed-B-Gon Max Pull 'N Spray, Ready-To-Use	029802, 030019, 031520	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	1/1/2006	3/31/2006	0	4	0
017747 - 00844	000239-02665	Weed-B-Gon Weed Killer for Lawns with Lawnguard	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2006	6/30/2006	0	1	0
017747 - 00804	002217-00570-000239	Weed-B-Gon Lawn Weed Killer2, Weed Killer for Lawns with Lawnguard	029802, 129046, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, mecoprop-P, 2,4-D, dimethylamine salt	4/1/2006	6/30/2006	1	30	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
017747 - 00848	000239-02682	Weed-B-Gon Max Pull 'N Spray, Weed-B-Gon Max Ready-To-Use, Weed-B-Gon Ready-To-Use PNS	030019, 029802, 031520	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	4/1/2006	6/30/2006	1	188	0
017774 - 00023	002217-00808	Gordon's Trimec Plus Concentrate	029802, 030019, 013803, 031520	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, MSMA (and salts), propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	4/1/2006	6/30/2006	0	2	0
017774 - 00034	002217-00867	Surge Broadleaf Herbicide for Turf	031520, 030019, 129081, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, sulfentrazone, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2006	6/30/2006	0	1	0
017747 - 00843	000239-02664	Weed-B-Gon Weed Killer for Lawns with Lawnguard	030019, 031519, 029802	2,4-D, dimethylamine salt, mecoprop, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2006	6/30/2006	0	11	0
017774 - 00005	002217-00539-033955	Gordon's Trimec Lawn Weed Killer	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2006	6/30/2006	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
017747 - 00809	000228-00424-000239	Weed-B-Gon Max Concentrate	029802, 116002, 030516	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, acetic acid, ((3,5,6-trichloro-2-pyridinyl)oxy)-, compd. with N, N-diethylethaneamine, MCPA, dimethylamine salt	4/1/2006	6/30/2006	0	87	0
017995 - 00001	051036-00289	Dicamba DMA	029802	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	6/1/2006	9/1/2006	0	2	0
017989 - 00004	002217-00540	Gordon's Bl 6000 Lawn Weed Killer	029802, 030019, 031520	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	7/1/2006	9/30/2006	0	2	0
018089 - 00274	000239-02682	Weed-B-Gon Max Pull 'N Spray, Weed-B-Gon Max Ready-To-Use, Weed-B-Gon Power Shot Twin Pack 40 Oz	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2006	9/30/2006	0	109	0
017989 - 00011	002217-00808	Gordon's Trimec Plus Concentrate	029802, 013803, 030019, 031520	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, MSMA (and salts), 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	7/1/2006	9/30/2006	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
018089 - 00242	000228-00424-000239	Weed-B-Gon Max Concentrate, Weed-B-Gon Max Ready Spray	116002, 030516, 029802	Acetic acid, ((3,5,6-trichloro-2-pyridinyl)oxy)-, compd. with N, N-diethylethaneamine, MCPA, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2006	9/30/2006	0	106	0
018089 - 00238	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns, Weed-B-Gon Weed Killer for Lawns with Lawnguard, Weed-B-Gon Weed K	129046, 030019, 029802	Mecoprop-P, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2006	9/30/2006	0	22	0
018089 - 00270	000239-02664	Weed-B-Gon Weed Killer for Lawns with Lawnguard	029802, 030019, 031519	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, mecoprop, dimethylamine salt	7/1/2006	9/30/2006	0	8	0
018320 - 00097	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns with Lawnguard, Weed-B-Gon Lawn Weed Killer2	029802, 030019, 12904	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, mecoprop-P	10/1/2006	12/31/2006	0	3	0
018320 - 00116	000239-02682	Weed-B-Gon Max Pull 'N Spray, Weed-B-Gon Max Ready-To-Use	029802, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt	10/1/2006	12/31/2006	0	9	0
018320 - 00113	000239-02664	Weed-B-Gon Weed Killer for Lawns with Lawnguard	031519, 030019, 029802	Mecoprop, dimethylamine salt, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	10/1/2006	12/31/2006	0	4	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
018320 - 00099	000228-00424-000239	Weed-B-Gon Max Concentrate, Weed-B-Gon Max Ready Spray	116002, 030516, 029802	Acetic acid, ((3,5,6-trichloro-2-pyridinyl)oxy)-, compd. with N, N-diethylethaneamine, MCPA, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	10/1/2006	12/31/2006	0	4	0
018507 - 00328	000228-00424-000239	Weed-B-Gon Max	029802, 116002, 030516	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, acetic acid, ((3,5,6-trichloro-2-pyridinyl)oxy)-, compd. with N, N-diethylethaneamine, MCPA, dimethylamine salt	1/1/2007	3/31/2007	0	2	0
018507 - 00345	000239-02682	Weed-B-Gon Max	029802, 030019, 031520	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	1/1/2007	3/31/2007	0	5	0
018507 - 00341	000239-02664	Weed-B-Gon Weed Killer for Lawns with Lawnguard	030019, 029802, 031519	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, mecoprop, dimethylamine salt	1/1/2007	3/31/2007	0	2	0
018507 - 00326	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns with Lawnguard	030019, 129046, 029802	2,4-D, dimethylamine salt, mecoprop-P, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	1/1/2007	3/31/2007	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
018856 - 00018	002217-00709	Trimec Plus	031520, 029802, 013803, 030019	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, MSMA (and salts), 2,4-D, dimethylamine salt	4/1/2007	6/30/2007	0	2	0
018818 - 00505	000228-00424-000239	Ortho Weed-B-Gon Max Concentrate	030516, 116002, 029802	MCPA, dimethylamine salt, acetic acid, ((3,5,6-trichloro-2-pyridinyl)oxy)-, compd. with N, N-diethylethaneamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2007	6/30/2007	1	0	0
018818 - 00692	000239-02682	Weed-B-Gon Max	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2007	6/30/2007	0	161	0
018818 - 00654	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns with Lawnguard	029802, 129046, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, mecoprop-P, 2,4-D, dimethylamine salt	4/1/2007	6/30/2007	0	24	0
018818 - 00658	000228-00424-000239	Weed-B-Gon Max	030516, 116002, 029802	MCPA, dimethylamine salt, acetic acid, ((3,5,6-trichloro-2-pyridinyl)oxy)-, compd. with N, N-diethylethaneamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2007	6/30/2007	2	121	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
018818 - 00653	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns	129046, 029802, 030019	Mecoprop-P, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	4/1/2007	6/30/2007	0	5	0
018818 - 00693	000239-02682	Weed-B-Gon Ready-To-Use	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2007	6/30/2007	0	4	0
018818 - 00655	002217-00570-000239	Weed-B-Gon For Southern Lawns Formula II	030019, 029802, 129046	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, mecoprop-P	4/1/2007	6/30/2007	0	2	0
018818 - 00689	000239-02664	Weed-B-Gon Weed Killer for Lawns with Lawnguard	031519, 030019, 029802	Mecoprop, dimethylamine salt, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2007	6/30/2007	0	16	0
018856 - 00012	002217-00655	Gordon's Trimec Broadleaf Herbicide for Sensitive Grass	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2007	6/30/2007	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
018818 - 00690	000239-02665	Weed-B-Gon Weed Killer for Lawns with Lawnguard	031520, 029802, 030019	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	4/1/2007	6/30/2007	0	3	0
019142 - 00315	000239-02682	Weed-B-Gon Max	029802, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2007	9/30/2007	0	76	0
019142 - 00316	000239-02682	Weed-B-Gon Ready-To-Use	029802, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2007	9/30/2007	0	2	0
019142 - 00272	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns	129046, 030019, 029802	Mecoprop-P, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2007	9/30/2007	0	2	0
019142 - 00312	000239-02665	Weed-B-Gon Weed Killer for Lawns with Lawnguard	030019, 029802, 031520	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	7/1/2007	9/30/2007	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
019142 - 00273	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns with Lawnguard	129046, 029802, 030019	Mecoprop-P, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2007	9/30/2007	0	8	0
019142 - 00277	000228-00424-000239	Weed-B-Gon Max	029802, 030516, 116002	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, MCPA, dimethylamine salt, acetic acid, ((3,5,6-trichloro-2-pyridinyl)oxy)-, compd. with N, N-diethylethaneamine	7/1/2007	9/30/2007	0	69	0
019142 - 00311	000239-02664	Weed-B-Gon Weed Killer for Lawns with Lawnguard	031519, 030019, 029802	Mecoprop, dimethylamine salt, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2007	9/30/2007	0	1	0
019405 - 00113	000228-00424-000239	Weed-B-Gon Max	116002, 030516, 029802	Triclopyr, triethylamine salt, MCPA, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	10/1/2007	12/31/2007	0	7	0
019405 - 00127	000239-02682	Weed-B-Gon Max	029802, 030019, 031520	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N- methylmethanamine	10/1/2007	12/31/2007	0	13	0
019681 - 00264	002217-00570-000239	Weed-B-Gon for Southern Lawns Formula II	030019, 029802, 129046	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, mecoprop-P	1/1/2008	3/31/2008	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
019681 - 00282	000239-02682	Weed-B-Gon Max Killer RTU	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N- methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	1/1/2008	3/31/2008	0	5	0
019681 - 00283	000239-02689	Weed-B-Gon Max Plus Crabgrass Control RTU	128974, 029802, 030019, 129046	Quinclorac, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, mecoprop-P	1/1/2008	3/31/2008	0	1	0
019681 - 00280	000239-02666	Weed-B-Gon for Southern Lawns RS	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	1/1/2008	3/31/2008	0	6	0
019681 - 00266	000228-00424-000239	Weed-B-Gon Max Weed Killer Concentrate	116002, 030516, 029802	Triclopyr, triethylamine salt, MCPA, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	1/1/2008	3/31/2008	0	5	0
019681 - 00279	000239-02665	Weed-B-Gon for Southern Lawns Concentrate	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N- methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	1/1/2008	3/31/2008	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
020308 - 00115	002217-00570-000239	Weed-B-Gon Weed Killer for Lawns Concentrate	030019, 029802, 129046	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, mecoprop-P	7/1/2008	9/30/2008	0	5	0
020188 - 00026	000478-00121	Real-Kill Broadleaf Weed Killer	029802, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2008	9/30/2008	0	1	0
020308 - 00140	000239-02682	Weed-B-Gon Max Weed Killer RTU	029802, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2008	9/30/2008	0	60	0
020391 - 00042	002217-00885-008845	Spectracide Weed Stop for Lawns Concentrate Plus Crabgrass Killer	030019, 029802, 128974, 129081	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, quinclorac, sulfentrazone	7/1/2008	9/30/2008	0	1	0
020308 - 00116	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Control Singles	128974, 030019, 029802	Quinclorac, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2008	9/30/2008	0	19	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
020308 - 00137	000239-02665	Weed-B-Gon Max Concentrate Singles	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2008	9/30/2008	0	5	0
020308 - 00138	000239-02666	Weed-B-Gon for Southern Lawns RS 32oz	031520, 029802, 030019	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2008	9/30/2008	0	17	0
020391 - 00038	002217-00875	EH-1416 Herbicide	129081, 029802, 030019, 031520	Sulfentrazone, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	7/1/2008	9/30/2008	0	6	0
020308 - 00117	000228-00424-000239	Weed-B-Gon Max Weed Killer Concentrate	029802, 030516, 116002	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, MCPA, dimethylamine salt, triclopyr, triethylamine salt	7/1/2008	9/30/2008	0	61	0
020308 - 00144	000239-02689	Weed-B-Gon Max Plus Crabgrass Control RTU	029802, 128974, 030019, 129046	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, quinclorac, 2,4-D, dimethylamine salt, mecoprop-P	7/1/2008	9/30/2008	0	40	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
020391 - 00039	002217-00876-008845	Spectracide Weed Stop 2x for Lawns	030019, 029802, 129081, 031520	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, sulfentrazone, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	7/1/2008	9/30/2008	0	2	0
020578 - 00151	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Concentrate	029802, 030019, 128974	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, quinclorac	10/1/2008	12/31/2008	0	2	0
020578 - 00152	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	128974, 030019, 129046, 029802	Quinclorac, 2,4-D, dimethylamine salt, mecoprop-P, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	10/1/2008	12/31/2008	0	2	0
020578 - 00146	000239-02665	Weed-B-Gon for Southern Lawns Concentrate	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	10/1/2008	12/31/2008	0	3	0
020578 - 00148	002217-00570-000239	Weed-B-Gon Lawn Weed Killer Concentrate	030019, 129046, 029802	2,4-D, dimethylamine salt, mecoprop-P, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	10/1/2008	12/31/2008	0	1	0
020578 - 00154	000239-02682	Weed-B-Gon Max RTU	029802, 030019, 031520	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	10/1/2008	12/31/2008	0	7	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
020578 - 00153	000228-00424-000239	Weed-B-Gon Max Ready Spray	030516, 116002, 029802	MCPA, dimethylamine salt, triclopyr, triethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	10/1/2008	12/31/2008	0	2	0
020578 - 00147	000239-02666	Weed-B-Gon for Southern Lawns Ready Spray	029802, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt	10/1/2008	12/31/2008	0	2	0
020578 - 00150	000228-00424-000239	Weed-B-Gon Max Concentrate	116002, 029802, 030516	Triclopyr, triethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, MCPA, dimethylamine salt	10/1/2008	12/31/2008	0	7	0
020813 - 00323	000228-00424-000239	Weed-B-Gon Max Concentrate	029802, 116002, 030516	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, triclopyr, triethylamine salt, MCPA, dimethylamine salt	1/1/2009	3/31/2009	0	2	0
020813 - 00329	000239-02682	Weed-B-Gon Max RTU	030019, 029802, 031520	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	1/1/2009	3/31/2009	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
020813 - 00322	000239-02665	Weed-B-Gon for Southern Lawns Concentrate	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	1/1/2009	3/31/2009	0	2	0
020813 - 00327	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Concentrate	128974, 030019, 029802	Quinclorac, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	1/1/2009	3/31/2009	0	1	0
020926 - 00070	009688-00208	Chemsico Herbicide RTU DFC	032201, 029802, 122809	Diquat dibromide, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-((5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)-	4/1/2009	6/30/2009	0	1	0
021092 - 00688	000239-02666	Weed-B-Gon for Southern Lawns Ready Spray	030019, 029802, 031520	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	4/1/2009	6/30/2009	0	3	0
021092 - 00692	000239-02665	Weed-B-Gon Max Concentrate	031520, 029802, 030019	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	4/1/2009	6/30/2009	0	46	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
021092 - 00699	000228-00424-000239	Weed-B-Gon Max Ready Spray	116002, 029802, 030516	Triclopyr, triethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, MCPA, dimethylamine salt	4/1/2009	6/30/2009	0	38	0
021092 - 00700	000239-02682	Weed-B-Gon Max RTU	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2009	6/30/2009	0	99	0
021214 - 00035	002217-00875-008845	Spectracide Weed Stop 2x for Lawns Concentrate	029802, 129081, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, sulfentrazone, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt	4/1/2009	6/30/2009	0	1	0
021214 - 00040	002217-00887-008845	Spectracide Weed Stop for Lawns Plus Crabgrass Killer	029802, 030019, 128974, 129081	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, quinclorac, sulfentrazone	4/1/2009	6/30/2009	0	1	0
021092 - 00687	002217-00570-000239	Weed-B-Gon for Southern Lawns Concentrate	029802, 030019, 129046	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, mecoprop-P	4/1/2009	6/30/2009	0	3	0
021092 - 00696	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Concentrate	030019, 029802, 128974	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, quinclorac	4/1/2009	6/30/2009	0	7	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
020926 - 00029	000478-00121	Real-Kill Broadleaf Weed Killer	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2009	6/30/2009	0	1	0
021092 - 00697	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass RS	128974, 029802, 030019	Quinclorac, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	4/1/2009	6/30/2009	0	13	0
021092 - 00701	000239-02682	Weed-B-Gon Weed Killer RTU	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2009	6/30/2009	0	2	0
021092 - 00690	002217-00570-000239	Weed-B-Gon Lawn Weed Killer Concentrate	129046, 029802, 030019	Mecoprop-P, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	4/1/2009	6/30/2009	0	6	0
021092 - 00691	000239-02664	Weed-B-Gon Lawn Weed Killer Ready Spray	029802, 030019, 031519	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, mecoprop, dimethylamine salt	4/1/2009	6/30/2009	0	1	0
021092 - 00698	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	128974, 129046, 029802, 030019	Quinclorac, Mecoprop-P, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	4/1/2009	6/30/2009	0	35	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
021384 - 00354	002217-00570-000239	Weed-B-Gon Lawn Weed Killer Concentrate	129046, 030019, 029802	Mecoprop-P, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2009	9/30/2009	0	2	0
021384 - 00365	000239-02682	Weed-B-Gon Power Shot	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2009	9/30/2009	0	1	0
021384 - 00352	000239-02666	Weed-B-Gon for Southern Lawns Ready-Spray	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2009	9/30/2009	0	1	0
021384 - 00360	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Control	030019, 029802, 128974	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, quinclorac	7/1/2009	9/30/2009	0	25	0
021384 - 00361	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass RS	030019, 029802, 128974	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, quinclorac	7/1/2009	9/30/2009	0	13	0
021384 - 00362	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	129046, 128974, 029802, 030019	Mecoprop-P, quinclorac, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2009	9/30/2009	0	30	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
021384 - 00364	000239-02682	Weed-B-Gon Max RTU	029802, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2009	9/30/2009	0	66	0
021384 - 00351	000239-02665	Weed-B-Gon Concentrate For Southern Lawns	031520, 029802, 030019	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2009	9/30/2009	0	1	0
021384 - 00363	000228-00424-000239	Weed-B-Gon Max Ready Spray	116002, 030516, 029802	Triclopyr, triethylamine salt, MCPA, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2009	9/30/2009	0	25	0
021428 - 00006	000352-00615	Dupont Cimarron Max Herbicide	030019, 029802, 122010	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, Metsulfuron-methylmethanaminehyl	7/1/2009	9/30/2009	0	1	0
021384 - 00356	000228-00424-000239	Weed-B-Gon Max Concentrate	030516, 029802, 116002	MCPA, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, triclopyr, triethylamine salt	7/1/2009	9/30/2009	0	28	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
021735 - 00006	002217-00875	EH-1416 Herbicide	030019, 031520, 029802, 129081	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, sulfentrazone	9/1/2009	12/31/2009	0	1	0
021661 - 00111	002217-00570-000239	Weed-B-Gon Lawn Weed Killer Concentrate	129046, 030019, 029802	Mecoprop-P, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	10/1/2009	12/31/2009	0	2	0
021661 - 00112	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Concentrate	128974, 029802, 030019	Quinclorac, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	10/1/2009	12/31/2009	0	25	0
021661 - 00113	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass	128974, 029802, 030019	Quinclorac, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	10/1/2009	12/31/2009	0	13	0
021661 - 00118	000228-00424-000239	Weed-B-Gon Max Ready Spray	116002, 030516, 029802	Triclopyr, triethylamine salt, MCPA, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	10/1/2009	12/31/2009	0	25	0
021661 - 00156	000239-02689	Weed-B-Gon Max Plus Crabgrass Ready-To-Use	029802, 030019, 128974, 129046,	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, quinclorac, mecoprop-P	10/1/2009	12/31/2009	0	30	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
021661 - 00145	000239-02665	Weed-B-Gon for Southern Lawns Concentrate	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	10/1/2009	12/31/2009	0	1	0
021661 - 00146	000239-02666	Weed-B-Gon for Southern Lawns Ready Spray	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	10/1/2009	12/31/2009	0	1	0
021661 - 00150	000239-02682	Weed-B-Gon Max Ready-To-Use	029802, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt	10/1/2009	12/31/2009	0	66	0
021661 - 00151	000239-02682	Weed-B-Gon Power Shot	029802, 030019, 031520	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	10/1/2009	12/31/2009	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
021661 - 00117	000228-00424-000239	Weed-B-Gon Max Concentrate	030516, 029802, 116002	MCPA, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, triclopyr, triethylamine salt	10/1/2009	12/31/2009	0	28	0
021916 - 00315	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Concentrate	029802, 128974, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, quinclorac, 2,4-D, dimethylamine salt	1/1/2010	3/31/2010	0	3	0
021916 - 00322	000239-02682	Weed-B-Gon Max RTU	029802, 030019, 031520	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	1/1/2010	3/31/2010	0	2	0
021916 - 00321	000239-02665	Weed-B-Gon for Southern Lawns Concentrate	031520, 029802, 030019	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	1/1/2010	3/31/2010	0	1	0
021916 - 00323	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	129046, 029802, 128974, 030019	Mecoprop-P, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, quinclorac, 2,4-D, dimethylamine salt	1/1/2010	3/31/2010	0	3	0
021916 - 00318	000228-00424-000239	Weed-B-Gon Max Concentrate	116002, 030516, 029802	Triclopyr, triethylamine salt, MCPA, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	1/1/2010	3/31/2010	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
022225 - 00863	000239-02666	Weed-B-Gon for Southern Lawns Ready Spray	029802, 030019, 031520	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	4/1/2010	6/30/2010	0	1	0
022239 - 00013	002217-00656	Gordon's Professional Turf Products' Trimec Broadleaf Herbicide-Application	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2010	6/30/2010	0	2	0
022225 - 00838	002217-00570-073327	K-Gro Selective Weed Controls	029802, 129046, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, mecoprop-P, 2,4-D, dimethylamine salt	4/1/2010	6/30/2010	0	1	0
022225 - 00862	000239-02665	Weed-B-Gon for Southern Lawns Concentrate	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	4/1/2010	6/30/2010	0	3	0
022225 - 00866	000239-02682	Weed-B-Gon Max RTU	029802, 030019, 031520	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine	4/1/2010	6/30/2010	0	38	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
022225 - 00840	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Concentrate	029802, 030019, 128974	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt, quinclorac	4/1/2010	6/30/2010	0	25	0
022225 - 00843	000228-00424-000239	Weed-B-Gon Max Concentrate	029802, 116002, 030516	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, triclopyr, triethylamine salt, MCPA, dimethylamine salt	4/1/2010	6/30/2010	1	39	0
022225 - 00870	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	129046, 029802, 030019 128974	Mecoprop-P, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt quinclorac	4/1/2010	6/30/2010	0	26	0
022477 - 00313	000239-02682	Weed-B-Gon Max RTU	031520, 029802, 030019	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2010	9/30/2010	1	19	0
022525 - 00013	002217-00656	Gordon's Professional Turf Products' Trimec Broadleaf Herbicide-Application	031520, 029802, 030019	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, 2,4-D, dimethylamine salt	7/1/2010	9/30/2010	0	1	0
022477 - 00291	000228-00424-000239	Weed-B-Gon Max Concentrate	029802, 030516, 116002	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine, MCPA, dimethylamine salt, triclopyr, triethylamine salt	7/1/2010	9/30/2010	0	39	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
022477 - 00285	002217-00570-000239	Weed-B-Gon Lawn Weed Killer Concentrate	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2010	9/30/2010	0	1	0
022477 - 00288	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Concentrate	030019, 128974, 029802	2,4-D, dimethylamine salt, quinclorac, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2010	9/30/2010	0	33	0
022477 - 00316	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	128974, 030019, 031520, 029802	Quinclorac, 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine	7/1/2010	9/30/2010	0	16	0
022712 - 00090	000239-02682	Weed-B-Gon Max RTU	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	10/1/2010	12/31/2010	0	4	0
022712 - 00092	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	128974, 031520, 030019, 029802	Quinclorac, Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	10/1/2010	12/31/2010	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
022712 - 00089	000239-02665	Weed-B-Gon for Southern Lawns Concentrate	030019, 029802, 031520	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1)	10/1/2010	12/31/2010	0	1	0
022712 - 00084	000228-00424-000239	Weed-B-Gon Max Concentrate	116002, 030516, 029802	Triclopyr, triethylamine salt, MCPA, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	10/1/2010	12/31/2010	0	5	0
022933 - 00274	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	030019, 029802, 031520, 128974	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1) quinclorac	1/1/2011	3/31/2011	0	2	0
023203 - 00653	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	031520, 029802, 030019, 128974	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt, quinclorac	4/1/2011	6/30/2011	0	21	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
023203 - 00649	000239-02682	Weed-B-Gon Max RTU	029802, 030019, 031520	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1)	4/1/2011	6/30/2011	0	53	0
023203 - 00647	000239-02666	Weed-B-Gon for Southern Lawns Ready Spray	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	4/1/2011	6/30/2011	0	1	0
023160 - 00001	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Control Concentrate	029802, 128974, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), quinclorac, 2,4-D, dimethylamine salt	4/1/2011	6/30/2011	0	23	0
023160 - 00006	002217-00570-000239	Ortho Weed-B-Gon Lawn Weed Killer 2	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	4/1/2011	6/30/2011	0	1	0
023203 - 00627	000228-00424-000239	Weed-B-Gon Max Concentrate	116002, 030516, 029802	Triclopyr, triethylamine salt, MCPA, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	4/1/2011	6/30/2011	0	33	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
023203 - 00646	000239-02665	Weed-B-Gon for Southern Lawns Concentrate	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	4/1/2011	6/30/2011	0	2	0
023427 - 00051	002217-00710	Trimec LAF-637 Broadleaf Herbicide	030019, 029802, 031520	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1)	7/1/2011	9/30/2011	0	1	0
023469 - 00193	000239-02665	Weed-B-Gon Max Concentrate	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	7/1/2011	9/30/2011	0	1	0
023469 - 00174	000228-00424-000239	Weed-B-Gon Max Concentrate	116002, 029802, 030516	Triclopyr, triethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), MCPA, dimethylamine salt	7/1/2011	9/30/2011	0	25	0
023469 - 00195	000239-02682	Weed-B-Gon Max RTU	030019, 029802, 031520	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1)	7/1/2011	9/30/2011	0	13	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
023427 - 00046	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Control Concentrate	128974, 029802, 030019	Quinclorac, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt	7/1/2011	9/30/2011	0	15	0
023469 - 00194	000239-02666	Weed-B-Gon for Southern Lawns Ready Spray	030019, 029802, 031520	2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1)	7/1/2011	9/30/2011	0	1	0
023469 - 00199	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	030019, 031520, 029802, 128974	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), quinclorac	7/1/2011	9/30/2011	0	27	0
023744 - 00094	000239-02665	Weed-B-Gon for Southern Lawns Concentrate	029802, 030019, 031520	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1)	10/1/2011	12/31/2011	0	1	0
023744 - 00095	000228-00424-000239	Weed-B-Gon Max Concentrate	116002, 030516, 029802	Triclopyr, triethylamine salt, MCPA, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	10/1/2011	12/31/2011	0	4	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
023744 - 00097	000239-02682	Weed-B-Gon Max RTU	029802, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt	10/1/2011	12/31/2011	0	3	0
023744 - 00096	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	128974, 031520, 030019, 029802	Quinclorac, Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	10/1/2011	12/31/2011	0	3	0
023646 - 00023	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Control Concentrate	029802, 128974, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), quinclorac, 2,4-D, dimethylamine salt	10/1/2011	12/31/2011	0	5	0
024071 - 00093	000239-02682	Weed-B-Gon Max RTU	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	1/1/2012	3/31/2012	0	2	0
023996 - 00030	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Control Concentrate	030019, 128974, 029802	2,4-D, dimethylamine salt, quinclorac, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	1/1/2012	3/31/2012	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
024071 - 00082	000228-00424-000239	Weed-B-Gon Lawn Weed Killer Ready Spray	116002, 029802, 030516	Triclopyr, triethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), MCPA, dimethylamine salt	1/1/2012	3/31/2012	0	4	0
024402 - 00173	000228-00424-000239	Weed-B-Gon Lawn Weed Killer Ready Spray	116002, 029802, 030516	Triclopyr, triethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), MCPA, dimethylamine salt	4/1/2012	6/30/2012	0	32	0
024402 - 00207	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	031520, 128974, 029802, 030019	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), Quinclorac, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt	4/1/2012	6/30/2012	0	17	0
024402 - 00203	000239-02682	Weed-B-Gon Max RTU	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	4/1/2012	6/30/2012	1	15	0
024338 - 00072	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Control Concentrate	029802, 030019, 128974	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt, quinclorac	4/1/2012	6/30/2012	0	25	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
024402 - 00201	000239-02665	Weed-B-Gon for Southern Lawns Concentrate	031520, 029802, 030019	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt	4/1/2012	6/30/2012	0	2	0
024338 - 00076	002217-00570-000239	Ortho Weed-B-Gon Lawn Weed Killer 2	029802, 031520, 030019	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt	4/1/2012	6/30/2012	0	1	0
024583 - 00050	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Control Concentrate	128974, 029802, 030019	Quinclorac, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt	7/1/2012	9/30/2012	0	12	0
024707 - 00167	000239-02682	Weed-B-Gon Max RTU	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	7/1/2012	9/30/2012	0	5	0
024707 - 00166	000239-02665	Weed-B-Gon for Southern Lawns Concentrate	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	7/1/2012	9/30/2012	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
024583 - 00054	002217-00933-085827	Green Light Wipe-Out Crabgrass Killer Plus Concentrate	029802, 030019, 128974	3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt, quinclorac	7/1/2012	9/30/2012	0	1	0
024583 - 00052	002217-00570-000239	Ortho Weed-B-Gon Lawn Week Killer 2	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	7/1/2012	9/30/2012	0	1	0
024707 - 00171	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	128974, 031520, 030019, 029802	Quinclorac, Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt, 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	7/1/2012	9/30/2012	0	13	0
024944 - 00063	000239-02682	Weed-B-Gon Weed Killer RTU	031520, 030019, 029802	Propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	10/1/2012	12/31/2012	0	1	0
024868 - 00018	002217-00570-000239	Ortho Weed-B-Gon Lawn Weed Killer 2	030019, 031520, 029802	2,4-D, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 3,6-dichloro-2-methoxybenzoic acid, compd with N-methylmethanamine (1:1)	10/1/2012	12/31/2012	0	1	0
024944 - 00059	000228-00424-000239	Weed-B-Gon Lawn Weed Killer Ready Spray	029802, 116002, 030516	Dicamba, dimethylamine salt, triclopyr, triethylamine salt, MCPA, dimethylamine salt	10/1/2012	12/31/2012	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
024944 - 00065	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	029802, 031520, 030019, 128974	Dicamba, dimethylamine salt, propanoic acid, 2-(4-chloro-2-methylphenoxy)-, (R)-, compd. with N-methylmethanamine (1:1), 2,4-D, dimethylamine salt, quinclorac	10/1/2012	12/31/2012	0	1	0
025226 - 00290	000228-00424-000239	Weed-B-Gon Lawn Weed Killer Ready-To-Spray	029802, 030516, 116002	Dicamba, dimethylamine salt, MCPA, dimethylamine salt, triclopyr, triethylamine salt	1/1/2013	3/31/2013	0	1	0
025226 - 00301	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	128974, 031520, 030019, 029802	Quinclorac, MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	1/1/2013	3/31/2013	0	3	0
025226 - 00297	000239-02682	Weed-B-Gon Weed Killer RTU	030019, 029802, 031520	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, MCPP-P, DMA salt	1/1/2013	3/31/2013	0	1	0
025490 - 00064	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Control Concentrate	128974, 029802, 030019	Quinclorac, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	4/1/2013	6/30/2013	1	12	0
025490 - 00068	002217-00867	Surge Broadleaf Herbicide for Turf	030019, 129081, 031520, 029802,	2,4-D, dimethylamine salt, sulfentrazone, MCPP-P, DMA salt, dicamba, dimethylamine salt	4/1/2013	6/30/2013	0	1	0
025520 - 00008	000352-00615	Dupont Cimarron Max Herbicide	030019, 029802, 122010	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, metsulfuron	4/1/2013	6/30/2013	0	1	0
025883 - 00191	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	128974, 030019, 031520, 029802	Quinclorac, 2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba, dimethylamine salt	7/1/2013	9/30/2013	0	26	0
025883 - 00173	000228-00424-000239	Weed-B-Gon Lawn Weed Killer Ready-To-Spray	029802, 030516, 116002	Dicamba, dimethylamine salt, MCPA, dimethylamine salt, triclopyr, triethylamine salt	7/1/2013	9/30/2013	0	20	0
025836 - 00052	002217-00539-033955	Gordon's Bl8000 Lawn Weed Killer	031520, 029802, 030019	MCPP-P, DMA salt, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	7/1/2013	9/30/2013	0	1	0

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025883 - 00189	000239-02682	Weed-B-Gon Max RTU	030019, 029802, 129046	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, mecoprop-P	7/1/2013	9/30/2013	0	9	0
025883 - 00187	000239-02666	Weed-B-Gon for Southern Lawns Ready-Spray	129046, 029802, 030019	Mecoprop-P, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	7/1/2013	9/30/2013	0	1	0
025836 - 00047	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Control Concentrate	029802, 128974, 030019	Dicamba, dimethylamine salt, quinclorac, 2,4-D, dimethylamine salt	7/1/2013	9/30/2013	0	16	0
026175 - 00090	000228-00424-000239	Weed-B-Gon Lawn Weed Killer Ready-To-Spray	029802, 030516, 116002	Dicamba, dimethylamine salt, MCPA, dimethylamine salt, triclopyr, triethylamine salt	10/1/2013	12/31/2013	0	3	0
026134 - 00014	002217-00896-000239	Ortho Weed-B-Gon Max Concentrate Plus Crabgrass Control	030019, 029802, 128974	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, quinclorac	10/1/2013	12/31/2013	0	1	0
026175 - 00097	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	031520, 128974, 029802, 030019	MCPP-P, DMA salt, quinclorac, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	10/1/2013	12/31/2013	0	1	0
026175 - 00096	000239-02682	Weed-B-Gon Weed Killer Ready-To-Use	031520, 029802, 030019	MCPP-P, DMA salt, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	10/1/2013	12/31/2013	0	1	0
026501 - 00052	000239-02689	Weed-B-Gon Max Plus Crabgrass Ready-To-Use	128974, 031520, 029802, 030019	Quinclorac, MCPP-P, DMA salt, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	1/1/2014	3/31/2014	0	1	0
026844 - 00010	002217-00570-073327	Ortho Weed-B-Gon Lawn Weed Killer 2	029802, 030019, 031520	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	4/1/2014	6/30/2014	0	1	0
026837 - 00028	000239-02665	Weed-B-Gon for Southern Lawns Concentrate	030019, 031520, 029802	2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba, dimethylamine salt	4/1/2014	6/30/2014	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
025614 - 00393	000239-02666	Weed-B-Gon for Southern Lawns Ready Spray	029802, 030019, 031520	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	4/1/2014	6/30/2014	0	1	0
026844 - 00016	002217-00694	Gordon's Trimec 899 Broadleaf Herbicide	030019, 031520, 029802	2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba, dimethylamine salt	4/1/2014	6/30/2014	0	1	0
026844 - 00042	002217-00896-000239	Ortho Weed-B-Gon Max Concentrate Plus Crabgrass Control	029802, 030019, 128974	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, quinclorac	4/1/2014	6/30/2014	0	4	0
025614 - 00376	000228-00424-000239	Weed-B-Gon Lawn Weed Killer Ready-To-Spray	116002, 029802, 030516	Triclopyr, triethylamine salt, dicamba, dimethylamine salt, MCPA, dimethylamine salt	4/1/2014	6/30/2014	0	5	0
026844 - 00013	002217-00655	Trimec Southern Broadleaf Herbicide For Sensitive Southern Grasses	029802, 030019, 031520	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	4/1/2014	6/30/2014	0	1	0
025614 - 00396	000239-02682	Weed-B-Gon Max RTU	029802, 030019, 031520	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	4/1/2014	6/30/2014	0	4	0
025614 - 00400	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	030019, 031520, 029802, 128974	2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba, dimethylamine salt quinclorac	4/1/2014	6/30/2014	0	17	0
025614 - 00392	000239-02665	Weed-B-Gon for Southern Lawns Concentrate	129046, 029802, 030019	Mecoprop-P, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	4/1/2014	6/30/2014	0	2	0
026837 - 00019	000228-00424-000239	Weed-B-Gon Lawn Weed Killer Ready Spray	029802, 030516, 116002	Dicamba, dimethylamine salt, MCPA, dimethylamine salt, triclopyr, triethylamine salt	4/1/2014	6/30/2014	0	14	0
026837 - 00029	000239-02682	Weed-B-Gon Max RTU	030019, 031520, 029802	2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba, dimethylamine salt	4/1/2014	6/30/2014	0	5	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
026837 - 00030	000239-02689	Weed-B-Gon Max Plus Crabgrass RTU	128974, 031520, 029802, 030019	Quinclorac, MCPP-P, DMA salt, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	4/1/2014	6/30/2014	0	14	0
027187 - 00039	002217-00896-000239	Ortho Weed-B-Gon Max Concentrate Plus Crabgrass Control	029802, 030019, 128974	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, quinclorac	7/1/2014	9/30/2014	0	1	0
027217 - 00153	000228-00424-000239	Ortho Weed-B-Gon Weed Killer for Lawns Ready-To-Spray	030516, 029802, 116002	MCPA, dimethylamine salt, dicamba, dimethylamine salt, triclopyr, triethylamine salt	7/1/2014	9/30/2014	0	17	0
027217 - 00162	000239-02689	Ortho Weed-B-Gon Max Plus Crabgrass Control	031520, 029802, 030019 128974	MCPP-P, DMA salt, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt quinclorac	7/1/2014	9/30/2014	0	26	0
027217 - 00160	000239-02682	Ortho Weed-B-Gon Weed Killer for Lawns	029802, 031520, 030019	Dicamba, dimethylamine salt, MCPP-P, DMA salt, 2,4-D, dimethylamine salt	7/1/2014	9/30/2014	0	6	0
027254 - 00006	000352-00615	Dupont Cimarron Max Herbicide	030019, 122010, 029802	2,4-D, dimethylamine salt, Metsulfuron, dicamba, dimethylamine salt	7/1/2014	9/30/2014	1	0	0
027307 - 00001	069526-00015	Clear Choice Concentrate Selective Herbicide	029802, 031520, 030019	Dicamba, dimethylamine salt, MCPP-P, DMA salt, 2,4-D, dimethylamine salt	7/22/2014	10/22/2014	0	2	0
027439 - 00007	000239-02682	2,4-D, mecoprop-P & dicamba	031520, 030019, 029802	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	10/1/2014	12/31/2014	0	2	0
027439 - 00005	000228-00424-000239	MCPA, triclopyr & dicamba	116002, 030516, 029802	Triclopyr, triethylamine salt, MCPA, dimethylamine salt, dicamba, dimethylamine salt	10/1/2014	12/31/2014	0	1	0
027958 - 00026	000239-02665	Weed-B-Gon Lawn Weed Killer3	029802, 030019, 031520	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	4/1/2015	6/30/2015	0	1	0

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027958 - 00027	000239-02682	EH-1398 Herbicide	030019, 029802, 031520	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, MCPP-P, DMA salt	4/1/2015	6/30/2015	0	3	0
027945 - 00048	002217-00930	Q4 Selective Herbicide	029802, 030019, 128974, 129081	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, quinclorac sulfentrazone	4/1/2015	6/30/2015	0	1	0
027958 - 00029	000239-02689	Lawn Crabgrass And Weed Killer	128974, 030019, 029802, 031520	Quinclorac, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt, MCPP-P, DMA salt	4/1/2015	6/30/2015	0	32	0
027958 - 00015	000228-00424-000239	Ortho Weed-B-Gon Max Concentrate	029802, 030516, 116002	Dicamba, dimethylamine salt, MCPA, dimethylamine salt, triclopyr, triethylamine salt	4/1/2015	6/30/2015	0	3	0
027945 - 00042	002217-00896-000239	Ortho Weed-B-Gon Max Concentrate Plus Crabgrass Control	030019, 029802, 128974	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, quinclorac	4/1/2015	6/30/2015	0	14	0
028169 - 00027	002217-00896-000239	Weed-B-Gon Max Concentrate Plus Crabgrass Control	128974, 029802, 030019	Quinclorac, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	7/1/2015	9/30/2015	0	19	0
028372 - 00002	002217-00543	Trimec Classic Brand Broadleaf Herbicide	030019, 029802, 031520	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, MCPP-P, DMA salt	10/1/2015	12/31/2015	1	0	0
028460 - 00044	000239-02689	Lawn Crabgrass and Weed Killer	031520, 029802, 030019, 128974	MCPP-P, DMA salt, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, quinclorac	10/1/2015	12/31/2015	0	1	0
028372 - 00010	002217-00896-000239	Ortho Weed-B-Gon Max Concentrate Plus Crabgrass Control	029802, 030019, 128974	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, quinclorac	10/1/2015	12/31/2015	0	1	0
029574 - 00047	000228-00424-000239	Ortho Weed-B-Gon Max Concentrate	116002, 029802, 030516	Triclopyr, triethylamine salt, dicamba, dimethylamine salt, MCPA, dimethylamine salt	1/1/2016	3/31/2016	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
028830 - 00003	002217-00655	Trimec Southern Broadleaf Herbicide for Sensitive Southern Grasses	029802, 030019, 031520	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	1/1/2016	3/31/2016	0	1	0
029183 - 00028	000239-02689	Lawn Crabgrass and Weed Killer	029802, 030019, 031520 128974,	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt, quinclorac	4/1/2016	6/30/2016	0	9	0
029183 - 00027	000239-02682	EH-1398 Herbicide	031520, 030019, 029802	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	4/1/2016	6/30/2016	0	7	0
029173 - 00040	002217-00896-000239	Weed-B-Gon Max Concentrate Plus Crabgrass Control Singles	029802, 030019, 128974	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, quinclorac	4/1/2016	6/30/2016	0	11	0
029183 - 00015	000228-00424-000239	Ortho Weed-B-Gon Max Concentrate	029802, 116002, 030516	Dicamba, dimethylamine salt, triclopyr, triethylamine salt, MCPA, dimethylamine salt	4/1/2016	6/30/2016	0	3	0
029173 - 00046	002217-00991-000239	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Use 2	029802, 030019, 128974	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, quinclorac	4/1/2016	6/30/2016	0	8	0
029452 - 00104	000239-02689	N/R	031520, 128974, 029802, 030019	MCPP-P, DMA salt, quinclorac, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	7/1/2016	7/1/2016	0	8	0
029415 - 00020	002217-00867	Surge Broadleaf Herbicide for Turf	030019, 031520, 129081, 029802	2,4-D, dimethylamine salt, MCPP-P, DMA salt, sulfentrazone, dicamba, dimethylamine salt	7/1/2016	9/30/2016	0	1	0
028225 - 00023	000239-02682	N/R	029802, 030019, 031520	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	7/1/2016	7/1/2016	0	3	0
029452 - 00093	000228-00424-000239	N/R	029802, 116002, 030516	Dicamba, dimethylamine salt, triclopyr, triethylamine salt, MCPA, dimethylamine salt	7/1/2016	7/1/2016	0	3	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
028225 - 00024	000239-02689	Lawn Crabgrass and Weed Killer	029802, 030019, 031520 128974	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt, quinclorac	7/1/2016	9/30/2016	0	25	0
028225 - 00014	000228-00424-000239	N/R	029802, 030516, 116002	Dicamba, dimethylamine salt, MCPA, dimethylamine salt, triclopyr, triethylamine salt	7/1/2016	7/1/2016	0	3	0
029452 - 00102	000239-02682	N/R	029802, 030019, 031520	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	7/1/2016	7/1/2016	0	7	0
029415 - 00025	002217-00896-000239	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Spray 2	029802, 030019, 128974	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, quinclorac	7/1/2016	9/30/2016	0	10	0
029415 - 00008	002217-00656	Trimec 992 Broadleaf Herbicide	031520, 030019, 029802	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	7/1/2016	9/30/2016	0	1	0
029415 - 00032	002217-00991-000239	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Use 2	128974, 029802, 030019	Quinclorac, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	7/1/2016	9/30/2016	0	12	0
029687 - 00005	000239-02689	Lawn Crabgrass and Weed Killer	029802, 030019, 031520 128974	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt, quinclorac	10/1/2016	12/31/2016	0	1	0
029667 - 00015	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Control	029802, 030019, 128974	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, quinclorac	10/1/2016	12/31/2016	0	1	0
030299 - 00101	000239-02689	Lawn Crabgrass and Weed Killer	029802, 031520, 128974, 030019,	Dicamba, dimethylamine salt, MCPP-P, DMA salt, quinclorac, 2,4-D, dimethylamine salt	4/1/2017	6/30/2017	0	24	0
030299 - 00093	000228-00424-000239	Ortho Weed-B-Gon Max Concentrate	029802, 030516, 116002	Dicamba, dimethylamine salt, MCPA, dimethylamine salt, triclopyr, triethylamine salt	4/1/2017	6/30/2017	0	6	0

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030299 - 00100	000239-02682	EH-1398 Herbicide	031520, 030019, 029802	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	4/1/2017	6/30/2017	0	12	0
030571 - 00037	002217-00991-000239	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Use 2	029802, 128974, 030019	Dicamba, dimethylamine salt, quinclorac, 2,4-D, dimethylamine salt,	7/1/2017	9/30/2017	1	1	0
030592 - 00119	000239-02682	EH-1398 Herbicide	029802, 031520, 030019	Dicamba, dimethylamine salt, MCPP-P, DMA salt, 2,4-D, dimethylamine salt	7/1/2017	9/30/2017	0	8	0
030592 - 00120	000239-02689	Lawn Crabgrass and Weed Killer	030019, 029802, 031520 128974	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, MCPP-P, DMA salt, quinclorac	7/1/2017	9/30/2017	0	5	0
030592 - 00110	000228-00424-000239	Ortho Weed-B-Gon Max Concentrate	030516, 029802, 116002	MCPA, dimethylamine salt, dicamba, dimethylamine salt, triclopyr, triethylamine salt	7/1/2017	9/30/2017	0	5	0
030592 - 00121	000239-02689-000538	Scotts EZ Lawn Weed Killer	031520, 029802, 030019, 128974	MCPP-P, DMA salt, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, quinclorac	7/1/2017	9/30/2017	0	3	0
030806 - 00017	002217-00918-000538	Roundup For Lawns3	030516, 029802, 128974, 129081	MCPA, dimethylamine salt, dicamba, dimethylamine salt, quinclorac, sulfentrazone	10/1/2017	12/31/2017	0	1	0
030769 - 00063	000239-02689	Lawn Crabgrass and Weed Killer	030019, 029802, 128974 031520	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, quinclorac, MCPP-P, DMA salt	10/1/2017	12/31/2017	0	2	0
030769 - 00069	000239-02682	EH-1398 Herbicide	030019, 029802, 031520	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, MCPP-P, DMA salt	10/1/2017	12/31/2017	0	1	0
030806 - 00015	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Control	030019, 128974, 029802	2,4-D, dimethylamine salt, quinclorac, dicamba, dimethylamine salt	10/1/2017	12/31/2017	0	1	0

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030806 - 00018	002217-00991-000239	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Use 2	128974, 030019, 029802	Quinclorac, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	10/1/2017	12/31/2017	0	2	0
030806 - 00019	002217-01010-000538	Roundup For Lawns5	030019, 029802, 119031, 129081	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, Penoxsulam, sulfentrazone	10/1/2017	12/31/2017	0	1	0
031283 - 00054	002217-01010-000538	Roundup For Lawns6	030019, 119031, 029802, 129081	2,4-D, dimethylamine salt, Penoxsulam, dicamba, dimethylamine salt, sulfentrazone	4/1/2018	6/30/2018	0	4	0
031283 - 00049	002217-00991-000239	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Use 2	030019, 029802, 128974	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, quinclorac	4/1/2018	6/30/2018	0	41	0
031341 - 00024	000239-02689-000538	Scotts EZ Lawn Weed Killer	029802, 128974, 031520, 030019	Dicamba, dimethylamine salt, quinclorac, MCPP-P, DMA salt, 2,4-D, dimethylamine salt	4/1/2018	6/30/2018	0	2	0
031283 - 00043	002217-00917-000538	Roundup for Lawns1	129081, 128974, 030516, 029802	Sulfentrazone, quinclorac, MCPA, dimethylamine salt, dicamba, dimethylamine salt	4/1/2018	6/30/2018	0	27	0
031341 - 00013	000239-02682	EH-1398 Herbicide	031520, 030019, 029802	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	4/1/2018	6/30/2018	0	2	0
031392 - 00004	000228-00312	Triplet Sf	029802, 030019, 031520	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	4/1/2018	6/30/2018	1	0	0
031341 - 00022	000228-00424-000239	Ortho Weed-B-Gon Max Concentrate	029802, 030516, 116002	Dicamba, dimethylamine salt, MCPA, dimethylamine salt, triclopyr, triethylamine salt	4/1/2018	6/30/2018	0	2	0
031283 - 00040	002217-00896-000239	Weed-B-Gon Max Plus Crabgrass Control	029802, 030019, 128974	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, quinclorac	4/1/2018	6/30/2018	0	18	0

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031283 - 00053	002217-01009-000538	Roundup for Lawns4	030019, 129081, 029802, 119031	2,4-D, dimethylamine salt, sulfentrazone, dicamba, dimethylamine salt, penoxsulam	4/1/2018	6/30/2018	0	10	0
031283 - 00044	002217-00918-000538	Roundup for Lawns3	029802, 129081, 030516, 128974	Dicamba, dimethylamine salt, sulfentrazone, MCPA, dimethylamine salt, quinclorac	4/1/2018	6/30/2018	0	7	0
031341 - 00033	000239-02682-073327	Ace Spot Weed Killer3	030019, 029802, 031520	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, MCPP-P, DMA salt	4/1/2018	6/30/2018	0	1	0
031341 - 00010	000239-02689	Lawn Crabgrass and Weed Killer	029802, 030019, 031520 128974	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt, quinclorac	4/1/2018	6/30/2018	0	10	0
031677 - 00033	002217-00918-000538	Roundup for Lawns 3 Ready-To-Spray	029802, 128974, 030516, 129081	Dicamba, dimethylamine salt, quinclorac, MCPA, dimethylamine salt, sulfentrazone	7/1/2018	9/30/2018	0	12	0
031624 - 00122	000239-02682	EH-1398 Herbicide	030019, 031520, 029802	2,4-D, dimethylamine salt, MCPP-P, DMA salt, dicamba, dimethylamine salt	7/1/2018	9/30/2018	0	3	0
031677 - 00032	002217-00917-000538	Roundup for Lawns 1 Ready-To-Use	029802, 030516, 128974, 129081	Dicamba, dimethylamine salt, MCPA, dimethylamine salt, quinclorac, sulfentrazone	7/1/2018	9/30/2018	0	31	0
031677 - 00040	002217-00991-000239	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Use 2	029802, 128974, 030019	Dicamba, dimethylamine salt, quinclorac, 2,4-D, dimethylamine salt	7/1/2018	9/30/2018	0	42	0
031677 - 00029	002217-00896-000239	Weed-B-Gon Max Concentrate Plus Crabgrass Control	030019, 128974, 029802	2,4-D, dimethylamine salt, quinclorac, dicamba, dimethylamine salt	7/1/2018	9/30/2018	0	34	0
031624 - 00118	000239-02689	Lawn Crabgrass and Weed Killer	128974, 031520, 029802, 030019	Quinclorac, MCPP-P, DMA salt, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	7/1/2018	9/30/2018	0	6	0

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031677 - 00042	002217-01009-000538	Roundup for Lawns 4 Ready-To-Use	129081, 119031, 029802, 030019	Sulfentrazone, Penoxsulam, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	7/1/2018	9/30/2018	0	6	0
031677 - 00043	002217-01010-000538	Roundup for Lawns 6 Ready-To-Spray	029802, 119031, 129081, 030019	Dicamba, dimethylamine salt, Penoxsulam, sulfentrazone, 2,4-D, dimethylamine salt	7/1/2018	9/30/2018	0	7	0
031624 - 00135	000228-00424-000239	Ortho Weed-B-Gon Max Concentrate	030516, 116002, 029802	MCPA, dimethylamine salt, triclopyr, triethylamine salt, dicamba, dimethylamine salt	7/1/2018	9/30/2018	0	1	0
031955 - 00010	002217-00896-000239	Ortho Weed-B-Gon Max Concentrate Plus Crabgrass Control	128974, 029802, 030019	Quinclorac, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	10/1/2018	12/31/2018	0	6	0
031955 - 00002	002217-00656	Trimec 992 Broadleaf Herbicide	031520, 030019, 029802	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	10/1/2018	12/31/2018	0	1	0
031955 - 00012	002217-00917-000538	Roundup for Lawns 1 Ready-To-Use	030516, 029802, 129081, 128974	MCPA, dimethylamine salt, dicamba, dimethylamine salt, sulfentrazone, quinclorac	10/1/2018	12/31/2018	0	3	0
031894 - 00013	002217-00991-000239	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Use 2	128974, 029802, 030019	Quinclorac, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	10/1/2018	12/31/2018	0	2	0
031955 - 00014	002217-01009-000538	Roundup for Lawns 4 Ready-To-Use	129081, 119031, 029802, 030019	Sulfentrazone, Penoxsulam, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	10/1/2018	12/31/2018	0	1	0
031955 - 00013	002217-00991-000239	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Use 2	128974, 029802, 030019	Quinclorac, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	10/1/2018	12/31/2018	0	2	0
031894 - 00012	002217-00917-000538	Roundup for Lawns 1 Ready-To-Use	129081, 029802, 128974, 030516	Sulfentrazone, dicamba, dimethylamine salt, quinclorac, MCPA, dimethylamine salt	10/1/2018	12/31/2018	0	3	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
031894 - 00010	002217-00896-000239	Ortho Weed-B-Gon Max Concentrate Plus Crabgrass Control	128974, 030019, 029802	Quinclorac, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	10/1/2018	12/31/2018	0	6	0
031894 - 00014	002217-01009-000538	Roundup for Lawns 4 Ready-To-Use	029802, 129081, 119031, 030019	Dicamba, dimethylamine salt, sulfentrazone, Penoxsulam, 2,4-D, dimethylamine salt	10/1/2018	12/31/2018	0	1	0
031850 - 00074	000239-02689	Lawn Crabgrass and Weed Killer	031520, 030019, 128974, 029802	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, quinclorac, dicamba, dimethylamine salt	10/1/2018	12/31/2018	0	1	0
031894 - 00002	002217-00656	Trimec 992 Broadleaf Herbicide	029802, 030019, 031520	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	10/1/2018	12/31/2018	0	1	0
031955 - 00015	002217-01010-000538	Roundup for Lawns 6 Ready-To-Spray	119031, 029802, 030019, 129081	Penoxsulam, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, sulfentrazone	10/1/2018	12/31/2018	0	3	0
031894 - 00015	002217-01010-000538	Roundup for Lawns 6 Ready-To-Spray	029802, 119031, 030019, 129081	Dicamba, dimethylamine salt, penoxsulam, 2,4-D, dimethylamine salt, sulfentrazone	10/1/2018	12/31/2018	0	3	0
032162 - 00014	002217-00896-000239	Weed-B-Gon Max Concentrate Plus Crabgrass Control	030019, 128974, 029802	2,4-D, dimethylamine salt, quinclorac, dicamba, dimethylamine salt	1/1/2019	3/31/2019	0	1	0
032162 - 00019	002217-00991-000239	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Use 2	030019, 128974, 029802	2,4-D, dimethylamine salt, quinclorac, dicamba, dimethylamine salt	1/1/2019	3/31/2019	0	3	0
032162 - 00021	002217-01010-000538	Roundup for Lawns 6 Ready-To-Spray	029802, 129081, 030019, 119031	Dicamba, dimethylamine salt, sulfentrazone, 2,4-D, dimethylamine salt, penoxsulam	1/1/2019	3/31/2019	0	2	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
032400 - 00029	002217-00875-008845	Spectracide Weed Stop 2x for Lawns Concentrate	029802, 030019, 129081, 031520	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, sulfentrazone, MCPP-P, DMA salt	4/1/2019	6/30/2019	0	1	0
032400 - 00036	002217-00917-000538	Roundup for Lawns 1 Ready-To-Use	029802, 128974, 030516, 129081	Dicamba, dimethylamine salt, quinclorac, MCPA, dimethylamine salt, sulfentrazone	4/1/2019	6/30/2019	0	10	0
032400 - 00040	002217-00991-000239	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Use 2	030019, 029802, 128974	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, quinclorac	4/1/2019	6/30/2019	0	18	0
032445 - 00127	000239-02689-000538	Scotts EZ Lawn Weed Killer	029802, 031520, 128974, 030019	Dicamba, dimethylamine salt, MCPP-P, DMA salt, quinclorac, 2,4-D, dimethylamine salt	4/1/2019	6/30/2019	0	1	0
032400 - 00037	002217-00918-000538	Roundup for Lawns 3 Ready-To-Spray	128974, 030516, 029802, 129081	Quinclorac, MCPA, dimethylamine salt, dicamba, dimethylamine salt, sulfentrazone	4/1/2019	6/30/2019	0	1	0
032400 - 00033	002217-00887-008845	Spectracide Weed Stop for Lawns Plus Crabgrass Killer	029802, 030019, 128974, 129081	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, quinclorac sulfentrazone	4/1/2019	6/30/2019	0	4	0
032445 - 00114	000239-02689	Lawn Crabgrass and Weed Killer	029802, 030019, 031520 128974	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt, quinclorac	4/1/2019	6/30/2019	0	5	0
032400 - 00034	002217-00896-000239	Weed-B-Gon Max Concentrate Plus Crabgrass Control	029802, 128974, 030019	Dicamba, dimethylamine salt, quinclorac, 2,4-D, dimethylamine salt	4/1/2019	6/30/2019	0	14	0
032445 - 00125	000228-00424-000239	Ortho Weed-B-Gon Max Concentrate	116002, 030516, 029802	Triclopyr, triethylamine salt, MCPA, dimethylamine salt, dicamba, dimethylamine salt	4/1/2019	6/30/2019	0	1	0
032445 - 00113	000239-02682	EH-1398 Herbicide	031520, 030019, 029802	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	4/1/2019	6/30/2019	0	5	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
032400 - 00044	002217-01010-000538	Roundup for Lawns 6 For Ready-To-Spray	029802, 030019, 129081, 119031	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, sulfentrazone, penoxsulam	4/1/2019	6/30/2019	0	1	0
032400 - 00043	002217-01009-000538	Scotts Weed Killer For Southern Lawns 4	030019, 029802, 119031, 129081	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, Penoxsulam, sulfentrazone	4/1/2019	6/30/2019	0	2	0
032767 - 00020	002217-00991-000239	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Use 2	128974, 030019, 029802	Quinclorac, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	7/1/2019	9/30/2019	0	28	0
032767 - 00016	002217-00917-000538	Roundup for Lawns 1 Ready-To-Use	030516, 128974, 029802, 129081	MCPA, dimethylamine salt, quinclorac, dicamba, dimethylamine salt, sulfentrazone	7/1/2019	9/30/2019	0	9	0
032767 - 00017	002217-00918-000538	Roundup for Lawns 3 Ready-To-Spray	129081, 029802, 128974, 030516	Sulfentrazone, dicamba, dimethylamine salt, quinclorac, MCPA, dimethylamine salt	7/1/2019	9/30/2019	0	5	0
032767 - 00013	002217-00896-000239	Ortho Weed-B-Gon Max Concentrate Plus Crabgrass Control	128974, 030019, 029802	Quinclorac, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	7/1/2019	9/30/2019	0	21	0
032700 - 00102	000239-02689	Lawn Crabgrass and Weed Killer	031520, 128974, 030019, 029802	MCPP-P, DMA salt, quinclorac, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	7/1/2019	9/30/2019	0	6	0
032700 - 00113	000239-02682	EH-1398 Herbicide	030019, 029802, 031520	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, MCPP-P, DMA salt	7/1/2019	9/30/2019	0	2	0
032767 - 00021	002217-01009-000538	Scotts Weed Killer For Southern Lawns4	029802, 030019, 119031, 129081	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, penoxsulam, sulfentrazone	7/1/2019	9/30/2019	0	1	0
032767 - 00022	002217-01010-000538	Roundup for Lawns 6 Ready-To-Spray	129081, 029802, 119031, 030019	Sulfentrazone, dicamba, dimethylamine salt, penoxsulam, 2,4-D, dimethylamine salt	7/1/2019	9/30/2019	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
032700 - 00114	000239-02689-000538	Scotts EZ Lawn Weed Killer	031520, 029802, 128974, 030019	MCPP-P, DMA salt, Dicamba, dimethylamine salt, quinclorac, 2,4-D, dimethylamine salt	7/1/2019	9/30/2019	0	1	0
032700 - 00109	000228-00424-000239	Ortho Weed-B-Gon Max Concentrate	029802, 030516, 116002	Dicamba, dimethylamine salt, MCPA, dimethylamine salt, triclopyr, triethylamine salt	7/1/2019	9/30/2019	0	3	0
033000 - 00002	002217-00917-000538	Roundup for Lawns 1 Round Up	128974, 030516, 129081, 029802	Quinclorac, MCPA, dimethylamine salt, sulfentrazone, dicamba, dimethylamine salt	10/1/2019	12/31/2019	0	1	0
033486 - 00022	002217-01009-000538	Scotts Weed Killer For Southern Lawns4	119031, 029802, 129081, 030019	Penoxsulam, dicamba, dimethylamine salt, sulfentrazone, 2,4-D, dimethylamine salt	4/1/2020	6/30/2020	0	1	0
033486 - 00023	002217-01010-000538	Roundup for Lawns6 Ready-To-Spray	029802, 119031, 030019, 129081	Dicamba, dimethylamine salt, penoxsulam, 2,4-D, dimethylamine salt, sulfentrazone	4/1/2020	6/30/2020	0	1	0
033486 - 00015	002217-00896-000239	Ortho Weed-B-Gon Max Concentrate Plus Crabgrass Control	030019, 128974, 029802	2,4-D, dimethylamine salt, quinclorac, dicamba, dimethylamine salt	4/1/2020	6/30/2020	0	17	0
033486 - 00021	002217-00991-000239	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Use 2	128974, 030019, 029802	Quinclorac, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	4/1/2020	6/30/2020	0	8	0
033486 - 00017	002217-00917-000538	Roundup for Lawns1 Ready-To-Use	128974, 030516, 129081, 029802	Quinclorac, MCPA, dimethylamine salt, sulfentrazone, dicamba, dimethylamine salt	4/1/2020	6/30/2020	0	5	0
033698 - 00002	N/R	Par III Turf Herbicide (Canada PMRA# 27884)	029802, 030019, 031520	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, MCPP-P, DMA salt	7/1/2020	9/30/2020	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
033700 - 00010	002217-00918-000538	Roundup for Lawns 2 Concentrate	029802, 030516, 129081, 128974	Dicamba, dimethylamine salt, MCPA, dimethylamine salt, sulfentrazone, quinclorac	7/1/2020	9/30/2020	0	2	0
033699 - 00092	000228-00424-000239	Ortho Weed-B-Gon Max Concentrate	030516, 029802, 116002	MCPA, dimethylamine salt, dicamba, dimethylamine salt, triclopyr, triethylamine salt	7/1/2020	9/30/2020	0	1	0
033699 - 00087	000239-02682	EH-1398 Herbicide	030019, 029802, 031520	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, MCPP-P, DMA salt	7/1/2020	9/30/2020	0	2	0
033699 - 00078	000239-02689-000538	Scotts EZ Lawn Weed Killer	031520, 030019, 029802128974	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt quinclorac	7/1/2020	9/30/2020	0	6	0
033700 - 00015	002217-01009-000538	Scotts Weed Killer For Southern Lawns4	119031, 129081, 029802, 030019	Penoxsulam, sulfentrazone, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	7/1/2020	9/30/2020	0	4	0
033699 - 00080	000239-02689	Lawn Crabgrass and Weed Killer	128974, 031520, 029802, 030019	Quinclorac, MCPP-P, DMA salt, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	7/1/2020	9/30/2020	0	4	0
033700 - 00007	002217-00896-000239	Ortho Weed-B-Gon Max Concentrate Plus Crabgrass Control	029802, 128974, 030019	Dicamba, dimethylamine salt, quinclorac, 2,4-D, dimethylamine salt	7/1/2020	9/30/2020	0	27	0
033700 - 00014	002217-00991-000239	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Use 2	128974, 030019, 029802	Quinclorac, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt	7/1/2020	9/30/2020	0	19	0
033700 - 00009	002217-00917-000538	Roundup for Lawns 1 Ready-To-Use	029802, 030516, 128974, 129081	Dicamba, dimethylamine salt, MCPA, dimethylamine salt, quinclorac, sulfentrazone	7/1/2020	9/30/2020	0	14	0
033700 - 00016	002217-01010-000538	Roundup for Lawns 6 Ready-To-Spray	030019, 029802, 119031, 129081	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, Penoxsulam, sulfentrazone	7/1/2020	9/30/2020	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
033699 - 00086	000239-02665-073327	Ace Lawn Weed Killer Concentrate	030019, 029802, 031520	2,4-D, dimethylamine salt, dicamba, dimethylamine salt, MCPP-P, DMA salt	7/1/2020	9/30/2020	0	2	0
033881 - 00007	002217-00917-000538	Roundup for Lawns 1 Ready-To-Use	029802, 030516, 129081, 128974	Dicamba, dimethylamine salt, MCPA, dimethylamine salt, sulfentrazone, quinclorac	10/1/2020	12/31/2020	0	1	0
033881 - 00005	002217-00896-000239	Ortho Weed-B-Gon Max Concentrate Plus Crabgrass Control	128974, 029802, 030019	Quinclorac, dicamba, dimethylamine salt, 2,4-D, dimethylamine salt	10/1/2020	12/31/2020	0	1	0
033887 - 00036	000239-02689	Lawn Crabgrass and Weed Killer	031520, 030019, 029802, 128974	MCPP-P, DMA salt, 2,4-D, dimethylamine salt, dicamba, dimethylamine salt quinclorac	10/1/2020	12/31/2020	0	3	0
033881 - 00010	002217-00991-000239	Ortho Weed-B-Gon Plus Crabgrass Control Ready-To-Use 2	029802, 030019, 128974	Dicamba, dimethylamine salt, 2,4-D, dimethylamine salt, quinclorac	10/1/2020	12/31/2020	0	2	0

N/R- not reported
WB = minor 'wildlife' incidents; PB = minor 'plant damage' incidents, ONT = 'other nontarget' incidents

Table E-10. Potassium salt (K-salt, PC code 129043) Aggregate Incidents

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
008947 - 00006	007969-00136	Marksman	129043, 080803	Dicamba, potassium salt, atrazine (ANSI)	6/8/1999	7/8/1999	0	6	0
009167 - 00007	007969-00136	Marksman	129043, 080803	Dicamba, potassium salt, atrazine (ANSI)	7/9/1999	8/31/1999	0	29	0
009678 - 00010	007969-00136	Marksman	129043, 080803	Dicamba, potassium salt, atrazine (ANSI)	9/1/1999	11/30/1999	0	4	0
010790 - 00009	007969-00136	Marksman	129043, 080803	Dicamba, potassium salt, atrazine (ANSI)	7/1/2000	10/1/2000	0	24	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
011250 - 00005	007969-00136	Marksman	080803, 129043	Dicamba, potassium salt, atrazine (ANSI)	10/1/2000	1/1/2001	0	4	0
012391 - 00013	007969-00136	Marksman Herbicide	129043, 080803	Dicamba, potassium salt, atrazine (ANSI)	7/1/2001	10/31/2001	0	20	0
013492 - 00014	007969-00136	Marksman	080803, 129043	Dicamba, potassium salt, atrazine (ANSI)	7/1/2002	10/1/2002	0	4	0
014582 - 00009	007969-00136	Marksman	080803, 129043	Dicamba, potassium salt, atrazine (ANSI)	6/1/2003	9/30/2003	0	14	0
015653 - 00009	007969-00136	Marksman	129043, 080803	3,6-dichloro-2-methoxybenzoic acid, potassium salt, atrazine	6/1/2004	9/1/2004	0	2	0
016743 - 00009	007969-00136	Marksman	080803, 129043	Atrazine, 3,6-dichloro-2-methoxybenzoic acid, potassium salt	6/1/2005	9/1/2005	0	3	0
017995 - 00012	007969-00136	Marksman	080803, 129043	Atrazine, 3,6-dichloro-2-methoxybenzoic acid, potassium salt	6/1/2006	9/1/2006	0	1	0
018976 - 00012	007969-00136	Marksman	129043, 029801, 080803	3,6-dichloro-2-methoxybenzoic acid, potassium salt, dicamba, atrazine	6/1/2007	9/1/2007	0	2	0

N/R- not reported
WB = minor 'wildlife' incidents; PB = minor 'plant damage' incidents, ONT = 'other nontarget' incidents

Table E-11. Sodium salt (Na-salt, PC code 029806) Aggregate Incidents

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
009573 - 00053	000100-00923	Northstar Herbicide	128973, 029806	Primisulfuron-methylmethanaminehyl, dicamba, sodium salt	11/1/1998	10/31/1999	0	6	0
008947 - 00007	007969-00150	Distinct	005107, 029806	Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}hy, dicamba, sodium salt	6/8/1999	7/8/1999	0	59	0
008947 - 00001	007969-00166	Celebrity	129008, 029806	Nicosulfuron (ANSI), dicamba, sodium salt	6/8/1999	7/8/1999	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
008947 - 00003	007969-00150	Distinct	029806, 005107	Dicamba, sodium salt, pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}hy	6/8/1999	7/8/1999	0	10	0
009167 - 00004	007969-00150	Distinct	005107, 029806	Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}hy, dicamba, sodium salt	7/9/1999	8/31/1999	0	76	0
009167 - 00002	007969-00166	Celebrity	129008, 029806	Nicosulfuron (ANSI), dicamba, sodium salt	7/9/1999	8/31/1999	0	10	0
009678 - 00003	007969-00166	Celebrity	029806, 129008	Dicamba, sodium salt, nicosulfuron (ANSI)	9/1/1999	11/30/1999	0	1	0
009678 - 00006	007969-00150	Distinct	005107, 029806	Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}hy, dicamba, sodium salt	9/1/1999	11/30/1999	0	31	0
010837 - 00093	000100-00923	Northstar Herbicide	128973, 029806	Primisulfuron-methylmethanaminehyl, dicamba, sodium salt	11/1/1999	10/31/2000	0	6	0
010790 - 00004	007969-00150	Distinct	005107, 029806	Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}hy, dicamba, sodium salt	7/1/2000	10/1/2000	0	57	0
010790 - 00002	007969-00175	Celebrity Plus	029806, 005107, 129008	Dicamba, sodium salt, pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}hy, nicosulfuron (ANSI)	7/1/2000	10/1/2000	0	17	0
011250 - 00009	007969-00150	Distinct	005107, 029806	Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}hy, dicamba, sodium salt	10/1/2000	1/1/2001	0	39	0
012499 - 00090	000100-00923	Northstar	128973, 029806	Primisulfuron-methylmethanaminehyl, dicamba, sodium salt	11/1/2000	10/31/2001	0	13	0
011250 - 00003	007969-00175	Celebrity Plus	129008, 029806, 005107	Nicosulfuron (ANSI), dicamba, sodium salt, pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}hy	11/1/2000	3/1/2001	0	2	0
011978 - 00050	000100-00923	Northstar	128973, 029806	Primisulfuron-methylmethanaminehyl, dicamba, sodium salt	4/1/2001	6/30/2001	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
012391 - 00003	007969-00175	Celebrity Plus Herbicide	029806, 129008, 005107	Dicamba, odium salt, nicosulfuron (ANSI), pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}hy	7/1/2001	10/31/2001	0	9	0
012391 - 00002	007969-00166	Celebrity Herbicide	129008, 029806	Nicosulfuron (ANSI), dicamba, sodium salt	7/1/2001	10/31/2001	0	1	0
012391 - 00007	007969-00150	Distinct Herbicide	005107, 029806	Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}hy, dicamba, sodium salt	7/1/2001	10/31/2001	0	40	0
012523 - 00045	000100-00923	Northstar	029806, 128973	Dicamba, sodium salt, primisulfuron-methylmethanaminehyl	7/1/2001	9/30/2001	0	1	0
012391 - 00005	007969-00166	Conclude Ultra	029806, 129008	Dicamba, sodium salt, nicosulfuron (ANSI)	7/1/2001	10/31/2001	0	1	0
013554 - 00065	000100-00923	Northstar	128973, 029806	Primisulfuron-methylmethanaminehyl, dicamba, sodium salt	11/1/2001	10/31/2002	0	4	0
013492 - 00004	007969-00175	Celebrity Plus Herbicide	129008, 005107, 029806	Nicosulfuron (ANSI), pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}hy, dicamba, sodium salt	7/1/2002	10/1/2002	0	6	0
013492 - 00003	007969-00166	Celebrity	029806, 129008	Dicamba, sodium salt, nicosulfuron (ANSI)	7/1/2002	10/1/2002	0	1	0
013492 - 00008	007969-00150	Distinct	029806, 005107	Dicamba, sodium salt, pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}hy	7/1/2002	10/1/2002	0	40	0
014597 - 00055	000100-00923	Northstar	128973, 029806	Primisulfuron-methylmethanaminehyl, dicamba, sodium salt	11/1/2002	10/31/2003	0	2	0
014582 - 00003	007969-00175	Celebrity Plus	029806, 129008, 005107	Dicamba, sodium salt, nicosulfuron (ANSI), pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}hy	6/1/2003	9/30/2003	0	5	0
014582 - 00004	007969-00150	Distinct	005107, 029806	Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}hy, dicamba, sodium salt	6/1/2003	9/30/2003	0	25	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
015713 - 00115	000100-00923	Northstar	128973, 029806	Primisulfuron-methylmethanaminehyl, 3,6-dichloro-2-methoxybenzoic acid, sodium salt	11/1/2003	10/31/2004	0	1	0
015653 - 00002	007969-00175	Celebrity Plus	005107, 129008, 029806	3-Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}, nicosulfuron, 3,6-dichloro-2-methoxybenzoic acid, sodium salt	6/1/2004	9/1/2004	0	4	0
015653 - 00004	007969-00150	Distinct	029806, 005107	3,6-dichloro-2-methoxybenzoic acid, sodium salt, 3-Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}	6/1/2004	9/1/2004	0	50	0
016903 - 00052	000100-00923	Northstar	029806, 128973	3,6-dichloro-2-methoxybenzoic acid, sodium salt, primisulfuron-methylmethanaminehyl	11/1/2004	10/31/2005	0	2	0
016743 - 00004	007969-00150	Distinct	029806, 005107	3,6-dichloro-2-methoxybenzoic acid, sodium salt, 3-pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}	6/1/2005	9/1/2005	0	23	0
016743 - 00002	007969-00175	Celebrity Plus Herbicide	129008, 005107, 029806	Nicosulfuron, 3-pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}, 3,6-dichloro-2-methoxybenzoic acid, sodium salt	6/1/2005	9/1/2005	0	2	0
017995 - 00006	007969-00150	Distinct	005107, 029806	3-Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}, dicamba, sodium salt	6/1/2006	9/1/2006	0	17	0
017995 - 00004	007969-00175	Celebrity	029806, 129008, 005107	Dicamba, sodium salt, nicosulfuron, 3-pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}	6/1/2006	9/1/2006	0	1	0
018208 - 00006	007969-00175	Celebrity Plus	005107, 029806, 129008,	3-Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}, dicamba, sodium salt, nicosulfuron	11/1/2006	1/31/2007	0	1	0

Incident Package and Sequence	Registration Number	Product Name	PC Code	Ingredient Name	From Date	To Date	WB	PB	ONT
018208 - 00005	007969-00150	Distinct	005107, 029806	3-Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}, dicamba, sodium salt	11/1/2006	1/31/2007	0	1	0
019130 - 00100	000100-00923	Northstar	128973, 029806	Primisulfuron-methylmethanaminehyl, dicamba, sodium salt	11/1/2006	10/31/2007	0	1	0
018976 - 00006	007969-00150	Distinct	029806, 005107	Dicamba, sodium salt, 3-Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}	6/1/2007	9/1/2007	0	4	0
018976 - 00020	007969-00242	Status Herbicide	005107, 029806	3-Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}, dicamba, sodium salt	6/1/2007	9/1/2007	0	17	0
018976 - 00004	007969-00175	Celebrity	029806, 129008, 005107	Dicamba, sodium salt, nicosulfuron, 3-Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}	6/1/2007	9/1/2007	0	2	0
020182 - 00019	007969-00242	Status Herbicide	005107, 029806	3-Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}, dicamba, sodium salt	6/1/2008	9/1/2008	0	35	0
020182 - 00005	007969-00150	Distinct	029806, 005107	Dicamba, sodium salt, 3-Pyridinecarboxylic acid, 2-{1-{{{(3, 5-difluorophenyl)amino}carbonyl}	6/1/2008	9/1/2008	0	1	0
024648 - 00031	000100-00927	Rave	128969, 029806	Triasulfuron, dicamba, sodium salt	11/1/2011	10/31/2012	0	1	0
027232 - 00036	007969-00242	Status Herbicide	005107, 029806	Diflufenzopyr-sodium, dicamba, sodium salt	7/18/2014	10/21/2014	0	1	0
030789 - 00027	007969-00242	Status Herbicide	029806, 005107	Dicamba, sodium salt, diflufenzopyr-sodium	10/19/2017	12/24/2017	0	1	0
033288 - 00013	007969-00242	Status Herbicide	029806, 005107	Dicamba, sodium salt, diflufenzopyr-sodium	4/16/2020	6/18/2020	1	0	0

N/R- not reported
WB = minor 'wildlife' incidents; PB = minor 'plant damage' incidents, ONT = 'other nontarget' incidents

Appendix F. Example Aquatic Modeling Output and Input Batch Files

Below is an example output summary file from a single PWC modeling simulation.

Aerial Application to Barley

Summary of Water Modeling of dicamba and DCSA and the USEPA Standard Pond

Estimated Environmental Concentrations for Dicamba and DCSA are presented in **Table F-1** and **F-2** for the USEPA standard pond with the TXwheatOP field scenario. A graphical presentation of the year-to-year acute values is presented in **Figure F-1** and **F-2**. These values were generated with the Pesticide Water Calculator (PWC), Version 2.001. Critical input values for the model are summarized in **Table F-3** to **F-6**.

This model estimates that about 3.2% of dicamba applied to the field eventually reaches the water body. The main mechanism of transport from the field to the water body is by run-off (61.3% of the total transport), followed by spray drift (38.7%) and erosion (0.04%). This model estimates that about 0.36% of DCSA produced on the field eventually reaches the water body. The main mechanism of transport from the field to the water body is by run-off (89.4% of the total transport) followed by erosion (10.7%).

In the water body, dicamba dissipates with an effective water column half-life of 37.0 days. (This value does not include dissipation by transport to the benthic region; it includes only processes that result in removal of pesticide from the complete system.) The main source of dissipation in the water column is metabolism (effective average half-life = 37.1 days) followed by photolysis (9279.1 days). In the water body, DCSA dissipates with an effective water column half-life of 57.4 days. (This value does not include dissipation by transport to the benthic region; it includes only processes that result in removal of pesticide from the complete system.) The main source of dissipation in the water column is metabolism (effective average half-life = 57.7 days) followed by photolysis (9306.7 days).

In the benthic region, dicamba is stable. The vast majority of the pesticide in the benthic region (99.24%) is sorbed to sediment rather than in the pore water. In the benthic region, DCSA dissipates very slowly (545.6 days). The main source of dissipation in the benthic region is metabolism (effective average half-life = 545.6 days). DCSA is about evenly distributed in the benthic region between the pore water and sorbed to sediment.

Table F-1. Estimated Environmental Concentrations (ppb) for Dicamba

1-day Avg (1-in-10 yr)	74.41
4-day Avg (1-in-10 yr)	70.97
21-day Avg (1-in-10 yr)	59.37
60-day Avg (1-in-10 yr)	44.16
365-day Avg (1-in-10 yr)	12.03
Entire Simulation Mean	6.465

Table F-2. Estimated Environmental Concentrations (ppb) for DCSA

1-day Avg (1-in-10 yr)	27.36
4-day Avg (1-in-10 yr)	27.33
21-day Avg (1-in-10 yr)	27.83
60-day Avg (1-in-10 yr)	28.70
365-day Avg (1-in-10 yr)	17.03
Entire Simulation Mean	9.067

Table F-3. Summary of Model Inputs for Dicamba

Scenario	TXwheatOP
Cropped Area Fraction	1
Koc (ml/g)	13.4
Water Half-Life (days) @ 20 °C	40.7
Benthic Half-Life (days) @ 25 °C	423
Photolysis Half-Life (days) @ 40 °Lat	105
Hydrolysis Half-Life (days)	0
Soil Half-Life (days) @ 20 °C	7.62
Foliar Half-Life (days)	0
Molecular Weight	221.04
Vapor Pressure (torr)	3.41e-5
Solubility (mg/l)	6100
Henry's Constant	0.0

Table F-4. Summary of Model Inputs for DCSA

Scenario	TXwheatOP
Cropped Area Fraction	1
Koc (ml/g)	1209
Water Half-Life (days) @ 20 °C	63.3
Benthic Half-Life (days) @ 25 °C	0
Photolysis Half-Life (days) @ 40 °Lat	105
Hydrolysis Half-Life (days)	0
Soil Half-Life (days) @ 20 °C	14.2
Foliar Half-Life (days)	0
Molecular Weight	207
Vapor Pressure (torr)	5.98e-5
Solubility (mg/l)	2112
Molar Conversion: Metabolism	1
Molar Conversion: Benthic	1
Molar Conversion: Soil Degradation	1

Table F-5. Application Schedule for Dicamba

Date (Days Since Emergence)	Type	Amount (kg/ha)	Eff.	Drift
-14	Ground	1.12	0.95	0.125
-7	Ground	0.98	0.95	0.125
7	Above Crop (Foliar)	0.13	0.95	0.125

Figure F-1. Yearly Highest 1-day Average Concentrations, Dicamba

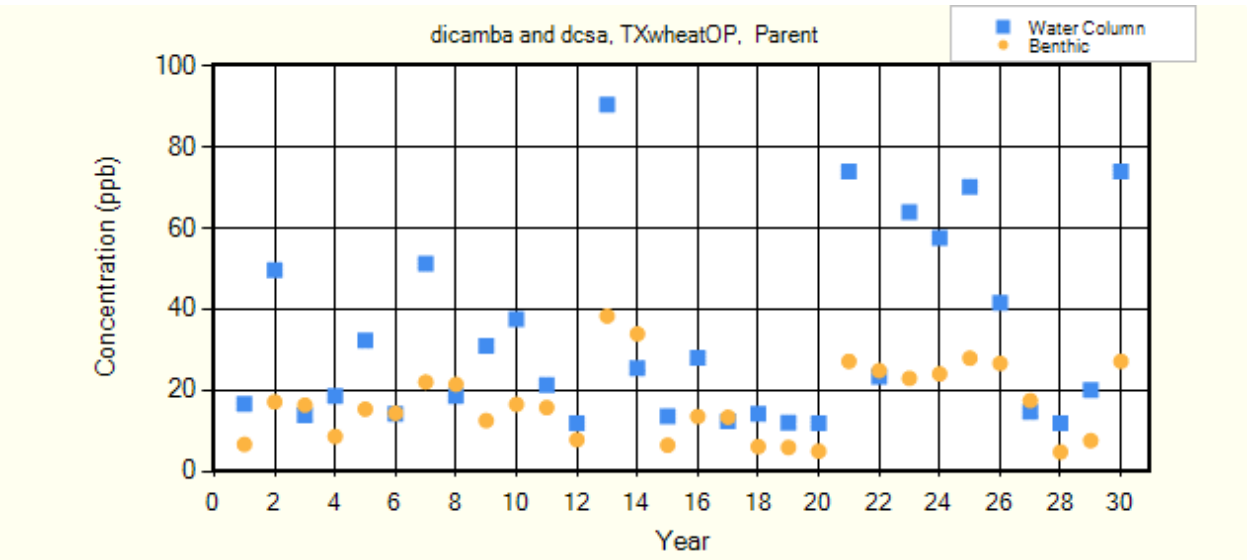
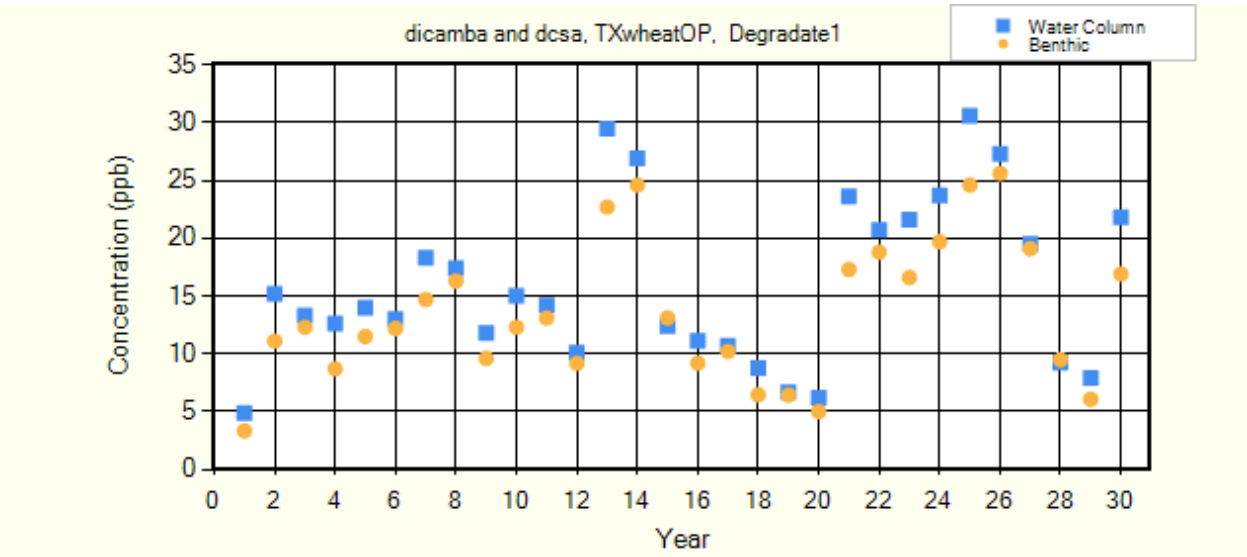


Figure F-2. Yearly Highest 1-day Average Concentrations, DCSA



Appendix G. T-REX Output (EECs and RQs) for Scenarios with LOC Exceedances

Table G-1. Avian Dose-Based EECs (mg ae/kg-bw; upper bound Kenaga)[1]

Primary feeding strategy	Herbivores and Omnivores												Insectivores			Granivores		
Animal size	Small				Medium				Large				S	M	L	S	M	L
Food item / Use↓[2]	Short Grass	Tall Grass	Broad-leaf Plants	Fruits, pods, seeds	Short Grass	Tall Grass	Broadleaf Plants	Fruits, pods, seeds	Short Grass	Tall Grass	Broadleaf Plants	Fruits, pods, seeds	Arthropods			Seeds and grains		
Various non-agricultural (*e.g.*, rights of way, fences, hedgerows, hay, grass grown for seed)[3]	547	251	308	34	312	143	175	19	140	64	79	9	214	122	55	8	4	1.9
Various agricultural (*e.g.*, corn and non-DT soybean) and non-agricultural (*e.g.*, parks)[4]	427	196	240	27	243	112	137	15	109	50	61	7	167	95	43	6	3	1.5
Various non-agriculture (*e.g.*, golf, grass forage, forest)[5]	273	125	154	17	156	71	88	10	70	32	39	4	107	61	27	4	2	1.0
DT-cotton and DT-soybean	281	129	158	18	160	73	90	10	72	33	40	4	110	63	28	4	2	1.0
Asparagus	202	93	114	13	115	53	65	7	52	24	29	3	79	45	20	3	1.6	0.7
Wheat	120	55	68	8	69	31	39	4	31	14	17	1.9	47	27	12	1.7	1.0	0.4
Sorghum	107	49	60	7	61	28	34	4	27	12	15	1.7	42	24	11	1.5	0.8	0.4
Barley	89	41	50	6	51	23	29	3	23	10	13	1.4	35	20	9	1.2	0.7	0.3
Various agricultural (*e.g.*, barley, millet, oats, triticale)[6]	49	23	28	3	28	13	16	1.8	13	6	7	0.8	19	11	5	0.7	0.4	0.2

[1] EECs above 2 mg ae/kg-bw are rounded to the nearest whole number.
[2] See **Appendix B** for complete list of uses associated with various application rates.
[3] Application rates of 1.94 to 2 lb ae/A. EECs reported for 2 lb ae/A rate.
[4] Application rates of 1 lb ae/A x 2. EECs reported for 1 lb ae/A x 2 rate with a minimum reapplication interval of 7 days. Some uses have longer reapplication intervals or three applications (*e.g.*, 1, 0.875, and 0.12 lb ae/A).
[5] Application rates of 1 lb ae/A
[6] Uses with single maximum application rates of 0.18 lb ae/A and lower. EECs reported for 0.18 lb ae/A.

Table G-2. Avian Dose-Based EECs (mg ae/kg-bw; mean Kenaga)

Primary feeding strategy	Herbivores and Omnivores												Insectivores			Granivores		
Animal size	Small				Medium				Large				S	M	L	S	M	L
Food item / Use↓[2]	Short Grass	Tall Grass	Broad-leaf Plants	Fruits, pods, seeds	Short Grass	Tall Grass	Broadleaf Plants	Fruits, pods, seeds	Short Grass	Tall Grass	Broadleaf Plants	Fruits, pods, seeds	Arthropods			Seeds and grains		
Various non-agricultural (*e.g.*, rights of way, fences, hedgerows, hay, grass grown for seed)[3]	194	82	103	16	110	47	58	9	49	21	26	4	148	84	38	4	2	0.9
Various agricultural (*e.g.*, corn and non-DT soybean) and non-agricultural (*e.g.*, parks)[4]	151	64	80	12	86	37	46	7	39	16	20	3	116	66	30	3	2	0.7
Various non-agriculture (*e.g.*, golf, grass forage, forest)[5]	97	41	51	8	55	23	29	5	25	10	13	2	74	42	19	1.8	1.0	0.5
DT-cotton and DT-soybean	99	42	53	8	57	24	30	5	25	11	13	2	76	43	19	1.8	1.0	0.5
Asparagus	72	30	38	6	41	17	22	3	18	8	10	1.5	55	31	14	1.3	0.7	0.3
Wheat	43	18	23	4	24	10	13	2.0	11	5	6	0.9	33	19	8	0.8	0.4	0.2
Sorghum	38	16	20	3	22	9	11	1.8	10	4	5	0.8	29	16	7	0.7	0.4	0.2
Barley	32	13	17	3	18	8	10	1.5	8	3	4	0.7	24	14	6	0.6	0.3	0.1
Various agricultural (*e.g.*, barley, millet, oats, triticale)[6]	17	7	9	1.4	10	4	5	0.8	4	1.9	2	0.4	13	8	3	0.3	0.2	0.1

[1] EECs above 2 mg ae/kg-bw are rounded to the nearest whole number.
[2] See **Appendix B** for complete list of uses associated with various application rates.
[3] Application rates of 1.94 to 2 lb ae/A. EECs reported for 2 lb ae/A rate.
[4] Application rates of 1 lb ae/A x 2. EECs reported for 1 lb ae/A x 2 rate with a minimum reapplication interval of 7 days. Some uses have longer reapplication intervals or three applications (*e.g.*, 1, 0.875, and 0.12 lb ae/A).
[5] Application rates of 1 lb ae/A
[6] Uses with single maximum application rates of 0.18 lb ae/A and lower. EECs reported for 0.18 lb ae/A.

Table G-3. Mammalian Dose-Based EECs (mg ae/kg-bw; upper bound Kenaga)

Primary feeding strategy	Herbivores and Omnivores												Insectivores			Granivores		
Animal size	Small				Medium				Large				S	M	L	S	M	L
Food item / Use↓[2]	Short Grass	Tall Grass	Broad-leaf Plants	Fruits, pods, seeds	Short Grass	Tall Grass	Broadleaf Plants	Fruits, pods, seeds	Short Grass	Tall Grass	Broadleaf Plants	Fruits, pods, seeds	Arthropods			Seeds and grains		
Various non-agricultural (*e.g.*, rights of way, fences, hedgerows, hay, grass grown for seed)[3]	458	210	257	29	316	145	178	20	73	34	41	5	179	124	29	6	4	1.0
Various agricultural (*e.g.*, corn and non-DT soybean) and non-agricultural (*e.g.*, parks)[4]	357	164	201	22	247	113	139	15	57	26	32	4	140	97	22	5	3	0.8
Various non-agriculture (*e.g.*, golf, grass forage, forest)[5]	229	105	129	14	158	72	89	10	37	17	21	2	90	62	14	3	2	0.5
DT-cotton and DT-soybean	235	108	132	15	162	74	91	10	38	17	21	2	92	64	15	3	2	0.5
Asparagus	169	78	95	11	117	54	66	7	27	12	15	1.7	66	46	11	2	1.6	0.4
Wheat	101	46	57	6	70	32	39	4	16	7	9	1.0	39	27	6	1.4	1.0	0.2
Sorghum	89	41	50	6	62	28	35	4	14	7	8	0.9	35	24	6	1.2	0.9	0.2
Barley	75	34	42	5	52	24	29	3	12	6	7	0.8	29	20	5	1.0	0.7	0.2
Various agricultural (*e.g.*, barley, millet, oats, triticale)[6]	41	19	23	3	28	13	16	1.8	7	3	4	0.4	16	11	3	0.6	0.4	0.1

[1] EECs above 2 mg ae/kg-bw are rounded to the nearest whole number.
[2] See **Appendix B** for complete list of uses associated with various application rates.
[3] Application rates of 1.94 to 2 lb ae/A. EECs reported for 2 lb ae/A rate.
[4] Application rates of 1 lb ae/A x 2. EECs reported for 1 lb ae/A x 2 rate with a minimum reapplication interval of 7 days. Some uses have longer reapplication intervals or three applications (*e.g.*, 1, 0.875, and 0.12 lb ae/A).
[5] Application rates of 1 lb ae/A
[6] Uses with single maximum application rates of 0.18 lb ae/A and lower. EECs reported for 0.18 lb ae/A.

Table G-4. Avian Dose-Based Acute RQs (upper bound Kenaga)[1]

Primary feeding strategy	Herbivores and Omnivores												Insectivores			Granivores		
Animal size	Small				Medium				Large				S	M	L	S	M	L
Food item / Use↓[2]	Short Grass	Tall Grass	Broad-leaf Plants	Fruits, pods, seeds	Short Grass	Tall Grass	Broadleaf Plants	Fruits, pods, seeds	Short Grass	Tall Grass	Broadleaf Plants	Fruits, pods, seeds	Arthropods			Seeds and grains		
Various non-agricultural (*e.g.*, rights of way, fences, hedgerows, hay, grass grown for seed)[3]	**4**	**1.8**	**2**	0.3	**1.8**	**0.8**	**1.0**	0.1	**0.6**	0.3	0.3	<0.1	**1.6**	**0.7**	0.2	<0.1	<0.1	<0.1
Various agricultural (*e.g.*, corn and non-DT soybean) and non-agricultural (*e.g.*, parks)[4]	**3**	**1.4**	**1.8**	0.2	**1.4**	**0.6**	**0.8**	0.1	0.4	0.2	0.3	<0.1	**1.2**	**0.6**	0.2	<0.1	<0.1	<0.1
Various non-agriculture (*e.g.*, golf, grass forage, forest)[5]	**2**	**0.9**	**1.1**	0.1	**0.9**	0.4	**0.5**	0.1	0.3	0.1	0.2	<0.1	**0.8**	0.4	0.1	<0.1	<0.1	<0.1
DT-cotton and DT soybean	**2**	**0.9**	**1.2**	0.1	**0.9**	0.4	**0.5**	0.1	0.3	0.1	0.2	<0.1	**0.8**	0.4	0.1	<0.1	<0.1	<0.1
Asparagus	**1.5**	**0.7**	**0.8**	0.1	**0.7**	0.3	0.4	<0.1	0.2	0.1	0.1	<0.1	**0.6**	0.3	<0.1	<0.1	<0.1	<0.1
Wheat	**0.9**	0.4	0.5	0.1	0.4	0.2	0.2	<0.1	0.1	0.1	0.1	<0.1	0.3	0.2	<0.1	<0.1	<0.1	<0.1
Sorghum	**0.8**	0.4	0.4	<0.1	0.4	0.2	0.2	<0.1	0.1	0.1	0.1	<0.1	0.3	0.1	<0.1	<0.1	<0.1	<0.1
Barley	**0.7**	0.3	0.4	<0.1	0.3	0.1	0.2	<0.1	0.1	<0.1	0.1	<0.1	0.3	0.1	<0.1	<0.1	<0.1	<0.1
Various agricultural (*e.g.*, barley, millet, oats, triticale)[6]	0.4	0.2	0.2	<0.1	0.2	0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Bolded values exceed the LOC for acute risk LOC of 0.5

[1] RQs above 2 are rounded to the nearest whole number.

[2] See **Appendix B** for complete list of uses associated with various application rates.

[3] Application rates of 1.94 to 2 lb ae/A. RQs reported for 2 lb ae/A rate.

[4] Application rates of 1 lb ae/A x 2. RQs reported for 1 lb ae/A x 2 rate with a minimum reapplication interval of 7 days. Some uses have longer reapplication intervals or three applications (*e.g.*, 1, 0.875, and 0.12 lb ae/A).

[5] Application rates of 1 lb ae/A

[6] Uses with single maximum application rates of 0.18 lb ae/A and lower. RQs reported for 0.18 lb ae/A.

Table G-5. Avian Dose-Based Acute RQs (mean Kenaga)[1]

Primary feeding strategy	Herbivores and Omnivores												Insectivores			Granivores		
Animal size	Small				Medium				Large				S	M	L	S	M	L
Food item / Use↓[2]	Short Grass	Tall Grass	Broad-leaf Plants	Fruits, pods, seeds	Short Grass	Tall Grass	Broadleaf Plants	Fruits, pods, seeds	Short Grass	Tall Grass	Broadleaf Plants	Fruits, pods, seeds	Arthropods			Seeds and grains		
Various non-agricultural (*e.g.*, rights of way, fences, hedgerows, hay, grass grown for seed)[3]	**1.4**	**0.6**	**0.8**	0.1	**0.6**	0.3	0.3	<0.1	0.2	<0.1	0.1	<0.1	**1.1**	**0.5**	0.2	<0.1	<0.1	<0.1
Various agricultural (*e.g.*, corn and non-DT soybean) and non-agricultural (*e.g.*, parks)[4]	**1.1**	0.5	**0.6**	<0.1	0.5	0.2	0.3	<0.1	0.2	<0.1	<0.1	<0.1	**0.9**	0.4	0.1	<0.1	<0.1	<0.1
Various non-agriculture (*e.g.*, golf, grass forage, forest)[5]	**0.7**	0.3	0.4	<0.1	0.3	0.1	0.2	<0.1	0.1	<0.1	<0.1	<0.1	**0.5**	0.2	<0.1	<0.1	<0.1	<0.1
DT-cotton and DT soybean	**0.7**	0.3	0.4	<0.1	0.3	0.1	0.2	<0.1	0.1	<0.1	<0.1	<0.1	**0.6**	0.3	<0.1	<0.1	<0.1	<0.1
Asparagus	**0.5**	0.2	0.3	<0.1	0.2	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	0.2	<0.1	<0.1	<0.1	<0.1
Wheat	0.3	0.1	0.2	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.1	<0.1	<0.1	<0.1	<0.1
Sorghum	0.3	0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.1	<0.1	<0.1	<0.1	<0.1
Barley	0.2	0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1
Various agricultural (*e.g.*, barley, millet, oats, triticale)[6]	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Bolded values exceed the LOC for acute risk LOC of 0.5

[1] RQs above 2 are rounded to the nearest whole number.

[2] See **Appendix B** for complete list of uses associated with various application rates.

[3] Application rates of 1.94 to 2 lb ae/A. RQs reported for 2 lb ae/A rate.

[4] Application rates of 1 lb ae/A x 2. RQs reported for 1 lb ae/A x 2 rate with a minimum reapplication interval of 7 days. Some uses have longer reapplication intervals or three applications (*e.g.*, 1, 0.875, and 0.12 lb ae/A).

[5] Application rates of 1 lb ae/A

[6] Uses with single maximum application rates of 0.18 lb ae/A and lower. RQs reported for 0.18 lb ae/A.

Table G-6. Mammalian Dose-Based Chronic RQs (upper bound Kenaga)[1]

Primary feeding strategy	Herbivores and Omnivores												Insectivores			Granivores		
Animal size	Small				Medium				Large				S	M	L	S	M	L
Food item / Use↓[2]	Short Grass	Tall Grass	Broad-leaf Plants	Fruits, pods, seeds	Short Grass	Tall Grass	Broadleaf Plants	Fruits, pods, seeds	Short Grass	Tall Grass	Broadleaf Plants	Fruits, pods, seeds	Arthropods			Seeds and grains		
Various non-agricultural (*e.g.*, rights of way, fences, hedgerows, hay, grass grown for seed)[3]	**1.5**	0.7	0.9	0.1	**1.3**	0.6	0.7	<0.1	0.7	0.3	0.4	<0.1	0.6	0.5	0.3	<0.1	<0.1	<0.1
Various agricultural (*e.g.*, corn and non-DT soybean) and non-agricultural (*e.g.*, parks)[4]	**1.2**	0.5	0.7	<0.1	**1.0**	0.5	0.6	<0.1	0.5	0.3	0.3	<0.1	0.5	0.4	0.2	<0.1	<0.1	<0.1
Various non-agriculture (*e.g.*, golf, grass forage, forest)[5]	0.8	0.4	0.4	<0.1	0.7	0.3	0.4	<0.1	0.4	0.2	0.2	<0.1	0.3	0.3	0.1	<0.1	<0.1	<0.1
DT-cotton and DT soybean	0.8	0.4	0.4	<0.1	0.7	0.3	0.4	<0.1	0.4	0.2	0.2	<0.1	0.3	0.3	0.1	<0.1	<0.1	<0.1
Asparagus	0.6	0.3	0.3	<0.1	0.5	0.2	0.3	<0.1	0.3	0.1	0.1	<0.1	0.2	0.2	0.1	<0.1	<0.1	<0.1
Wheat	0.3	0.2	0.2	<0.1	0.3	0.1	0.2	<0.1	0.2	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1
Sorghum	0.3	0.1	0.2	<0.1	0.3	0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1
Barley	0.3	0.1	0.1	<0.1	0.2	0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Various agricultural (*e.g.*, barley, millet, oats, triticale)[6]	0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Bolded values exceed the LOC for chronic risk LOC of 1.0.

[1] RQs above 2 are rounded to the nearest whole number.

[2] See **Appendix B** for complete list of uses associated with various application rates.

[3] Application rates of 1.94 to 2 lb ae/A. RQs reported for 2 lb ae/A rate.

[4] Application rates of 1 lb ae/A x 2. RQs reported for 1 lb ae/A x 2 rate with a minimum reapplication interval of 7 days. Some uses have longer reapplication intervals or three applications (*e.g.*, 1, 0.875, and 0.12 lb ae/A).

[5] Application rates of 1 lb ae/A

[6] Uses with single maximum application rates of 0.18 lb ae/A and lower. RQs reported for 0.18 lb ae/A.

Appendix H. Attractiveness of Registered Use Patterns for Dicamba to Bees

Table H-1.

Crop Name	Honey Bee Attractive?	Bumble Bee Attractive?	Solitary Bee Attractive?	Acreage in the U.S.	Notes
Agricultural Uses					
Asparagus (*Asparagus officinalis*)	Yes (nectar & pollen)[1]	N/AV	N/AV	24,500	Only require bee pollination and managed pollinators for seed production. Small % of acreage is grown for seed.
Barley (*Hordeum spp.*)	No	No	No	3,000,000	Wind-pollinated. Not harvest prior to bloom.
Corn (*Zea mays*)	Yes (pollen)[1]	Yes[1]	Yes[1]	87,668,000	Wind pollinated but can be visited during pollen shedding.
Cotton (Upland cotton (*Gossypium hirsutum*) Pima Cotton (*Gossypium barbadense*))	Yes (nectar)[1]	Yes[1]	Yes[1]	7,664,400	Does not require bee pollination or use managed pollinators. Used by some beekeepers for honey production.
Oat (*Avena spp., mainly Avena sativa*)	No	No	No	1,030,000	Wind-pollinated.
Millet (Poaceae)	Yes (pollen only)[1]	No	No	N/A	Does not require bee pollination or use managed pollinators; source of pollen only when no other forage sources are available.
Sorghum (*Sorghum bicolor, spp. bicolor*)	Yes (pollen only)[1]	N/AV	Yes[1]	6,910,000	Bee pollination is not required. Acreage is for grain and silage
Soybeans (*Glycine soja*)	Yes (nectar & pollen)[1]	Yes[1]	Yes[1]	75,869,000	Bee pollination is not required, but soybean is used by some beekeepers for honey production
Sugarcane (*Saccharum officinarum*)	No	No	No	905,600	Wind pollinated. In 2013, 907 acres were for seed production.
Triticale (*Triticum x Secale*)	No	No	No	61,428	Triticale is a cross between wheat (Triticum) and rye (Secale), both wind pollinated

Crop Name	Honey Bee Attractive?	Bumble Bee Attractive?	Solitary Bee Attractive?	Acreage in the U.S.	Notes
Wheat (*Triticum* spp. common (*T. aestivum*, durum (*T. durum*), spelt (*T. spelta*))	No	No	No	45,157,000	Bee pollination is not required.
Non-Agricultural Uses					
Turfgrass (non-maintained lawns/areas) (all varieties of grasses*)*	Yes (pollen only)[1]	No	No	35,000,000	Does not require bee pollination or use managed pollinators; wind-pollinated, source of pollen only when no other forage sources are available.
Ornamentals & Forestry trees	--	--	--	--	Potentially attractive depending on the specific plant
Premises/areas	--	--	--	--	Potentially attractive depending on presence of pollinator attractive plants

N/AV – not available

[1] attractiveness rating is a single "+", denoting a use pattern is opportunistically attractive to bees.