Maryland Department of Natural Resources

Forest Service Pesticide Environmental and Social Risk Assessment

Pesticide Active Ingredient: Metsulfuron-methyl

Version 1.1

2021

Appendix 5: National Guidance ESRA for Metsulfuron-methyl

Environmental National Assessment

Pesticide:	**Metsulfuron-methyl**		***Specific Formulation:***
Hazard Status:	Metsulfuron-methyl is not considered a highly hazardous pesticide (HHP) per the FSC Pesticides Policy (FSC-POL-30-001 V3-0 EN) and the FSC Lists of Highly Hazardous Pesticides (FSC-POL-30-001a EN).		Escort
Exposure Elements	**Minimum list of values**	**Description of why/why not a risk**	**National-level Mitigation strategies defined to minimize risk[1]**
Environmental	**Soil (erosion, degradation, biota, carbon storage)**	**Minimal indication of adverse effects to atmosphere was found when metsulfuron-methyl is used according to label instructions in forestry applications. Additional considerations are provided below.** Some adverse effects on microorganisms are unlikely but may also occur (1). Wind erosion and soil loss is likely off-site due to runoff from clay and drift at distances of 500 feet or more from the application site, especially in more arid environments where soil and topographic conditions favor erosion; this erosion could lead to adverse effects on plants (1). Adverse effects on soil microorganisms are likely to be transient and resolve within 9 to 14 days (1).	**Follow all pesticide label application instructions. Follow applicable criterion and indicators from the FSC US FM Standard V1.0 (e.g., Criterion 4.3 for worker safety, Criterion 7.3 for worker training, Criterion 6.5 for protecting water resources, and Criteria 8.1 and 8.2 for Monitoring). Applicators or persons supervising application of restricted use pesticides are required to be certified in accordance with EPA regulations and state, territorial and tribal laws. Additional risk mitigation strategies are provided below. Organizations should take reasonable steps to avoiding environmental and social impacts by considering the mitigation strategies provided below, as well as application-, Organization-, or location-specific strategies.** **General consideration of exposure variables designed to mitigate risk:** -Know and understand the specific pesticide formulation and/or tank mixture, as its unique formulation may provide a different risk characterization. -Understand how the mixture of active ingredients affects the pesticides risk profile.
	Water (ground water, surface waters, water supplies)	**Effects on aquatic ecosystems are characterized by potential adverse effects to aquatic plants. Additional considerations are provided below.** Aquatic macrophytes are at some risk if metsulfuron-methyl is applied near bodies of water (1). Adverse effects in aquatic microorganisms are not anticipated at estimated peak concentrations (1).	

		Concentrations of metsulfuron-methyl in water is expected to be low and adverse effects on aquatic animals is not anticipated (1). Metsulfuron-methyl has the potential to impact surface water quality due to runoff, especially for poorly drained soils or where there is a shallow water table (3).	-Seek to minimize the frequency, interval, and amount of application. -Use the most efficient and effective method of application by seeking to minimize risk to environmental and social values. -Understand the site (e.g., soil type, topography, etc.) and climatic (e.g., wind, temperature, and humidity) conditions and the likely effect on risk to environmental and social values. -Have appropriate waste management systems in place. **Mitigating Risk to the Environment:** *reduce contact with water resources and minimize application amounts and number of applications.* *General and non-target species:* -Minimize application amounts and number of applications. -Minimize risk of spray drift: unintentional spray drift has potential to significantly increase risk to the environment and public welfare. -Consider that this herbicide is injurious to plants at extremely low concentrations. Nontarget plants may be adversely affected from drift and run-off. *Water:* -Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. -Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate (3). -To mitigate risk to surface water: "A level, well-maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential loading of metsulfuron-methyl from runoff
	Atmosphere (air quality, greenhouse gasses)	**Minimal indication of adverse effects to atmosphere was found when metsulfuron-methyl is used according to label instructions in forestry applications.**	
	Non-target species (vegetation, wildlife, bees and other pollinators, pets)	**Minimal indication of adverse effects to mammals, birds, terrestrial insects, and microorganisms when metsulfuron-methyl is used according to label instructions in forestry applications. However, there are risks to non-target plants; additional considerations are provided below.** Highest risk for small mammals consuming contaminated insects, but this is expected to be insignificant and does not reach the level of concern (1). It is noteworthy that metsulfuron-methyl has only been tested in a limited number of species and under conditions that do not well represent populations of free-ranging nontarget terrestrial mammals or birds (1). Honeybees have shown to be no more sensitive than birds or mammals (1). Runoff and drift may negatively impact terrestrial plants: "This herbicide is injurious to plants at extremely low concentrations. Nontarget plants may be adversely effected from drift and run-off" (3). Exposure may result in adverse effects to plants in terrestrial or wetland areas located adjacent to or downwind from an application site (4).	

		Secondary effects to habitats and food availability could occur, which would affect virtually all nontarget organisms. These secondary effects caused by herbicide or mechanical methods could either be detrimental or beneficial to affected species (1).	water and sediment. Runoff of this product will be greatly reduced by avoiding applications when rainfall or irrigation is expected to occur within 48 hours" (3). -Do not treat frozen or snow-covered soil (3). *Soil:* -Leave treated soil undisturbed to reduce the potential for herbicide movement by soil erosion due to wind or water (4).- -Avoid using metsulfuron-methyl in areas where soils are vulnerable to wind erosion. This is usually soils with "high silt and/or fine to very fine sand fractions and low organic matter content. Other factors which can affects the movement of windblown soil include the intensity and direction of prevailing winds, vegetative cover, site slope, rainfall, and drainage patterns" (3).
Environmental	**Non-timber forest products (as FSC-STD-01-001 V5-2 FSC Principles and Criteria, criterion 5.1)**	**Minimal indication of adverse effects to non-timber forest products was found when metsulfuron-methyl is used according to label instructions in forestry applications. Additional considerations are provided below.** As with any effective herbicide, vegetation will likely be altered within the treatment area, which may lead to secondary effects on terrestrial or aquatic animals as well as nontarget plants (1).	
	High Conservation Values (particularly HCV 1-4)	**Minimal indication of adverse effects to high conservation values was found when metsulfuron-methyl is used according to label instructions in forestry applications. Additional considerations are provided below.** Unintentional secondary effects on habitat, landscape and ecosystem are possible (1).	
	Landscape (aesthetics, cumulative impacts)	**Minimal indication of adverse effects to landscape was found when metsulfuron-methyl is used according to label instructions in forestry applications. Additional considerations are provided below.** Potential for secondary effects on terrestrial or aquatic animals and plants, including changes in food availability and habitat quality (1).	
	Ecosystem services (water, soil, carbon sequestration, tourism)	**Minimal indication of adverse effects to ecosystem services was found when metsulfuron-methyl is used according to label instructions in forestry applications. Additional considerations are provided below.** Potential for secondary effects on terrestrial or aquatic animals and plants, including changes in food availability and habitat quality (1).	

1 Mitigation strategies have been categorized to avoid redundancy

Sources:

(1) USDA/Forest Service. (2016). Metsulfuron methyl: Human Health and Ecological Risk Assessment. Prepared by Syracuse Environmental Research Associates, Inc. under GSA Forest Service BPA: WO-01-3187-0150. Retrieved from https://www.fs.fed.us/foresthealth/pesticide/pdfs/ImidaclopridFinalReport.pdf.

(2) US EPA (2016). Proposed Interim Registration Review Decision for 22 Sulfonyluea (SU) Herbicides.

(3) Bayer Environmental Science (2019). Escort XP Pesticide Label. Retrieved from: https://www3.epa.gov/pesticides/chem_search/ppls/000432-01549-20190510.pdf

(4) Bayer CropScience (2015). Escort XP Herbicide Safety Data Sheet. Accessed from: https://sds.chemicalsafety.com/sds/pda/msds/getpdf.ashx?action=msdsdocument&auth=200C200C200C200C2008207A200D2078200C200C200C200C200C200C200C200C2008&param1=ZmRwLjFfMzI2NDgwMDNORQ==&unique=1585234531

Social National Assessment

Pesticide:	Metsulfuron-methyl		***Specific Formulation:***
Hazard Status:	Metsulfuron-methyl is not considered a highly hazardous pesticide (HHP) per the FSC Pesticides Policy (FSC-POL-30-001 V3-0 EN) and the FSC Lists of Highly Hazardous Pesticides (FSC-POL-30-001a EN).		**DISCLAIMER: Adoption or adaption of this national-level assessment alone does not guarantee compliance with FSC-POL-30-001 V3-0 (see Background/Expectations Section)**
Exposure Elements	**Minimum list of values**	**Description of why/why not a risk**	**National-level Mitigation strategies defined to minimize risk[1]**
	High Conservation Values (especially HCV 5-6)	**Minimal indication of adverse effects to high conservation values was found when metsulfuron-methyl is used according to label instructions in forestry applications.**	**Follow all pesticide label application instructions. Follow applicable criterion and indicators from the FSC US FM Standard V1.0 (e.g., Criterion 4.3 for worker safety, Criterion 7.3 for worker training, Criterion 6.5 for protecting water resources, and Criteria 8.1 and 8.2 for Monitoring). Applicators or persons supervising application of restricted use pesticides are required to be certified in accordance with EPA regulations and state, territorial and tribal laws. Additional risk mitigation strategies are provided below. Organizations should take reasonable steps to avoiding environmental and social impacts by considering the mitigation strategies provided below, as well as application-, Organization-, or location-specific strategies.** **General consideration of exposure variables designed to mitigate risk:** -Know and understand the specific pesticide formulation, as its unique formulation may provide a different risk characterization. -Understand how the mixture of active ingredients affects the pesticides risk profile. -Seek to minimize the frequency, interval, and amount of application. -use the most efficient and effective method of application by seeking to minimize risk to environmental and social values. -Understand the site (e.g., soil type, topography, etc.) and climatic (e.g., wind, temperature, and
	Health (fertility, reproductive health, respiratory health, dermatologic, neurological and gastrointestinal problems, cancer and hormonal imbalance)	**Minimal indication of adverse effects to mammals, birds, terrestrial insects, and microorganisms when metsulfuron-methyl is used according to label instructions in forestry applications. However, there are risks to non-target plants; additional considerations are provided below.** Highest risk for small mammals consuming contaminated insects, but this is expected to be insignificant and does not reach the level of concern (1). It is noteworthy that metsulfuron-methyl has only been tested in a limited number of species and under conditions that do not well represent popoulations of free-ranging nontarget terrestrial mammals or birds (1). Honeybees have shown to be no more sensitive than birds or mammals (1). Runoff and drift may negatively impact terrestrial plants. Exposure may result in adverse effects to plants in terrestrial or wetland areas located adjacent to or downwind from an application site (4).	

		Secondary effects to habitats and food availability could occur, which would affect virtually all nontarget organisms. These secondary effects caused by herbicide or mechanical methods could either be detrimental or beneficial to affected species (1).	humidity) conditions and the likely effect on risk to environmental and social values. -Have appropriate, waste management systems in place. **Mitigating risk to water and food resources:** See Environmental Risk Assessment mitigation strategies. **Mitigating Risk to Workers:** *Label instructions should be followed when applying pesticides.* -Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. -Use personal protective equipment. When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations. -Chemical resistant nitrile rubber gloves are needed for hand protection. -Safety glasses with side-shields are needed for eye protection. -Long-sleeved shirts, long pants, shoes, and socks are needed for skin and body protection. -Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics (3). -Avoid contact with skin, eyes, and clothing. Applicators and handlers must wear long-sleeved shirts, long pants, shoes and socks. Remove clothing if they become contaminated and then rinse skin immediately with plenty of water for 15-20 minutes. **Mitigating Risk to Public Access/Public Welfare:**
Social	**Welfare**	**Minimal indication of adverse effects to welfare was found when metsulfuron-methyl is used according to label instructions in forestry applications.**	
	Food and water	**Minimal indication of adverse effects to food and water was found when metsulfuron-methyl is used according to label instructions in forestry applications. Additional considerations are provided below.** Although consumption of contaminated vegetation is possible, hazard is still well below the level of concern; even less hazardous are consumption of fruit, water, and fish (1). Contamination of water is possible from runoff and wind erosion, which is more prominent in more arid regions and with predominantly clay soils; contaminated irrigation water may adversely affect terrestrial and aquatic plants. However, effects depend on exposure conditions, such as precipitation levels, topography, and hydrological conditions (1).	
	Social Infrastructure; (schools and hospitals, recreational infrastructure, infrastructure adjacent to the management unit)	**Minimal indication of adverse effects to social infrastructure was found when metsulfuron-methyl is used according to label instructions in forestry applications.**	
	Economic viability (agriculture, livestock, tourism)	**Minimal indication of adverse effects to economic viability was found when metsulfuron-methyl is used according to label instructions in forestry applications.**	

		Risks to crops and other terrestrial plants due to exposure through runoff, contaminated irrigation water, drift, and wind erosion. However, effects depend on exposure conditions, such as precipitation levels, topography, and hydrological conditions (1). Minimal to no risk to fish and terrestrial animals (1). Unintentional secondary effects on ecosystems and landscape are possible due to changes in vegetation (1).	-Reduce the possibility of public consumption of contaminated wild food (e.g., fruit or fungi) and public exposure to pesticides through public outreach and engagement, limiting access, and/or appropriate signage. For instance, users of the forest may be excluded from the area using barriers or signage until the pesticide dries. -Consider effects on local communities and indigenous peoples when considering limiting access to treatment areas. -Do not allow children or pets to enter the treated area until it has dried.
Social	**Rights (legal and customary)**	**Minimal indication of adverse effects to rights was found when metsulfuron-methyl is used according to label instructions in forestry applications.**	
	Others	**No additional values were identified in this assessment.**	

1 Mitigation strategies have been categorized to avoid redundancy

Sources:

(1) USDA/Forest Service. (2016). Metsulfuron methyl: Human Health and Ecological Risk Assessment. Prepared by Syracuse Environmental Research Associates, Inc. under GSA Forest Service BPA: WO-01-3187-0150. Retrieved from https://www.fs.fed.us/foresthealth/pesticide/pdfs/ImidaclopridFinalReport.pdf.

(2) US EPA (2016). Proposed Interim Registration Review Decision for 22 Sulfonyluea (SU) Herbicides.

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(4) Bayer CropScience (2015). Escort XP Herbicide Safety Data Sheet. Accessed from: https://sds.chemicalsafety.com/sds/pda/msds/getpdf.ashx?action=msdsdocument&auth=200C200C200C200C2008207A200D2078200C200C200C200C200C200C200C200C2008&param1=ZmRwLjFfMzI2NDgwMDNORQ==&unique=1585234531