Environmental and Social Risk Assessment for Fenoxaprop-p-ethyl

2020

Wisconsin Department of Natural Resources

Management Unit ESRA for Fenoxaprop-p-ethyl

Environmental Management Unit Assessment Template

Pesticide:	fenoxaprop-p-ethyl		***Specific Formulation:***
Hazard Status:	Fenoxaprop-p-ethyl is not considered a highly hazardous pesticide (HHP) per the FSC Pesticides Policy (FSC- POL-30-001 V3-0 EN) and is not listed on the FSC Lists of Highly Hazardous Pesticides (FSC- POL-30-001a EN). However, risks from other FSC hazard groups and toxicity categories were not precluded from this assessment. Fenoxaprop-p-ethyl is considered a Group 1 Herbicide		
Exposure Elements	**Minimum list of values**	**Description of why/why not a risk on the Management Unit (indicate "No change from national Guidance ESRA" if no change from the national assessment)[1]**	**Management Unit Mitigation strategies defined to minimize risk**
Environmental	**Soil (erosion, degradation, biota, carbon storage)**	**Minimal indication of adverse effects to soil was found when fenoxaprop-p-ethyl is used according to label instructions in forestry applications, use for post-emergent application to target vegetation.** Fenoxaprop-p-ethyl is immobile in soils; however, it is recommended not to allow to enter soil (1). For terrestrial uses, do not apply directly to water or areas that could drain to waterways (2). This chemical is not rapidly biodegradable (1). The half-life of fenoxaprop in soils is 9d (aerobic) and 30d (anaerobic conditions). If this chemical is used per dosage and label instructions, it should not pose adverse soil effects (6).	**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:**
	Water (ground water, surface waters, water supplies)	**Fenoxaprop-p-ethyl is very toxic to fish and aquatic invertebrates (1,2,3,4,5). This chemical poses a high risk to aquatic communities (fish, aquatic invertebrates) if allowed to enter waterways.**	

		Fenoxaprop-p-ethyl is dispersible (soluble) in water (1). Accidental spill into small pond or streams presents highest risk for contamination of water. These do not present a considerable risk to human water resources but may adversely affect aquatic invertebrates.	• 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. • 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. • Have appropriate waste management systems in place. **Mitigating Risk to the Environment:** *avoid contact with water resources and minimize application amounts and number of applications.* *General and non-target species:* • Fenoxaprop-p-ethyl is toxic to fish and aquatic invertebrates (2). • Non-target native grasses could be affected (2). *Water (1,4):* • Do not allow it to enter soil, waterways or waste water canals. • Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. • Do not apply when weather conditions favor runoff or drift. • Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash
	Atmosphere (air quality, greenhouse gasses)	**Minimal indication of adverse effects to atmosphere was found when fenoxaprop-p-ethyl is used according to label instructions.** There is little information available on this metric. Nitrous oxide (N2O) emissions may be decreased in the first 10 days following application of fenoxaprop-p-ethyl (7).	
Environmental	**Non-target species (vegetation, wildlife, bees and other pollinators, pets)**	**Risks to non-target species are mainly to fish, aquatic invertebrates and aquatic plants. This chemical could impact non-target grasses and shows some impacts to mammals.** **Fenoxaprop-p-ethyl is toxic to fish and aquatic invertebrates (1,2). Very toxic to aquatic life with long lasting effects (5).** Causes damage to organs with repeated exposure (5). The risk to these organisms is mainly due to accidental spills during application. This product does not impact broad-leaved plants (1). Does not bioaccumulate (1).	

	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 fenoxaprop-p-ethyl is used according to label instructions in forestry applications. Additional considerations are provided, below.** Potential for unintentional secondary effects on non-timber forest products) are present but unlikely. Accidental contact with non-target grass species could impact habitat or food availability.	water. • Do not contaminate water sources by disposal. • Rinsing application equipment over the treated area will help avoid run off to water bodies or drainage systems (1,2). All treatments of fenoxaprop-p-ethyl are submitted for rigorous environmental review through jurisdictional agencies in Pennsylvania. All treatments are screened for adverse effects to plants, wildlife, and invertebrates by the Pennsylvania Department of Conservation and Natural Resources (plants and invertebrates), the Pennsylvania Game Commission (wildlife), the Pennsylvania Boat Commission (fish, reptiles, invertebrates), and the US Fish and Wildlife Service (wildlife). All agencies provide concerns, restrictions, and mitigation measures if necessary. The Pennsylvania Department of Conservation and Natural Resources Bureau of Forestry also follows their Bureau of Forestry Invasive Plant Plan and Planting & Seeding Guidelines regarding herbicide application (X). Always observe aquatic habitat buffers. Always apply fenoxaprop-p-ethyl according to the label and requirements in the Pennsylvania Herbicide Applicators License manual.
	High Conservation Values (particularly HCV 1-4)	**Minimal indication of adverse effects to High Conservation Values was found when fenoxaprop-p-ethyl is used according to label instructions in forestry applications. Additional considerations are provided, below.** Unintentional secondary effects on habitat, landscape and ecosystem could occur, such as accidental spill into aquatic system or impact to native grasses (1,2,3).	
	Landscape (aesthetics, cumulative impacts)	**Minimal indication of adverse effects to landscape values was found when fenoxaprop-p-ethyl is used according to label instructions in forestry applications. Additional considerations are provided, below.** Potential for phytotoxicity (yellowing) of some ornamental plantings may occur (2). Some native Panic-grasses could be impacted by this herbicide which may result in a decreased landscape aesthetics (1,2).	
	Ecosystem services (water, soil, carbon sequestration, tourism)	**Minimal indication of adverse effects to ecosystem services was found when fenoxaprop-p-ethyl 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 (1,2).	

Sources:

(1) Safety Data Sheet Acclaim Extra Herbicide. (2016). Retrieved from: https://www.environmentalscience.bayer.us/-/media/prfunitedstates/documents/resource-library/sds/acclaim_extra_herbicide.ashx

(2) Acclaim Extra Specimen Label. Retrieved from: https://www.environmentalscience.bayer.us/-/media/prfunitedstates/documents/resource-library/product-labels/specimen-labels/acclaim-extra-specimen-label.ashx

(3) Acclaim Extra herbicide label. Retrieved from: https://www.backedbybayer.com/-/media/PRFUnitedStates/Documents/Resource-Library/Product-Labels/Acclaim-Extra-Herbicide.ashx

(4) Material Safety Data Sheet Acclaim Extra Herbicide. (2006). Retrieved from https://newsomseed.com/resources/AcclaimExtraMSDS.pdf

(5) Globally Harmonized System of Classification and Labelling of Chemicals (GHS), 8th Revision. (2019). PubChem entry on fenoxaprop-p-ethyl. Retrieved from: https://pubchem.ncbi.nlm.nih.gov/compound/Fenoxaprop-P-ethyl#datasheet=LCSS&section=GHS-Classification

(6) Martin, Hugh. Herbicide Mode of Action Categories. (May 2000.) *Factsheet - ISSN 1198-712X*. Ontario Ministry of Agriculture, Food and Rural Affairs. http://www.omafra.gov.on.ca/english/crops/facts/00-061.htm

(7) CHEN Lin-mei; SUN Qing; CHEN Ling; JIANG Jing-yan. (2014). *Effects of Herbicides on N_2O Emissions and Soil Biochemical Parameters in Winter-Wheat Field*. Journal of Agro-Environment Science. http://en.cnki.com.cn/Article_en/CJFDTotal-NHBH201407029.htm

Social Management Unit Assessment Template

Pesticide:	Fenoxaprop-p-ethyl		***Specific Formulation:***
Hazard Status:	Fenoxaprop-p-ethyl is not considered a highly hazardous pesticide (HHP) per the FSC Pesticides Policy (FSC- POL-30-001 V3-0 EN) and is not listed on the FSC Lists of Highly Hazardous Pesticides (FSC- POL-30-001a EN). However, risks from other FSC hazard groups and toxicity categories were not precluded from this assessment. Fenoxaprop-p-ethyl is considered a Group 1 Herbicide		
Exposure Elements	**Minimum list of values**	**Description of why/why not a risk on the Management Unit (indicate "No change from national Guidance ESRA" if no change from the national assessment)[1]**	**Management Unit Mitigation strategies defined to minimize risk**
	High Conservation Values (especially HCV 5-6)	**Minimal indication of adverse effects to high conservation values was found when fenoxaprop-p-ethyl is used according to label instructions in forestry applications.** There is little information available on this metric.	**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.**
	Health (fertility, reproductive health, respiratory health, dermatologic, neurological and gastrointestinal problems, cancer and hormonal imbalance)	**Minimal indication of adverse effects to health values was found when fenoxaprop-p-ethyl is used according to label instructions in forestry applications. Additional considerations are provided below.** Routes of exposure are ingestion, inhalation, skin contact, and skin absorption (4) May be fatal if swallowed and enters airways (1). Causes moderate eye irritation (1,4).	

		Inhalation of high vapor/aerosol concentrations are irritating to the eyes and respiratory tract that may cause central nervous system impacts such as headaches, dizziness, anesthesia, drowsiness, unconsciousness, loss of appetite, nausea (1,4). Found to cause kidney problems in rats (1). It is considered an HMIS moderate hazard for health (1). As long as one adheres to proper worker protections there is no substantial risk for workers or members of the general public (1). Fenoxaprop-p-ethyl poses the following health hazards (5): • Causes moderate eye irritation. • Contact with skin or clothing can cause slight skin irritation. • Inhalations of high concentrations (>~1,000ppm) of vapor or aerosol are irritating to the eyes and respiratory tract, may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness and other central nervous system effects. • Chronic or long term exposure may have target organ effects such as liver and adrenal glands (1). Exposure scenarios would involve consumption of contaminated surface water following an accidental spill, or accidental spill in with direct contact in mouth, eyes, or on skin, or inhaling liquid (1), or long-term chronic exposure to repeatedly-treated areas (4). Chronic toxicity: Fenoxaprop-ethyl caused liver and/or adrenal effects in long-term dietary studies in rats, mice and dogs (4).	**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 the mixture of active ingredients. • 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. • Have appropriate waste management systems in place. **Mitigating Risk to Workers:** *When applying pesticides, label instructions should be followed.* For all pesticide applications, Personal Protective Equipment (PPE) should be worn as follows: • chemical-resistant gloves, • overalls or long-sleeved shirt and long pants, • shoes/boots plus socks, • eye protection (goggles, or safety glasses with side shields), • an appropriate respirator if called for in applicable Safety Data Sheets. *Follow Label Recommendations (1,2,3,4):* • Avoid contact with anything that has been treated such as soil, plants or water. • Ensure adequate ventilation

		Carcinogenicity: Fenoxaprop-ethyl caused liver and adrenal gland tumors at the highest dose tested in an oncogenicity study in mice. However, there was no evidence of carcinogenicity in combined chronic/carcinogenicity study in rats treated with fenoxaprop-ethyl (4). Reproduction: Fenoxaprop-p-ethyl showed no effects on reproductive parameters but rat pup body weights were decreased at maternally toxic doses (4). Developmental Toxicity: effects were observed in both rats and rabbits but were considered secondary to maternal toxicity (4). Mutagenicity: Fexoxaprop-p-ethyl was not mutagenic or genotoxic in a battery of in vitro and in vivo mutagenic studies (4).	• Use NIOSH approved respirators when required. • Avoid contact with skin, eyes or clothing. • Handle and open container in a manner to prevent spillage. • Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or applying cosmetics. • In case of skin contact: Take of contaminated clothing and shoes immediately, was thoroughly and put on clean clothing. Launder separately. • Rinse immediately with plenty of water for at least 15 min. Call poison control or a doctor for treatment advice. • In case of eye exposure: hold eye open and rinse slowly and gently with water for 15-20 min. Remove contact lenses if present, after the first 5 min. Continue rinsing and call poison control or a doctor for treatment advice. • In case of ingestion: Call poison control or a doctor immediately. Sip water if able to swallow. Do not induce vomiting unless directed by a doctor. Do not give anything to an unconscious person. Do not leave victim unattended. *Handling and Storage requirements (4):* • Store in original container and out of the reach of children, preferably in a locked storage area. • Store between 10 deg. F and 100 deg.
Social	**Welfare**	**Minimal indication of adverse effects to welfare was found when fenoxaprop-p-ethyl is used according to label instructions in forestry applications.** There is little information available on this metric.	
	Food and water	**Minimal indication of adverse effects to food and water was found when fenoxaprop-p-ethyl is used according to label instructions. Additional considerations are provided below.** Toxic to fish. Risk associated with accidental exposure to aquaculture or fisheries (1,4). Risk associated with application to drinking water sources (1). Risk associated with non-accidental exposures would involve water contamination from	

		washwater (1,2,3,4). Do not contaminate food or feed with fenoxaprop-p-ethyl (2).	• Do not contaminate food, water or feed by storage or disposal. • Store in a cool, dry place. **Mitigating Risk to Public Access/Public Welfare:** • Keep people and pets away from treated area until it has been watered and allowed to dry (1,2,3,4). • 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. • In case of accidental release: Isolate hazard area. Keep unauthorized people away. Avoid contact with spilled product or contaminated surfaces (1,2,3.4). • 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 (1,2,3,4).
	Social Infrastructure; (schools and hospitals, recreational infrastructure, infrastructure adjacent to the management unit)	**Minimal indication of adverse effects to social infrastructure was found when fenoxaprop-p-ethyl is used according to label instructions in forestry applications.**	
	Economic viability (agriculture, livestock, tourism)	**Minimal indication of adverse effects economic viability was found when fenoxaprop-p-ethyl is used according to label instructions in forestry applications (1,2).** Fenoxaprop-p-ethyl does not affect broad leaved plants, so would likely have no impact on crops. Long-term chronic accidental exposure to livestock could cause tumors (1). Accidental release into waterways could impact water sources used by agriculture (1).	
	Rights (legal and customary)	**Minimal indication of adverse effects to rights was found when fenoxaprop-p-ethyl is used according to label instructions in forestry applications.** There is little information available on this metric.	
	Others	**No additional values were identified in this assessment.**	

References:

(1) Safety Data Sheet Acclaim Extra Herbicide. (2016). Retrieved from: https://www.environmentalscience.bayer.us/-/media/prfunitedstates/documents/resource-library/sds/acclaim_extra_herbicide.ashx

(2) Acclaim Extra Specimen Label. Retrieved from: https://www.environmentalscience.bayer.us/-/media/prfunitedstates/documents/resource-library/product-labels/specimen-labels/acclaim-extra-specimen-label.ashx

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(4) Material Safety Data Sheet Acclaim Extra Herbicide. (2006). Retrieved from https://newsomseed.com/resources/AcclaimExtraMSDS.pdf