

Revision: Original Issue
Affected Organization: Transmission Business Line (T); Employee and Business Services (C);, Environment, Fish, and Wildlife (KE)

Approved: James R. Meyer
Manager, Pollution Prevention and Abatement

STANDARD: List of Approved Herbicides - BPA and its contractors will use only "BPA-approved" herbicides for vegetation management purposes.

1.0 Background

BPA concluded its vegetation management strategy with finalization of the Transmission System Vegetation Management Program Environmental Impact Statement and corresponding Record of Decision during July 2000.

During preparation of the Vegetation Management EIS, BPA carefully analyzed vegetation management chemicals and selected those chemicals best fitting our needs while providing the least impact to non-target resources. This Standard describes the current "List of Approved Herbicides".

This Standard applies to all vegetation management activities at all BPA facilities whether managed by BPA or a contractor.

2.0 Standard

BPA and its contractors will use only "BPA-approved" herbicides for vegetation management purposes. The approved herbicides are for terrestrial application purposes only. Even though some of the approved herbicides are registered by EPA for both terrestrial and aquatic use, the use of these herbicides in an aquatic environment is outside the scope of the EIS and requires individual NEPA documentation. Active ingredients, mixtures of active ingredients, and adjuvants **NOT** listed in this Standard are hereby prohibited from use by BPA and its contractors at any BPA facility.

2.1 List of Approved Herbicides

Table 1 lists approved herbicides and the facilities where the approved herbicides can be used. For the herbicides listed in Table 1, the active ingredient can be used in any percentage and in any "single ingredient" formulation.

Table 2 lists approved herbicide mixtures and the facilities where the approved herbicide mixtures can be used. For the herbicide mixtures listed in Table 2, each active ingredient of the mixture can be mixed in any percentage and used in any formulation provided the label allows such mixing. Mixtures not listed in Table 2, however, cannot be created from individually approved active ingredients contained in Table 1 without further analysis for their synergistic effects.

Table 3 lists the approved trade names and formulations for glyphosate. Glyphosate can be tank-mixed or simultaneously applied with any other approved herbicide or approved mixture provided the label of the other herbicide allows such mixing or application.

Table 4 lists approved adjuvants that can be used in any combination, at any facility, with any of the herbicides approved in Table 1 and 2, provided the label allows such mixing.

Table 5a is provided as a trade name-active ingredient cross-reference and Table 5b is provided as an active ingredient-trade name cross-reference. Users must bear in mind that trade names change or expire over time. Ensure the correct active ingredient by reading the label.

Table 6 is a listing of individual herbicides and their reported corrosiveness to metals or painted surfaces. Users should be aware that combining herbicides and/or adding adjuvants might affect the reported corrosiveness.

2.2 Addition of herbicides, use areas, or techniques to original listings

Users requesting new herbicides, use areas, and techniques shall complete the attached questionnaire to initiate this action. The Vegetation Management EIS allows for the introduction of new herbicides and vegetation management techniques, particularly those having less impact when compared against the original herbicide list, use areas, and techniques. Requests for new herbicides, use areas, and techniques will be analyzed for effectiveness, cost, and potential environmental impacts. The review would include, as appropriate, consultations with appropriate agencies and tribes, as well as public notification and solicitation of comments. This information would be gathered in a Supplement Analysis. The Supplement Analysis will tell us whether we can simply tier to the EIS and add the new herbicide, use area, or technique, or whether we need to proceed with a supplemental EIS before deciding whether to add the new herbicide to our toolbox. If the Supplement Analysis shows impacts equivalent to, and safer or more environmentally benign than the ones discussed in the EIS, then the new herbicide or technique could be added to our toolbox without further review. If the impacts are greater, or, have not been previously analyzed in the EIS, a supplemental EIS will be required followed by a new Record of Decision.

2.3 Lands administered by USDOJ-Bureau of Land Management and USDA-Forest Service

Vegetation management on BLM and Forest Service lands requires coordination with individual BLM Field Offices and Forest Service Regions and/or Districts due to regional and district differences in allowable herbicides. Please consult the Vegetation Management EIS for appropriate planning steps prior to the application of herbicides on these lands.

3.0 Related Documentation

USDOE-BPA, Transmission System Vegetation Management Program, Final Environmental Impact Statement, DOE/EIS-0285, May 2000

USDOE-BPA, Transmission System Vegetation Management Program, Record of Decision, DOE/EIS-0285, July 2000

4.0 Forms

Questionnaire: Request for Addition of Herbicide to List of Approved Herbicides

Table 1 - List of Approved Active Ingredients

Active Ingredient	Use Areas	Advisory		Highest Aquatic Toxicity for Invertebrates/Vertebrates	Remarks	Trade Name
		Ground Water	Surface Water			
2,4-D butoxyethanol ester (low volatile)	ROW, NE	X		Moderately Toxic		Many
2,4-D butyl ester (high volatile)	ROW, NE	X		Highly Toxic		Many
2,4-D dimethylamine salt	ROW, NE	X		Practically Non-toxic	General groundwater advisory.	Many
2,4-D dodecyl/tetradodecyl amine salt	ROW, NE	X		Slightly Toxic	General groundwater advisory.	Many
2,4-D oleylpropylene amine salt	ROW, NE	X		Highly Toxic	General groundwater advisory.	Many
2,4-D propylene glycol butyl ether ester	ROW, NE	X		Highly Toxic		Many
azafenidin	ALL			Slightly Toxic		Milestone
bromacil	ROW, E	X		Slightly Toxic	General groundwater advisory.	Hyvar
chlorsulfuron	ROW			Practically Non-toxic		Glean, Telar
clopyralid	ROW, NE	X		Practically Non-toxic	General groundwater advisory.	Stinger, Transline
dicamba	ROW, NE	X	X	Slightly Toxic	Restrictions with mandatory setbacks.	Banvel, Vanquish
dichlobenil	NE	X		Moderately Toxic	Do not apply to fine sandy soils. Others.	Casoron
diuron	ROW, E			Highly Toxic		Diuron, Karmex
fosamine ammonium	ROW			Practically Non-toxic		Krenite
glyphosate (See Table 3)	ALL					
halosulfuron-methyl	NE	X		Practically Non-toxic	General groundwater advisory.	Manage
hexazinone	All	X	X	Slightly Toxic	General surface/groundwater advisory.	Velpar
imazapyr	ROW			Practically Non-toxic		Arsenal, Chopper
isoxaben	ALL			Moderately Toxic		Gallery
mefluidide	NE			Practically Non-toxic		Embark
metsulfuron-methyl	ROW			Practically Non-toxic		Escort
oryzalin	NE			Moderately Toxic		Surflan
paclobutrazol	ROW			Slightly Toxic		Profile
picloram	ROW	X	X	Moderately Toxic	General surface/groundwater advisory.	Tordon 22K
sulfometuron-methyl	E		X	Slightly Toxic	Many restrictions apply.	Oust
tebuthiuron	ROW, E	X	X	Slightly Toxic	Many restrictions apply.	Spike
triclopyr (BEE)	ROW, NE			Highly Toxic		Forestry Garlon 4, Garlon 4, Pathfinder II
triclopyr (TEA)	ROW, NE			Practically Non-toxic		Garlon 3A
Trinexapac-ethyl	NE			Slightly Toxic		Primo

*Pending registration by EPA.

Table 2 - List of Approved Herbicide Mixtures

Mixtures of Active Ingredient	Use Areas	Advisory		Highest Aquatic Toxicity for Invertebrates/Vertebrates	Remarks (In addition to stated above for single active ingredients.)	Tank Mix or Trade Name	
		Ground Water	Surface Water			Mix	Trade Name
2,4-D + chlorsulfuron	ROW			Practically Non-Toxic to Highly Toxic	Depends on 2,4-D Formulation (Table 7a)	X	
2,4-D + clopyralid	ROW, NE	X		Practically Non-Toxic to Highly Toxic	Depends on 2,4-D Formulation (Table 7a)	X	Curtail
2,4-D + dicamba	ROW, NE	X	X	Slightly Toxic to Highly Toxic	Depends on 2,4-D Formulation (Table 7a)	X	
2,4-D + metsulfuron-methyl	ROW			Practically Non-Toxic to Highly Toxic	Depends on 2,4-D Formulation (Table 7a)	X	
2,4-D + picloram	ROW	X	X	Moderately Toxic			Grazon, Pathway
2,4-D + triclopyr (BEE)	ROW, NE			Highly Toxic	Tank Mix with Garlon 4 or Use Crossbow	X	Crossbow
2,4-D + triclopyr (TEA)	ROW			Highly Toxic	Tank Mix with Garlon 3A Only	X	
bromacil + diuron	ROW, E	X		Highly Toxic			Krovar
bromacil + diuron + sulfometuron-methyl	ROW, E	X		Highly Toxic	Tank mix with Krovar and Oust	X	
bromacil + imazapyr	ROW, E	X		Slightly Toxic		X	
clopyralid + triclopyr (BEE)	ROW, NE	X		Highly Toxic		X	
clopyralid + triclopyr (TEA)	ROW, NE	X		Slightly Toxic		X	
chlorsulfuron + metsulfuron-methyl	ROW			Practically Non-Toxic		X	
hexazinone + sulfometuron-methyl	ROW, E	X	X	Slightly Toxic		X	
imazapyr + chlorsulfuron	ROW, E			Practically Non-Toxic		X	
imazapyr + dicamba	All	X	X	Slightly Toxic		X	
imazapyr + diuron	ROW, E			Highly Toxic			Sahara
imazapyr + fosamine ammonium	ROW, E			Practically Non-Toxic		X	
imazapyr + metsulfuron-methyl	ROW, E			Practically Non-Toxic		X	
imazapyr + picloram	ROW, NE	X	X	Moderately Toxic		X	
imazapyr + triclopyr (BEE)	ROW, NE			Highly Toxic	Recommended without fish issues		Stalker + Garlon 4
imazapyr + triclopyr (TEA)	ROW, NE			Practically Non-toxic	Recommended with fish issues		Stalker + Garlon 3A
picloram + triclopyr (BEE)	ROW, NE	X	X	Highly Toxic		X	
picloram + triclopyr (TEA)	ROW, NE	X	X	Moderately Toxic		X	
All glyphosate mixtures	ALL	Can be tank mixed with all the above ingredients if allowed by label. See description of glyphosate products and toxicity explanations on Table 3					

Table 3 - List of Approved Glyphosate Products

Glyphosate is labeled under many different names and formulations. While the percent of active ingredient is generally the same, the greatest difference in formulations is the inert ingredient. Inert ingredients are added to aid in mixing of the active ingredient and as surfactants, etc. The active ingredient, glyphosate, is generally practically non-toxic to human, terrestrial, and aquatic animals. The addition of inert ingredients, by either the manufacturer during packaging, or, an applicator during tank mixing, can cause toxicity values, particularly for aquatic species, to rise dramatically. The table below summarizes the various formulations of glyphosate and selected issues that may arise during planning for vegetation management. Please read the footnotes below the table.

Trade Name ¹	Manufacturer	Percent Active Ingredient	Inert Ingredients ²	Use Areas	Aquatic Toxicity
Accord	Monsanto	41.50	Unknown	All	Practically Non-toxic
Accord Concentrate	Monsanto	53.80	Unknown	All	Slightly Toxic (algae) Practically Non-toxic (fish)
Accord Site Prep	Monsanto	41.00	Unknown	All	Moderately Toxic
Accord SP	Monsanto	41.00	Unknown	All	Moderately Toxic
AquaMaster	Monsanto	53.80	Unknown	All	Slightly Toxic (algae) Practically Non-toxic (fish)
EZJECT Glyphosate	Monsanto			All	
Gly-Flo	Micro Flo	41.00	POEA	All	Moderately Toxic
Glyfos	Cheminova	41.00	POEA	All	Moderately Toxic
Glyphosate Original	Griffin LLC	41.00	Unknown	All	Slightly Toxic
Honcho	Monsanto	41.00	POEA	All	Slightly Toxic
Mirage	UAP West	41.00	POEA	All	Moderately Toxic
Protocol	Monsanto	41.50	Unknown	All	Moderately Toxic
Rodeo Aquatic	Monsanto	53.80	Water	All	Practically Non-toxic
Roundup Dry Pak	Monsanto	93.96	Dry	All	Practically Non-toxic
Roundup Original	Monsanto	41.00	POEA	All	Moderately Toxic
Roundup Original RT	Monsanto	41.00	POEA	All	Moderately Toxic
Roundup Pro	Monsanto	41.00	Unknown	All	Moderately Toxic
Roundup ProDry	Monsanto	71.40	Unknown	All	Slightly Toxic
Roundup Ultra	Monsanto	41.00	Unknown	All	Moderately Toxic

¹ Products may not be available or registered in states with BPA service area.

² Most inert ingredients are trade secrets and are listed as unknown. When no further inert ingredient information could be found for a particular formulation, the default value for aquatic toxicity was placed at moderately toxic. For those listings with unknown inert ingredients with values less than moderately toxic, information is on file describing the listed toxicity values of that formulation.

Table 4 - List of Approved Adjuvants

Common Name	Primary Technical Ingredient	Aquatic Toxicity
Crop Oil Concentrates (COC)	Any Solvent-Refined Light Paraffinic Petroleum Distillates	Slightly - Moderately Toxic
Vegetable/Seed Oil Concentrates (VOC) (SOC)	Any Vegetable Seed Oils	Practically Non-toxic
Methylated Seed Oils (MSO)	Any Refined (Methylated) Vegetable Seed Oils	Practically Non-toxic
Limonene	Any Percentage d-Limonene (CAS 138-86-3)	Practically Non-toxic
Organosilicone	Polyether-Polymethylsiloxane-Copolymer Formulations	Practically Non-toxic
POEA	Polyoxyethylamine	Moderately Toxic
Inorganic Salts	Ammonium Nitrate and Ammonium Sulfate Formulations	Practically Non-toxic
Dyes	Any FDA-Approved Food Dye	Practically Non-toxic
Foam Retardants	Acetic Acid Formulations	Practically Non-toxic
Drift Control Agents	Polyacrylamide Copolymer Formulations	Practically Non-toxic

Table 5a - Trade Name-Active Ingredient Cross-Reference

Trade Name*	Active Ingredient	Trade Name*	Active Ingredient
2,4-D	2,4-D	Milestone	Azafenidin
Accord	Glyphosate	Mirage	Glyphosate
Ally	Metsulfuron Methyl	Norosac	Dichlobenil
Arsenal	Imazapyr	Oust	Sulfometuron Methyl
Banvel	Dicamba	Palisade	Trinexapac-ethyl
Barrage	2,4-D	Pathfinder	Triclopyr
Barrier	Dichlobenil	Permit	Halosulfuron Methyl
Brush-Bullet	Tebuthiuron	Primo	Trinexapac-ethyl
Casoron	Dichlobenil	Profile	Paclobutrazol
Chopper	Imazapyr	Pronone	Hexazinone
Clarity	Dicamba	Ranger	Glyphosate
Direx	Diuron	Remedy	Triclopyr
Diuron	Diuron	Rodeo	Glyphosate
Dyclomic	Dichlobenil	Roundup	Glyphosate
Embark	Mefluidide	Solve	2,4-D
Escort	Metsulfuron Methyl	Spike	Tebuthiuron
Expedite	Glyphosate	Sprakil	Tebuthiuron
Gallery	Isoxaben	Stinger	Clopyralid
Garlon	Triclopyr	Surflan	Oryzalin
Glean	Chlorsulfuron	Telar	Chlorsulfuron
Glyphomax	Glyphosate	Tordon	Picloram
Glyphos	Glyphosate	Touchdown	Glyphosate
Glypro	Glyphosate	Transline	Clopyralid
Graslan	Tebuthiuron	Vanquish	Dicamba
Grazon	Picloram	Velpar	Hexazinone
Honcho	Glyphosate	Weed Rhap	2,4-D
Hyvar	Bromacil	Weed Stopper	Oryzalin
Kleenup	Glyphosate	Weedar	2,4-D
Krenite	Fosamine Ammonium	Weedmaster	2,4-D
Manage	Halosulfuron Methyl	Weedone	2,4-D

* Trade names are subject to change. Always check the label for the correct active ingredient.

Table 5b - Active Ingredient-Trade Name Cross-Reference

Active Ingredient	Trade Name*
2,4-D	2,4-D, Barrage, Weedar, Weed Rhap, Solve, Weedmaster, Weedone (and many more)
azafenidin	Milestone
bromacil	Hyvar
chlorsulfuron	Glean, Telar
clopyralid	Stinger, Transline
dicamba	Banvel, Clarity, Vanquish
dichlobenil	Barrier, Casoron, Dyclomic, Norosac
diuron	Direx, Diuron
fosamine ammonium	Krenite
glyphosate	See Table 3
Halosulfuron-methyl	Manage, Permit
hexazinone	Pronone, Velpar
imazapyr	Arsenal, Chopper
isoxaben	Gallery
mefluidide	Embark
Metsulfuron-methyl	Ally, Escort
oryzalin	Surflan, Weed Stopper
paclobutrazol	Profile
picloram	Grazon, Tordon
sulfometuron-methyl	Oust
tebuthiuron	Brush-Bullet, Graslan, Sprakil, Spike
triclopyr	Garlon, Pathfinder, Remedy
trinexapac-ethyl	Palisade, Primo

* Trade names are subject to change. Always check the label for the correct active ingredient.

Table 6 - Corrosivity of BPA-Approved Herbicides

This list applies to metals commonly found at BPA electrical facilities such as, copper conductors, aluminum conductors, structural aluminum, brass connectors, structural steel, galvanized coatings, etc. Other metals and coatings should be tested prior to exposure to these herbicides. The addition of other herbicides and adjuvants may also create a corrosive formulation that should be tested prior to application.

Active Ingredient	Corrosiveness
2,4-D	Most formulations are non-corrosive to metals. Some formulations may damage painted surfaces.
azafenidin	Non-Corrosive.
bromacil	Alkaline formulated products are corrosive to aluminum. Other formulations are non-corrosive.
chlorsulfuron	Non-Corrosive.
clopyralid	Non-Corrosive.
dicamba	Non-Corrosive.
dichlobenil	Non-Corrosive.
diuron	Non-Corrosive.
fosamine ammonium	Slightly corrosive to brass and copper.
glyphosate	Corrosive to iron and galvanized steel.
halosulfuron-methyl	Non-Corrosive.
hexazinone	Non-Corrosive.
imazapyr	Corrosive to iron, mild steel and brass.
isoxaben	Non-Corrosive.
mefluidide	Slightly corrosive to steel and aluminum.
metsulfuron-methyl	Non-Corrosive.
oryzalin	Non-Corrosive.
paclobutrazol	No information available.
picloram	Slightly corrosive to mild steel after extended exposure.
sulfometuron-methyl	Non-Corrosive.
tebuthiuron	Non-Corrosive.
triclopyr	Slightly corrosive to aluminum after extended exposure.
trinexapac-ethyl	Non-Corrosive.

**Request for Addition of Herbicide, Use Area, or Technique to List of Approved
Herbicides**

Bonneville is only allowed to use herbicides that have gone through Bonneville environmental review and placed on our approved herbicide list. If there is a product that you would like added to that list for your use, fill out the request sheet below and mail, fax or **e-mail it to Mark Hermeston (cc. Stacy Mason)** for initiating the review process.

What we will do with the Request

We will look at the potential environmental impacts of the product, compare those impacts with those described in the Vegetation Management Program EIS. If the impacts are similar or less than those analyzed in the EIS, then we will post the proposed addition for public comment and conclude the addition. If the potential impacts are greater than or have not been analyzed in the EIS, we will work with you to determine if there are other products that can meet this need. Products that do not have similar impacts to those described in the EIS will require a supplemental EIS and a new Record of Decision.

Questions?

Call or email Mark Hermeston at 503 230-4334, or Stacy Mason at 503 230-5455.

Product Name _____

Active Ingredient _____

Manufacturer _____

Where would you use this product? (Mark one or more.)

Rights-of-ways Switchyards Landscaping

What would you use this product/technique for? (i.e. selective control, total control, noxious weeds, etc.)

What application method would you use with this product?

What does this product/technique offer that the products/techniques on the current approved list do not?

Name: _____ Routing: _____ Date: _____