

APR 23 1993

Dr. Mark Galley
American Cyanamid Co.
P.O. Box 400
Princeton, NJ 08543

Dear Dr. Galley:

Subject: Change in Environmental Hazard Statement
ARSENAL® HERBICIDE
EPA Reg. No. 241-346
Your submission dated March 17, 1993

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, is acceptable. A stamped copy is enclosed for your records.

At the next printing of your label, or within 6 months, whichever comes first, please revise your label as follows:

Delete "wetlands" and change the Environmental Hazards statement to read "For terrestrial uses, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark".

Sincerely yours,


Robert J. Taylor
Product Manager 25
Fungicide-Herbicide Branch
Registration Division (H7505C)

Enclosure

RD:RTaylor:eja:4/23/93:3056800

ARSENAL® herbicide

ACTIVE INGREDIENT:

Isopropylamine salt of Imazapyr (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)*.....28.7%

INERT INGREDIENTS.....71.3%

TOTAL.....100.0%

*Equivalent to 22.6% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid or 2 pounds acid per gallon.

EPA Reg. No. 241-346

EPA Est. No.

KEEP OUT OF REACH OF CHILDREN
CAUTION!

PRECAUCION

PRECAUCION AL USUARIO: Si usted no lee ingles, no use este producto hasta que la etiqueta le haya sido explicada ampliamente.

In case of emergency endangering life or property involving this product, call collect, day or night, Area Code 201-835-3100.

See next page for Additional Precautionary Statements

AMERICAN CYANAMID COMPANY
AGRICULTURAL PRODUCTS DIVISION
VEGETATION AND PEST CONTROL
WAYNE, NJ 07470 ©1993

with COMMENTS
in EPA Letter Dated:

APR 23 1993

Net Contents:

Under the Federal Insecticide,
Fungicide, and Rodenticide Act
as amended, for the pesticide
registered under EPA Reg. No.
241-346

®Registered Trademark of American Cyanamid Company

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS

CAUTION!

Avoid contact with skin, eyes or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

FIRST AID

IF ON SKIN: Wash with plenty of soap and water.

IF IN EYES: Flush with plenty of water. Get medical attention if irritation persists.

IF INHALED: Remove victim to fresh air.

PHYSICAL AND CHEMICAL HAZARDS

Spray solutions of ARSENAL should be mixed, stored and applied only in stainless steel, fiberglass, plastic and plastic-lined steel containers.

DO NOT mix, store or apply ARSENAL or spray solutions of ARSENAL in unlined steel (except stainless steel) containers or spray tanks.

ENVIRONMENTAL HAZARDS

DO NOT apply directly to open water (reservoirs, ponds, lakes, rivers, and streams) or to intertidal areas below the mean high water mark. DO NOT apply to water in irrigation ditches or to water used for crop irrigation or for domestic purposes. DO NOT apply to estuaries, salt water bays, or salt water marshes within tidal areas. DO NOT contaminate water when disposing of equipment washwaters.

IMPORTANT

DO NOT use on food or feed crops. DO NOT treat irrigation ditches, or water used for crop irrigation or for domestic uses. Keep from contact with fertilizers, insecticides, fungicides and seeds. DO NOT apply or drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots. DO NOT use on lawns, walks, driveways, tennis courts, or similar areas. DO NOT side trim desirable vegetation with this product. Prevent drift of spray to desirable plants. DO NOT USE in California.

Clean application equipment after using this product by thoroughly flushing with water.

GENERAL INFORMATION

ARSENAL herbicide is an aqueous solution to be mixed with water and a surfactant and applied as a spray solution to noncropland areas such as railroad, utility, pipeline and highway rights-of-way, utility plant sites, petroleum tank farms, pumping installations, fence rows, storage areas, non-irrigation ditchbanks, and other similar areas. ARSENAL is recommended for the establishment and maintenance of wildlife openings. ARSENAL may also be used for the release of unimproved bermudagrass (see specific directions) and for use under certain paved surfaces (see specific directions).

ARSENAL herbicide will control most annual and perennial grasses and broadleaf weeds in addition to many brush and vine species and ARSENAL will provide some residual control of weeds which germinate in the treated areas. This product may be applied either preemergence or postemergence to the weeds; however, postemergence application is the method of choice in most situations, particularly for perennial species. For maximum activity, weeds should be growing vigorously at the time of postemergence application and the spray solution should include a nonionic or silicone-based surfactant. These solutions may be applied selectively by using low-volume techniques or may be applied broadcast by using ground equipment or aerial equipment. In addition, ARSENAL herbicide may also be used for stump and cut stem treatments (see specific directions).

ARSENAL is readily absorbed through leaves, stems, and roots and is translocated rapidly throughout the plant, with accumulation in the meristematic regions. Treated plants stop growing soon after spray application. Chlorosis appears first in the newest leaves, and necrosis spreads from this point. In perennials, the herbicide is translocated into, and kills, underground storage organs which prevents regrowth. Chlorosis and tissue necrosis may not be apparent in some plant species until two weeks after application. Complete kill of plants may not occur for several weeks.

DISCLAIMER

The label instructions for the use of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the use or application of the product contrary to label instructions, all of which are beyond the control of American Cyanamid Company. All such risks shall be assumed by the user.

American Cyanamid Company warrants only that the material contained herein conforms to the chemical description on the label and is reasonably fit for the use therein described when used in accordance with the directions for use, subject to the risks referred to above.

Any damages arising from a breach of this warranty shall be limited to direct damages and shall not include consequential commercial damages such as loss of profits or values or any other special or indirect damages.

American Cyanamid Company makes no other express or implied warranty, including other express or implied warranty of FITNESS or of MERCHANTABILITY.

DIRECTIONS FOR USE

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

ARSENAL herbicide should be used only in accordance with recommendations on the leaflet label attached to the container. Keep containers closed to avoid spills and contamination.

ARSENAL may be applied in non-cropland areas on wetlands as defined only as puddles, potholes, berms of ditches, drainage ditches, intermittent drainage, intermittently flooded lowlying sites. It is permissible to treat marshes, swamps, and bogs after water has receded, as well as seasonally dry flood deltas.

STORAGE AND DISPOSAL

PROHIBITIONS: DO NOT store below 10 degrees F.
DO NOT contaminate water, food or feed by storage or disposal.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL FOR 2.5 GALLON AND 30 GALLON: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in an approved sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

CONTAINER DISPOSAL FOR FIELD KEG, MINIBULK AND BULK: Return empty container for reuse.

AERIAL APPLICATIONS

All precautions should be taken to minimize or eliminate spray drift. Fixed wing aircraft and helicopters can be used to apply ARSENAL herbicide, however, DO NOT make applications by fixed wing aircraft unless appropriate buffer zones can be maintained to prevent spray drift out of the target area. Aerial equipment designed to minimize spray drift, such as a helicopter equipped with a MICROFOIL¹ boom, THRU-VALVE² boom or raindrop nozzles, must be used and calibrated. Except when applying with a MICROFOIL boom, a drift control agent may be added at the recommended label rate. Applications should not be made under gusty conditions or when the wind velocity exceeds 5 mph.

Uniformly apply the recommended amount of ARSENAL herbicide in 5 to 30 gallons of water per acre; include in the spray solution 0.25% of a non-ionic or silicone-based surfactant having at least 75% active ingredient (refer to surfactant manufacturer's label recommendations). A foam reducing agent may be added at the recommended label rate, if needed.

IMPORTANT: Thoroughly clean application equipment, including landing gear, immediately after use of this product. Prolonged exposure of this product to uncoated steel (except stainless steel) surfaces may result in corrosion and failure of the exposed part.

¹Trademark of Rhone Poulenc Ag. Company

²Trademark of Waldrum Specialites

GROUND APPLICATIONS

IMPORTANT: To minimize spray drift, select proper nozzles to avoid spraying a fine mist, use pressures less than 50 psi, and do not spray under gusty or windy conditions. Add a foam reducing agent, if needed, and a spray pattern indicator, if desired, at the recommended label rates. DO NOT side trim desirable vegetation. Clean application equipment after using this product by thoroughly flushing with water.

Low Volume

Use equipment calibrated to deliver 5 to 20 gallons of spray solution per acre. To prepare the spray solution, thoroughly mix in water 0.5 to 5% ARSENAL herbicide and a minimum of 0.25% (1/3 oz./gallon or 1 quart/100 gallons) of a nonionic surfactant or labeled rate of a silicone-based surfactant having at least 75% active ingredient (refer to manufacturer's label recommendations). A foam reducing agent may be applied at the recommended label rate, if needed. For control of difficult species (see "Weeds Controlled" section for relative susceptibility of weed species), use the higher concentrations of herbicide and/or spray volumes but do not apply more than 6 pints of ARSENAL herbicide per acre. Excessive wetting of foliage is not recommended. See the Mixing Guide below for some suggested volumes of ARSENAL herbicide and water.

SPRAY SOLUTION MIXING GUIDE FOR LOW VOLUME APPLICATIONS

AMOUNT OF SPRAY SOLUTION BEING PREPARED	DESIRED CONCENTRATION (fluid volume)				
	0.5%	0.75%	1%	1.5%	5%
(Amount of ARSENAL to use)					
1 gallon	0.6 oz.	0.9 oz.	1.3 oz.	1.9 oz.	6.5 oz.
3 gallons	1.9 oz.	2.8 oz.	3.8 oz.	5.8 oz.	1.2 pints
4 gallons	2.5 oz.	3.8 oz.	5.1 oz.	7.7 oz.	1.6 pints
5 gallons	3.2 oz.	4.8 oz.	6.5 oz.	9.6 oz.	2 pints
10 gallons	6.4 oz.	9.6 oz.	12.8 oz.	1.2 pints	4 pints
20 gallons	12.8 oz.	1.2 pints	1.6 pints	2.4 pints	6 pints

2 tablespoons = 1 fluid ounce

Traditional Volumes

Use equipment calibrated to deliver 21 gallons or more of spray solution per acre. To prepare the spray solution, thoroughly mix ARSENAL herbicide at a rate of 2 to 6 pints per acre in water and 2 quarts/100 gallons (= 0.5% or 2/3 oz./gallon) of a non-ionic or silicone based surfactant having at least 75% active ingredient (refer to surfactant manufacturer's label recommendations). A foam reducing agent may be added at the recommended label rate, if needed. For control of difficult species (see "Weeds Controlled" section for relative susceptibility of weed species), use the higher concentrations of herbicide and/or spray volumes but do not apply more than 6 pints of ARSENAL herbicide per acre. Uniformly cover the foliage of the vegetation to be controlled but do not apply to run-off. Excessive wetting of foliage is not recommended. See the Mixing Guide below for some suggested volumes of ARSENAL herbicide and water.

SPRAY SOLUTION MIXING GUIDE FOR TRADITIONAL VOLUME APPLICATIONS

GALLONS OF SPRAY SOLUTION PER ACRE	DESIRED RATE PER ACRE		
	2 pts/acre	3 pts/acre	6 pts/acre
(pints of ARSENAL to mix per 100 gallons of water)			
25 gallons	8 pints	12 pints	24 pints
30 gallons	6.7 pints	10 pints	20 pints
40 gallons	5 pints	7.5 pints	15 pints
50 gallons	4 pints	6 pints	12 pints
60 gallons	3.3 pints	5 pints	10 pints
75 gallons	2.7 pints	4 pints	8 pints
100 gallons	2 pints	3 pints	6 pints

^a pints = 1 gallon

STUMP AND CUT STEM TREATMENTS

ARSENAL herbicide may be used to control undesirable woody vegetation on noncropland by applying the ARSENAL solution to the cambium area of freshly-cut stump surfaces or to fresh cuts on the stem of the target woody vegetation. Applications can be made at any time of the year except during periods of heavy sap flow in the spring.

MIXING

ARSENAL may be mixed as either a concentrated or dilute solution for stump and cut stem treatments. The dilute solution may be used for applications to the surface of the stump or to cuts on the stem of the target woody vegetation. Concentrated solutions may be used for applications to cuts on the stem. Use of the concentrated solution permits application to fewer cuts on the stem, especially for large diameter trees. Follow the application instructions to determine proper application techniques for each type of solution.

To prepare a dilute solution, mix 8 to 12 fluid ounces of ARSENAL with one gallon of water.

To prepare a concentrated solution, mix 2 quarts of ARSENAL with no more than 1 quart of water.

APPLICATION WITH DILUTE SOLUTIONS

For cut stump treatments: Spray or brush the solution onto the cambium area of the freshly cut stump surface. Insure that the solution thoroughly wets the entire cambium area (the wood next to the bark of the stump).

For tree injection treatments: Using standard injection equipment, apply 1 milliliter of solution at each injection site around the tree with no more than one inch intervals between cut edges. Insure that the injector completely penetrates the bark at each injection site.

For frill or girdle treatments: Using a hatchet, machete, or similar device, make cuts through the bark at intervals around the tree with no more than two inch intervals between cut edges. Spray or brush the solution into each cut until thoroughly wet.

APPLICATION WITH CONCENTRATED SOLUTIONS

For tree injection treatments: Using standard injection equipment, apply 1 milliliter of solution at each injection site. Make at least one injection cut for every 3 inches of Diameter at Breast Height (DBH) on the target tree. For example, a 3 inch DBH tree will receive 1 injection cut and a 6 inch DBH tree will receive 2 injection cuts. On trees requiring more than one injection site place the injection cuts at approximately equal intervals around the tree.

For frill or girdle treatments: Using a hatchet, machete, or similar device, make cuts through the bark at approximately equal intervals around the tree. Make at least one cut for every 3 inches of DBH on the target tree. For example, a 3 inch DBH tree will receive 1 cut and a 6 inch DBH tree will receive 2 cuts. Spray or brush the solution into each cut until thoroughly wet.

NOTE: Injury may occur to non-target or desirable woody plants if they extend from the same root system or their root systems are grafted to those of the treated tree.

FOR CONTROL OF UNDESIRABLE WEEDS UNDER PAVED SURFACES

ARSENAL herbicide can be used under asphalt, pond liners and other paved areas, ONLY in industrial sites or where the pavement has a suitable barrier along the perimeter that prevents encroachment of roots of desirable plants.

ARSENAL should be used only where the area to be treated has been prepared according to good construction practices. If rhizomes, stolons, tubers or other vegetative plant parts are present in the site, they should be removed by scalping with a grader blade to a depth sufficient to insure their complete removal.

IMPORTANT: Paving should follow ARSENAL applications as soon as possible. DO NOT apply where the chemical may contact the roots of desirable trees or other plants.

The product is not recommended for use under pavement on residential properties such as driveways or parking lots, nor is it recommended for use in recreational areas such as under bike or jogging paths, golf cart paths, or tennis courts, or where landscape plantings could be anticipated.

Injury or death of desirable plants may result if this product is applied where roots are present or where they may extend into the treated area. Roots of trees and shrubs may extend a considerable distance beyond the branch extremities or so called drip line.

APPLICATION DIRECTIONS

Applications should be made to the soil surface only when final grade is established. Do not move soil following ARSENAL application.

Apply ARSENAL in sufficient water (at least 100 gal. per acre) to insure thorough and uniform wetting of the soil surface, including the shoulder areas. Add ARSENAL at a rate of 6 pints per acre to clean water in the spray tank during the filling operation. Agitate before spraying.

If the soil is not moist prior to treatment, incorporation of ARSENAL is needed for herbicide activation. ARSENAL can be incorporated into the soil to a depth of 4 to 6 inches using a rototiller or disc. Rainfall or irrigation of 1 inch will also provide uniform incorporation. Do not allow treated soil to wash or move into untreated areas.

WEEDS CONTROLLED BY ARSENAL HERBICIDE

ARSENAL herbicide will provide preemergence or postemergence control with residual control of the following target vegetation species at the rates listed. Residual control refers to control of newly germinating seedlings in both annuals and perennials. In general, annual weeds may be controlled by preemergence or postemergence applications of ARSENAL; whereas, for established biennials and perennials postemergence applications of ARSENAL are recommended. The rates shown below pertain to broadcast applications and indicate the relative sensitivity of these weeds. The relative sensitivity should be referenced when preparing low volume spray solutions (see "Low Volume" section of "Ground Applications"); low volume applications may provide control of the target species with less ARSENAL per acre than is shown for the broadcast treatments. ARSENAL herbicide should be used only in accordance with the recommendations on this label and the leaflet label.

GRASSES

Apply 2-3 pints per acre¹

COMMON NAME	SPECIES	GROWTH HABIT ²
Annual bluegrass	(<u>Poa annua</u>)	A
Broadleaf signalgrass	(<u>Brachiaria platphylla</u>)	A
Canada bluegrass	(<u>Poa compressa</u>)	P
Downy brome	(<u>Bromus tectorum</u>)	A
Fescue	(<u>Festuca</u> spp.)	A/P
Foxtail	(<u>Setaria</u> spp.)	A
Italian ryegrass	(<u>Lolium multiflorum</u>)	A
Johnsongrass	(<u>Sorghum halepense</u>)	P
Kentucky bluegrass	(<u>Poa pratensis</u>)	P
Lovegrass	(<u>Eragrostis</u> spp.)	A/P
Orchardgrass	(<u>Dactylis glomerata</u>)	P
Paragrass	(<u>Brachiaria mutica</u>)	P
Quackgrass	(<u>Agropyron repens</u>)	P
Sandbur	(<u>Cenchrus</u> spp.)	A
Sand dropseed	(<u>Sporobulus cryptandrus</u>)	A
Smooth brome	(<u>Bromus inermis</u>)	P
Vaseygrass	(<u>Paspalum urvillei</u>)	P
Wild oats	(<u>Avena fatua</u>)	A
Witchgrass	(<u>Panicum capillare</u>)	A

Apply 3-4 pints per acre¹

Beardgrass	(<u>Andropogon</u> spp.)	P
Cheat	(<u>Bromus secalinus</u>)	A
Crabgrass	(<u>Digitaria</u> spp.)	A
Fall panicum	(<u>Panicum dichotomiflorum</u>)	A
Goosegrass	(<u>Eleusine indica</u>)	A
Prairie threeawn	(<u>Aristida oligantha</u>)	P
Reed canarygrass	(<u>Phalaris arundinacea</u>)	P
Torpedograss	(<u>Panicum repens</u>)	P
Wild barley	(<u>Hordeum</u> spp.)	A

Apply 4-6 pints per acre¹

Bahiagrass	(<u>Paspalum notatum</u>)	P
Bermudagrass	(<u>Cynodon dactylon</u>)	P
Big bluestem	(<u>Andropogon gerardi</u>)	P
Cattail	(<u>Typha</u> spp.)	P
Cogongrass	(<u>Imperata cylindrica</u>)	P
Dallisgrass	(<u>Paspalum dilatatum</u>)	P
Feathertop	(<u>Pennisetum villosum</u>)	P
Guineagrass	(<u>Panicum maximum</u>)	P
Phragmites	(<u>Phragmites australis</u>)	P
Prairie cordgrass	(<u>Spartina pectinata</u>)	P
Saltgrass	(<u>Distichlis stricta</u>)	P
Sand dropseed	(<u>Sporobolus cryptandrus</u>)	P
Timothy	(<u>Phleum pratense</u>)	P
Wirestem muhly	(<u>Muhlenbergia frondosa</u>)	P

BROADLEAF WEEDS

Apply 2-3 pints per acre¹

Burdock	(<u>Arctium</u> spp.)	B
Camphorweed	(<u>Heterotheca subaxillaris</u>)	P
Carpetweed	(<u>Mollugo verticillata</u>)	A
Carolina geranium	(<u>Geranium carolinianum</u>)	A
Clover	(<u>Trifolium</u> spp.)	A/P
Common chickweed	(<u>Stellaria media</u>)	A
Common ragweed	(<u>Ambrosia artemisiifolia</u>)	A
Dandelion	(<u>Taraxacum officinale</u>)	P
Dogfennel	(<u>Eupatorium capillifolium</u>)	A
Filaree	(<u>Erodium</u> spp.)	A
Fleabane	(<u>Erigeron</u> spp.)	A
Hoary vervain	(<u>Verbena stricta</u>)	P
Horseweed	(<u>Conyza canadensis</u>)	A
Indian mustard	(<u>Brassica juncea</u>)	A
Lambsquarters	(<u>Chenopodium album</u>)	A
Lespedeza	(<u>Lespedeza</u> spp.)	P
Miners lettuce	(<u>Montia perfoliata</u>)	A
Mullein	(<u>Verbascum</u> spp.)	B
Nettleleaf goosefoot	(<u>Chenopodium murale</u>)	A
Oxeye daisy	(<u>Chrysanthemum leucanthemum</u>)	P
Pepperweed	(<u>Lepidium</u> spp.)	A
Pigweed	(<u>Amaranthus</u> spp.)	A
Plantain	(<u>Plantago</u> spp.)	P
Puncturevine	(<u>Tribulus terrestris</u>)	A
Russian thistle	(<u>Salsola kali</u>)	A
Smartweed	(<u>Polygonum</u> spp.)	A/P
Sorrell	(<u>Rumex</u> spp.)	P
Sunflower	(<u>Helianthus</u> spp.)	A
Sweet clover	(<u>Melilotus</u> spp.)	A/B
Tansymustard	(<u>Descurainia pinnata</u>)	A
Western ragweed	(<u>Ambrosia psilostachya</u>)	P
Wild carrot	(<u>Daucus carota</u>)	B

Wild lettuce	(<u>Lactuca</u> spp.)	A/B
Wild parsnip	(<u>Pastinaca sativa</u>)	B
Wild turnip	(<u>Brassica campestris</u>)	B
Woollyleaf bursage	(<u>Franseria tomentosa</u>)	P
Yellow woodsorrel	(<u>Oxalis stricta</u>)	P

Apply 3-4 pints per acre¹

Broom snakeweed ³	(<u>Gutierrezia sarothrae</u>)	P
Bull thistle	(<u>Cirsium volgare</u>)	B
Cocklebur	(<u>Xanthium strumarium</u>)	A
Desert Camelthorn	(<u>Alhagi pseudalhagi</u>)	P
Diffuse knapweed	(<u>Centaurea diffusa</u>)	A
Dock	(<u>Rumex</u> spp.)	P
Goldenrod	(<u>Solidago</u> spp.)	P
Pokeweed	(<u>Phytolacca americana</u>)	P
Purple loosestrife ³	(<u>Lythrum salicaria</u>)	P
Purslane	(<u>Portulaca</u> spp.)	A
Rush skeletonweed ³	(<u>Chondrilla juncea</u>)	B
Saltbush	(<u>Atriplex</u> spp.)	A
Stinging nettle ³	(<u>Urtica dioica</u>)	P
Yellow starthistle	(<u>Centaurea solstitialis</u>)	A

Apply 4-6 pints per acre¹

Arrowwood	(<u>Pluchea sericea</u>)	A
Canada thistle	(<u>Cirsium arvense</u>)	P
Giant ragweed	(<u>Ambrosia trifida</u>)	A
Grey rabbitbrush	(<u>Chrysothamnus nauseosus</u>)	P
Japanese bamboo	(<u>Polygonum cuspidatum</u>)	P
Little mallow	(<u>Malva parviflora</u>)	B
Milkweed	(<u>Asclepias</u> spp.)	P
Primrose	(<u>Oenothera kunthiana</u>)	P
Russian knapweed	(<u>Centaurea repens</u>)	P
Silverleaf nightshade	(<u>Solanum elaeagnifolium</u>)	P
Sowthistle	(<u>Sonchus</u> spp.)	A
Texas thistle	(<u>Cirsium texanum</u>)	P

VINES AND BRAMBLES

Apply 1 pint per acre

Field bindweed	(<u>Convolvulus arvensis</u>)	P
Hedge bindweed	(<u>Calystegia sepium</u>)	A

Apply 2-3 pints per acre¹

Wild buckwheat	(<u>Polygonum convolvulus</u>)	P
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Apply 3-4 pints per acre¹

Greenbriar	(<u>Smilax</u> spp.)	P
Honeysuckle	(<u>Lonicera</u> spp.)	P
Morningglory	(<u>Ipomoea</u> spp.)	A/P
Poison ivy	(<u>Rhus radicans</u>)	P
Redvine	(<u>Brunnichia cirrhosa</u>)	P
Wild rose	(<u>Rosa</u> spp.)	P
Including: Multiflora rose	(<u>Rosa multiflora</u>)	
Macartney rose	(<u>Rosa bracteata</u>)	

Apply 4-6 pints per acre¹

Blackberry ⁴	(<u>Rubus</u> spp.)	P
Dewberry ⁴	(<u>Rubus</u> spp.)	P
Kudzu ⁵	(<u>Pueraria lobata</u>)	P
Trumpet creeper	(<u>Campsis radicans</u>)	P
Virginia creeper	(<u>Parthenocissus quinquefolia</u>)	P
Wild grape	(<u>Vitis</u> spp.)	P

BRUSH SPECIES

Apply 4-6 pints per acre¹

American beech	(<u>Fagus grandifolia</u>)	P
Ash	(<u>Fraxinus</u> spp.)	P
Bald cypress	(<u>Taxodium distichum</u>)	P
Bigleaf Maple	(<u>Acer macrophyllum</u>)	P
Blackgum	(<u>Nyssa sylvatica</u>)	P
Boxelder	(<u>Acer negundo</u>)	P
Brazilian peppertree ⁶	(<u>Schinus terebinthifolius</u>)	P
Cherry	(<u>Prunus</u> spp.)	P
Chinaberry	(<u>Melia azadarach</u>)	P
Chinese tallow-tree	(<u>Sapium sebiferum</u>)	P
Dogwood	(<u>Cornus</u> spp.)	P
Hawthorn	(<u>Crataegus</u> spp.)	P
Hickory	(<u>Carya</u> spp.)	P
Maple	(<u>Acer</u> spp.)	P
Melaleuca ⁶	(<u>Melaleuca quinquenervia</u>)	P
Mulberry	(<u>Morus</u> spp.)	P
Oak	(<u>Quercus</u> spp.)	P
Persimmon	(<u>Diospyros virginiana</u>)	P
Poplar	(<u>Populus</u> spp.)	P
Privet	(<u>Ligustrum vulgare</u>)	P
Russian Olive	(<u>Eleagnus angustifolia</u>)	P
Red Alder	(<u>Alnus rubra</u>)	P
Red Maple	(<u>Acer rubrum</u>)	P
Saltcedar	(<u>Tamarix ramosissima</u>)	P
Sassafras	(<u>Sassafras albidum</u>)	P
Sourwood	(<u>Oxydendrum arboreum</u>)	P
Sumac	(<u>Rhus</u> spp.)	P
Sweetgum	(<u>Liquidambar styraciflua</u>)	P
Willow	(<u>Salix</u> spp.)	P
Yellow poplar	(<u>Liriodendron tulipifera</u>)	P

- 1 The higher rates should be used where heavy or well established infestations occur.
- 2 Growth Habit - A - Annual, B - Biennial, P - Perennial
- 3 For best results early postemergence applications are required.
- 4 The degree of control is species dependent. Some Rubus species may not be completely controlled.
- 5 Use a minimum of 75 GPA - Control of established stands may require repeat applications.
- 6 See supplemental labeling for Florida.

FOR CONTROL OF UNDESIRABLE WEEDS IN UNIMPROVED BERMUDAGRASS AND BAHIAGRASS

ARSENAL may be used on unimproved bermudagrass and bahiagrass turf such as roadsides, utility rights-of-way and other non-cropland industrial sites. The application of ARSENAL on established common and coastal bermudagrass and bahiagrass provides control of labeled broadleaf and grass weeds. Competition from these weeds is eliminated, releasing the bermudagrass and bahiagrass. Treatment of bermudagrass with ARSENAL results in a compacted growth habit and seedhead inhibition.

Uniformly apply with properly calibrated ground equipment using at least 10 gallons of water per acre with a spray pressure 20 to 50 psi.

IMPORTANT: Temporary yellowing of grass may occur when treatment is made after growth commences. DO NOT add surfactant in excess of the recommended rate (1 oz. per 25 gallons of spray solution). DO NOT APPLY to grass during its first growing season. DO NOT APPLY to grass that is under stress from drought, disease, insects, or other causes.

DOSAGE RATES AND TIMING

Bermudagrass - Apply ARSENAL at 6 to 12 oz. per acre when the bermudagrass is dormant and at 6 to 8 oz. per acre after the grass has initiated green-up but has not exceeded 25% green-up. Include in the spray solution a non-ionic or silicone-based surfactant (having at least 75% active ingredient) at a rate of 1 oz. per 25 gallons of spray solution.

Bahiagrass - Apply ARSENAL at 4 to 8 oz. per acre when the bahiagrass is dormant or after the grass has initiated green-up but has not exceeded 25% green-up. Include in the spray solution a non-ionic or silicone-based surfactant (having at least 75% active ingredient) at a rate of 1 oz. per 25 gallons of spray solution.

WEEDS CONTROLLED

- Bedstraw (Galium spp.)
- Bishopweed (Ptilimnium capillaceum)
- Buttercup (Ranunculos parviflorus)
- Carolina geranium (Geranium carolinianum)

- Fescue (Festuca spp.)
- Foxtail (Setaria spp.)
- Little barley (Hordeum pusillum)
- Seedling Johnsongrass (Sorghum halapense)
- Wild carrot (Daucus carota)
- White clover (Trifolium repens)
- Yellow woodsorrel (Oxalis stricta)

TANK MIXES

If desired, ARSENAL may be tank-mixed with other herbicides registered for the same use areas. When tank-mixing, observe all precautions, limitations, and directions in booklets and labels of products used in combination with ARSENAL herbicide. Appropriate tank mixes may include the following:

For Bareground Uses

- ARSENAL plus Karmex³ (diuron)
- ARSENAL plus STOMP[®] 3.3EC
- ARSENAL plus STOMP[®] WDG

For Brush Control

- ARSENAL plus Accord⁴ or Roundup⁴
- ARSENAL plus Krenite³

³Trademark of E.I. duPont de Nemours & Company
[®]Registered Trademark of American Cyanamid Company
⁴Trademark of Monsanto Company