



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

December 14, 2006

John J. Jachetta, Ph.D.
Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268

SUBJECT: Applications for Pesticide Notification to Add NY Restrictions
Spike® 80DF EPA Reg. No. 62719-107
✓ Spike® 20P EPA Reg. No. 62719-121
Applications Dated December 5, 2006

Dear Dr. Jachetta:

The Agency is in receipt of your Applications for Pesticide Notification under Pesticide Registration Notice (PRN) 98-10 for the above products. The Registration Division (RD) has conducted a preliminary screen of this request for its applicability under PRN 98-10 and finds that the actions requested fall within the scope of PRN 98-10. The labels submitted with the applications have been stamped "Notification" received but not reviewed and will be placed in our records.

If you have any questions, please me directly at 703-305-6249 or Terri Stowe of my staff at 703-305-6117.

Sincerely,

A handwritten signature in black ink, appearing to read "Linda Arrington".

Linda Arrington
Notifications & Minor Formulations Team Leader
Registration Division (7505P)
Office of Pesticide Programs

 United States Environmental Protection Agency Washington, DC 20460	<input type="checkbox"/> Registration <input type="checkbox"/> Amendment <input checked="" type="checkbox"/> Other	OPP Identifier Number
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Application for Pesticide - Section I

1. Company/Product Number Dow AgroSciences/62719-121	2. EPA Product Manager Joanne I. Miller	3. Proposed Classification <input checked="" type="checkbox"/> None <input type="checkbox"/> Restricted
4. Company/Product (Name) Dow AgroSciences/Spike@20P	PM# 23	
5. Name and Address of Applicant (Include ZIP Code) Dow AgroSciences LLC 9330 Zionsville Road Indianapolis, IN 46268 <input type="checkbox"/> Check if this is a new address		6. Expedited Review. In accordance with FIFRA Section 3(c)(3) (b)(i), my product is similar or identical in composition and labeling to: EPA Reg. No. _____ Product Name _____

Section - II

<input type="checkbox"/> Amendment - Explain below. <input type="checkbox"/> Resubmission in response to Agency letter dated _____ <input checked="" type="checkbox"/> Notification - Explain below.	<input type="checkbox"/> Final printed labels in response to Agency letter dated _____ <input type="checkbox"/> "Me Too" Application. <input type="checkbox"/> Other - Explain below.
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NOTIFICATION
DEC 14 2006

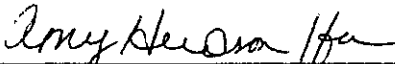
Explanation: Use additional page(s) if necessary. (For section I and Section II.)

Changes by Notification: 1. Added restriction for New York - Not for sale, distribution, or use in Nassau and Suffolk Counties in New York State

Section - III

1. Material This Product Will Be Packaged In:					
Child-Resistant Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No	Unit Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No	Water Soluble Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No	2. Type of Container <input type="checkbox"/> Metal <input type="checkbox"/> Plastic <input type="checkbox"/> Glass <input type="checkbox"/> Paper <input type="checkbox"/> Other (Specify) _____		
* Certification must be submitted		If "Yes" Unit Packaging wgt. No. per container	If "Yes" Package wgt No. per container		
3. Location of Net Contents Information <input type="checkbox"/> Label <input type="checkbox"/> Container		4. Size(s) Retail Container		5. Location of Label Directions <input type="checkbox"/> _____	
6. Manner in Which Label is Affixed to Product <input type="checkbox"/> Lithograph Paper glued Stenciled <input type="checkbox"/> Other _____					

Section - IV

1. Contact Point (Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)		
Name John J. Jachetta, Ph.D.	Title Regulatory Manager	Telephone No. (Include Area Code) (317) 337-4686
Certification I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment both under applicable law.		6. Date Application Received (Stamped)
2. Signature 	3. Title Regulatory Manager	
4. Typed Name John J. Jachetta, Ph.D. @Trademark of Dow AgroSciences LLC	5. Date December 5, 2006	

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308/2E
December 5, 2006



Document Processing Desk (NOTIF)
Office of Pesticide Programs (7504P)
U. S. Environmental Protection Agency
One Potomac Yard
2777 S. Crystal Drive
Arlington, VA 22202

NOTIFICATION
DEC 14 2006

SPIKE 20P (AI: TEBUTHIURON)
EPA REGISTRATION NUMBER: 62719-121
NOTIFICATION OF MINOR LABEL CHANGE PER PR NOTICE 98-10

Enclosed please find labeling for the notification action of Spike[®]20P specialty herbicide based on EPA accepted copy dated May 19, 2005 and Notification dated May 15, 2006. Following are the changes by Notification:

1. Added restriction for New York - Not for sale, distribution, or use in Nassau and Suffolk Counties in New York State

This notification is consistent with the provisions of PR Notice 98-10 and EPA regulations at 40 CFR 152.46, and no other changes have been made to the labeling or the confidential statement of formula of this product. I understand that it is a violation of 18 U.S.C. Sec. 1001 to willfully make any false statement to EPA. I further understand that if this notification is not consistent with the terms of PR Notice 98-10 and 40 CFR 152.46, this product may be in violation of FIFRA and I may be subject to enforcement action and penalties under sections 12 and 14 of FIFRA.

Contents of Submission

- Transmittal document (this letter)
- Application for Pesticide, EPA Form 8570-1
- Label entitled Spike 20P (T1H / Spike 20P / Notif / 12-05-06) (15 Pages plus Registration Notes) (5 Copies)

If you require further information, please contact Amy Hudson, Regulatory Specialist at 317-337-3967 or Kim Williamson, Registration Assistant for this product, at 317-337-4657.

Sincerely,

John J. Jachetta, Ph. D.
Regulatory Leader
Regulatory Success - Americas
317-337-4686
317-337-4649 (FAX)

Enclosures
JJJ/akh

T1H / Spike 20P / Notif / 12-05-06
File: Spike 20P-121 05Dec06N.doc

Spike[®] 20P
EPA Reg. No. 62719-121

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NOTIFICATION

DEC 14 2006

Registration Notes:

Source label text based on EPA accepted copy dated March 25, 2003 and Notification dated May 15, 2006.

Following are changes by notification:

1. Added restriction for New York - Not for sale, distribution, or use in Nassau and Suffolk Counties in New York State

[®]Trademark of Dow AgroSciences LLC

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(Base Label):

Spike® 20P Specialty Herbicide

NOTIFICATION

DEC 14 2006

A surface applied herbicide for woody plant control in such areas as:

- Along highways
- Fence rows
- Firebreaks
- Industrial sites
- Clearings for wildlife habitat
- Other non-cropland areas for control of woody plant species
- Utility rights-of-way
- Pastureland
- Pipelines
- Railroad rights-of-way
- Rangeland

Carefully read the entire label, including all use precautions, before applying to avoid inappropriate use of this product.

Not for sale, distribution, or use in Nassau and Suffolk Counties in New York State

[Editor's Note: Insert tree graphic]

Spike® 20P will kill trees and shrubs. Carefully read the precautions before using.

Active Ingredient:

tebuthiuron: N-[5-(1,1-dimethylethyl)-
1,3,4-thiadiazol-2-yl]-N,N'-
dimethylurea 20%

Inert Ingredients 80%

Total 100%

Contains 0.2 pound active ingredient per pound of product.

Keep Out of Reach of Children

CAUTION PRECAUCION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Precautionary Statements

Hazards to Humans and Domestic Animals

Harmful If Swallowed, Inhaled, Or Absorbed Through Skin • Causes Moderate Eye Irritation.

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

First Aid

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

Environmental Hazards

Do not apply Spike® 20P specialty herbicide near desirable trees or other woody species. Exposure of even a small part of a plant root system to Spike 20P may cause severe plant injury or death. 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 contaminate water when cleaning equipment or disposing of equipment washwaters.

Spills: To prevent unintended damage to non-target vegetation or contamination of ground water, cover spills with waterproof covering if in outdoor area; then carefully collect and dispose of spilled pellets, whether in storage areas, vehicles, or on the soil surface. (See General Information section for remedial action after accidental application or spill). In outdoor areas, **do not** cover with soil or incorporate spilled material into the soil surface.

Ground Water Advisory: This product is known to leach through soil into ground water under certain conditions as a result of registered (rangeland and non-crop) uses. Use of this product in areas where soils have rapid to very rapid permeability, particularly where the water table is shallow, may result in ground water contamination.

Use Restrictions for Groundwater Protection

Vulnerable Sites: To minimize any movement of tebuthiuron to subsurface water, do not exceed the application rates specified below on treatment sites where soils have a sand or loamy sand texture throughout the soil profile and **all** of the following characteristics:

1. Rapid to very rapid permeability.
2. Absence of well-defined organic layers or a textural B-horizon (restricting layer of fine-textured soil).
3. The water table of an underlying aquifer[†] is shallow.

Maximum application rates for Spike 20P in such areas are:

- **Less than 20 inches annual precipitation:** Do not apply more than 5 lb/acre Spike 20P.
- **Greater than 20 inches annual precipitation:** Do not apply more than 10 lb/acre Spike 20P.

Refer to the "Woody Plants Controlled" section of this label for plant species controlled at these application rates.

[†]An aquifer is defined as "an underground saturated, permeable, geologic formation capable of producing significant quantities of water to a well or spring". It is the ability of the saturated zone or portion of that zone, to yield water which makes it an aquifer (American Chemical Society, 1983). Local agricultural agencies can provide further information on the type of soil in your area and the location of shallow ground water aquifers.

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Do not apply Spike 20P in areas where the water table is predominately shallow (5 feet or less), such as marshy or sub irrigated areas, or areas immediately adjacent to streams or lakes which are periodically flooded, unless such use is allowed under a state-approved pesticide management program. **Note:** Also on such areas, woody plants rooted directly in a shallow water table are minimally affected by applications of tebuthiuron and poor woody plant control will result.

Do not apply Spike 20P where bedrock is continuously exposed or in areas of bedrock overlain by soils that are shallow or discontinuous.

Do not apply Spike 20P in areas adjacent to sinkholes or depressions lacking external drainage which occur within areas of karst topography.

Do not apply Spike 20P to high shrink/swell soils (vertisols) which develop deep cracks upon drying.

Do not apply Spike 20P within areas identified by state or local authorities as protected groundwater recharge zones.

Refer to label booklet for additional precautionary information and Directions for Use.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read "Warranty Disclaimer," "Inherent Risks of Use," and "Limitation of Remedies" at end of label booklet. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at www.dowagro.com.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

Not For Residential Use

EPA Reg. No. 62719-121

EPA Est. _____

®Trademark of Dow AgroSciences LLC

Dow AgroSciences LLC • Indianapolis, IN 46268 USA

Net Weight __ lb

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(cover):

Spike[®] 20P Specialty Herbicide

A surface applied herbicide for woody plant control in such areas as:

- Along highways
- Fence rows
- Firebreaks
- Industrial sites
- Clearings for wildlife habitat
- Other non-cropland areas for control of woody plant species
- Utility rights-of-way
- Pastureland
- Pipelines
- Railroad rights-of-way
- Rangeland

Carefully read the entire label, including all use precautions, before applying to avoid inappropriate use of this product.

Not for sale, distribution, or use in Nassau and Suffolk Counties in New York State

[Editor's Note: Insert tree graphic]

Spike[®] 20P will kill trees and shrubs. Carefully read the precautions before using.

Active Ingredient:

tebuthiuron: *N*-[5-(1,1-dimethylethyl)-
1,3,4-thiadiazol-2-yl]-*N,N'*-
dimethylurea 20%

Inert Ingredients 80%

Total 100%

Contains 0.2 pound active ingredient per pound of product.

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CAUTION PRECAUCION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

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Not For Residential Use

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EPA Reg. No. 62719-121
®Trademark of Dow AgroSciences LLC
Dow AgroSciences LLC • Indianapolis, IN 46268 USA

EPA Est. _____

Net Weight __ lb

10/19

(Page 1 through end):

Precautionary Statements

Hazards to Humans and Domestic Animals**CAUTION****Harmful If Swallowed, Inhaled, Or Absorbed Through Skin • Causes Moderate Eye Irritation.****Avoid contact with skin, eyes and/or clothing. Avoid breathing dust. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.****First Aid**

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

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Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

Environmental Hazards

Do not apply Spike[®] 20P herbicide near desirable trees or other woody species. Exposure of even a small part of a plant root system to Spike 20P may cause severe plant injury or death. 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 contaminate water when cleaning equipment or disposing of equipment washwaters.

Spills: To prevent unintended damage to non-target vegetation or contamination of ground water, cover spills with waterproof covering if in outdoor area; then carefully collect and dispose of spilled pellets, whether in storage areas, vehicles, or on the soil surface. (See General Information section for remedial action after accidental application or spill). In outdoor areas, **do not** cover with soil or incorporate spilled material into the soil surface.

Ground Water Advisory: This product is known to leach through soil into ground water under certain conditions as a result of registered (rangeland and non-crop) uses. Use of this product in areas where soils have rapid to very rapid permeability, particularly where the water table is shallow, may result in ground water contamination.

Use Restrictions for Groundwater Protection

Vulnerable Sites: To minimize any movement of tebuthiuron to subsurface water, do not exceed the application rates specified below on treatment sites where soils have a sand or loamy sand texture throughout the soil profile and **all** of the following characteristics:

1. Rapid to very rapid permeability.
2. Absence of well-defined organic layers or a textural B-horizon (restricting layer of fine-textured soil).
3. The water table of an underlying aquifer† is shallow.

Maximum application rates for Spike 20P in such areas are:

- **Less than 20 inches annual precipitation:** Do not apply more than 5 lb/acre Spike 20P.
- **Greater than 20 inches annual precipitation:** Do not apply more than 10 lb/acre Spike 20P.

Refer to the "Woody Plants Controlled" section of this label for plant species controlled at these application rates.

†An aquifer is defined as "an underground saturated, permeable, geologic formation capable of producing significant quantities of water to a well or spring". It is the ability of the saturated zone, or portion of that zone, to yield water which makes it an aquifer (American Chemical Society, 1983). Local agricultural agencies can provide further information on the type of soil in your area and the location of shallow ground water aquifers.

Do not apply Spike 20P in areas where the water table is predominately shallow (5 feet or less), such as marshy or sub irrigated areas, or areas immediately adjacent to streams or lakes which are periodically flooded, unless such use is allowed under a state-approved pesticide management program. **Note:** Also on such areas, woody plants rooted directly in a shallow water table are minimally affected by applications of tebuthiuron and poor woody plant control will result.

Do not apply Spike 20P where bedrock is continuously exposed or in areas of bedrock overlain by soils that are shallow or discontinuous.

Do not apply Spike 20P in areas adjacent to sinkholes or depressions lacking external drainage which occur within areas of karst topography.

Do not apply Spike 20P to high shrink/swell soils (vertisols) which develop deep cracks upon drying.

Do not apply Spike 20P within areas identified by state or local authorities as protected groundwater recharge zones.

Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read all Directions for Use carefully before applying.

Storage and Disposal

Do not contaminate water, food, or feed by storage or disposal.

Pesticide Storage: The herbicidal properties of Spike 20P require caution in handling, storage, and transportation of this product. Store in original container only. In case of leak or spill, contain material and dispose as waste.

Pesticide Disposal: Open dumping is prohibited. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal: Completely empty bag into application equipment. Do not reuse. Then dispose of empty bag in a sanitary landfill or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

General Information

Spike[®] 20P herbicide is a surface applied soil-active product for control of woody plants (trees, shrubs, and vines). Treatments become effective after sufficient rainfall has occurred to move the active ingredient in Spike 20P into the root zone. Herbicidal symptoms appear most rapidly when applied just before seasonal rainfall. Treated trees and shrubs (brush) exhibit leaf chlorosis and browning followed by defoliation. Woody plants may go through several defoliation cycles before death occurs. Time required to achieve control of woody vegetation may vary from one to several years. Increased application rates and additional time is required to achieve consistent woody plant control under the following conditions: (1) the treated area contains deep, medium-to-fine textured, or high organic matter soils; (2) the target species are deep-rooted; or (3) the vegetation consists of species tolerant to Spike 20P.

For best brush control results, do not disturb intact plants by such practices as wood cutting, chaining, or burning for two years after application of Spike 20P. Resprouting is more likely to occur if plants are disturbed before complete woody plant control occurs.

General Use Precautions and Restrictions

Spike 20P is intended for control of unwanted woody vegetation such as trees, shrubs, and vines. Spike 20P will also control herbaceous broadleaf plants such as clover or lespedeza. Grasses in the area immediately adjacent to pellets may be temporarily damaged. Dormant season application is recommended to minimize herbicidal effects on grasses and other herbaceous plants. The herbicidal activity of Spike 20P in soil may prevent the growth of trees, shrubs, and other broadleaf vegetation for several years after treatment.

Do not apply Spike 20P to interior ditch banks (areas which slope toward the drainage). Do not apply to ditches used to transport irrigation water or potable water.

Not for sale, distribution, or use in Nassau and Suffolk Counties in New York State

Use Restrictions in the State of Florida

In Broward, Collier, Dade, Hendry, Lee, Monroe, and Palm Beach Counties of Florida, Spike 20P may be applied only in accordance with supplemental labeling.

Maximum Application Rate for Grazing or Haying: If treated area is to be used for haying, do not apply more than 20 pounds per acre of Spike 20P. If treated area is to be used for grazing, do not apply more than 10 pounds per acre of Spike 20P in areas receiving 20 inches or less average annual rainfall, or more than 20 pounds per acre of Spike 20P in areas receiving more than 20 inches average annual rainfall. There are no grazing restrictions following application of Spike 20P at labeled rates.

Haying Restriction: Do not cut hay for livestock feed for one year after a Spike 20P treatment.

Effects on Herbaceous Vegetation: Spike 20P may injure or suppress certain herbaceous vegetation in the treated area. Therefore, do not apply where such injury cannot be tolerated. Injury to most herbaceous perennial plants is reduced if Spike 20P is applied when vegetation is dormant.

Do not apply Spike 20P more than once per year.

Safe use of Spike 20P requires the following guidelines to be carefully followed:

Treatment Setback: Do not apply Spike 20P in the vicinity of desirable plants. Exposure of even a small part of a plant root system to Spike 20P may cause severe plant injury or death.

Note: Plant roots usually occupy an area much larger than the aerial portion of the plant. Treatment setback distance should be 1 to 2 times the height or width of adjacent non-target vegetation, whichever is

greater. For example, if adjacent non-target vegetation is 25 feet tall, the treatment setback should be 25 to 50 feet.

If there is a question about appropriate setback distance, contact an Arboriculturist (tree expert) to determine if the proposed treatment area is free of roots of desirable vegetation.

Potential Product Movement: Spike 20P or soil containing Spike 20P may be moved from treated areas by flowing water, wind, or mechanical means. Do not apply Spike in areas where overland flow of water might move Spike 20P or soil containing Spike 20P from the treated area. Do not apply where wind erosion may cause movement of soil containing Spike 20P from the treated area unless the surface has been stabilized with a gravel mulch or some other means. Do not apply in areas where soil may be redistributed by mechanical means to non-treated areas.

Cleaning of Equipment: Thoroughly clean all traces of Spike 20P from application equipment after use. Do not empty residues cleaned from application equipment on areas where contact with roots of desirable vegetation may occur.

Remedial Action After Accidental Application or Spill: Take action to minimize the effects of an accidental application or spill immediately. **Once rainfall has moved Spike 20P into the plant root zone, the effect on woody plants is irreversible.** Damage from accidental application or spill may be prevented only if soil containing Spike 20P is carefully removed before rainfall has moved Spike 20P into the root zone. Apply a waterproof covering to the affected area until cleanup is accomplished. Carefully collect Spike 20P pellets and/or soil containing Spike 20P with appropriate equipment and dispose at an approved landfill site. If rainfall has occurred, remove surface soil in the affected area to the depth of Spike 20P penetration.

Frequency of Application and Maximum Use Rates:

Broadcast Applications (Aerial or Ground Equipment):

- The maximum use rate and frequency of application is 1 to 2 lb a.i./acre once every three years for vulnerable sites where soils are sandy and depth to water table is shallow. (Refer to Environmental Hazards section under "Use Restrictions for Ground Water Protection".)
- For all other areas, the maximum use rate and frequency of application is up to 4 lb a.i./acre once every three years and no more than two treatments totaling of 6 lb a.i./acre in any 6 year period.

Spot Treatments (Hand Application or Hand-held Equipment): May be applied at rates up to 6 lb a.i./acre when needed.

Factors in Herbicidal Response

Soil Texture, Soil Depth, and Organic Matter

Poor control or erratic results are likely to occur when Spike 20P is applied to soils containing more than 5% organic matter or more than 30% clay. Do not apply to "blackland" or other heavy clay soils which crack extensively upon drying. Other deep, medium, and fine-textured soils supporting deep-rooted woody plant species require increased application rates for consistent control. The susceptibility of woody plants occurring on shallow, coarse, or rocky soils with low organic matter is normally increased due to increased soil availability of Spike 20P and shallow rooting depth. Therefore, use application rates at the low end of the rate range in these situations.

Woody Plant Size and Density

The height and density of woody vegetation is a reliable indicator of soil conditions. Woody vegetation is generally taller and more dense where soils are deeper and/or of medium to fine texture and where soil moisture conditions are more favorable. Higher rates in the rate range are required on such sites. On sites with coarse, shallow, or rocky conditions with less favorable soil moisture conditions, woody vegetation will be smaller and less dense. Lower rates in the rate range are required for control on such sites. Where a high level of woody plant control is required and application rates cannot be adjusted for

changes in soils, plant size, or density, apply Spike 20P at a rate sufficient to control the tallest and most dense woody vegetation in the treatment area.

Application Timing

Spike 20P may be applied anytime except when the soil is frozen or is saturated with moisture. For optimum results, applications should be made prior to the resumption of active seasonal growth in the spring or before expected seasonal rainfall. In areas receiving greater than 25 inches of annual rainfall, late summer and fall applications may require a higher application rate in the indicated rate range to achieve consistent control.

Spike 20P is recommended for control of brush regrowth after dozing or shredding, provided the regrowth has reached an average height of five feet or more prior to application. Spike 20P works best when there is an abundance of active leaf area to stimulate water and herbicide uptake during the season following application. Taller regrowth will tend to provide faster and more consistent brush control.

Spike 20P may cause temporary herbicidal symptoms to appear on perennial grasses. Dormant season application is recommended to minimize herbicidal effects on desirable forage grasses.

Effect of Shallow Groundwater on Woody Plant Control: Do not apply Spike 20P to areas where the water table is predominately shallow (5 feet or less), such as marshy or sub irrigated areas, or areas immediately adjacent to streams or lakes which are periodically flooded. On such sites, where roots extend directly to a shallow water table, woody plants are minimally affected by applications of tebuthiuron and poor control will result.

Rangeland and Pasture Management Information

There are no label restrictions which require livestock grazing to be delayed following an application of Spike 20P. Spike 20P is a pelleted formulation and does not adhere to plants. Therefore, significant plant residues do not occur as a result of application. However, at the time of application forage species may be sparsely distributed and in a low state of vigor due to competition from woody plants. Under such circumstances, the density and vigor of forage species may be enhanced by deferment of grazing following application of Spike 20P.

Grazing Management

For optimum perennial forage grass response, desirable species should be present in the area to be treated at a minimum of 10% of normal plant density (density = plants per unit area) compared to similar rangeland or pasture sites not dominated by woody plants. To encourage forage grass response, grazing should be deferred during the entire active growing season following application. Poor vegetative vigor or inadequate rainfall, may necessitate additional grazing deferment during periods of active forage growth. Light grazing of mature forage after seed maturity will not harm grass recovery and can aid in seed dispersal. Forage grass production usually increases as woody plant competition for water and nutrients is reduced. However, increased forage production is also dependent on adequate rainfall and a sound grazing management program.

Precaution: The density of cool season grass stands such as fescue and crested wheatgrass may be reduced after application of Spike 20P. Factors which may contribute to the possibility of stand reduction include excessive application rates, areas of shallow or rocky soil, and low brush density.

Rangeland and Pasture Overseeding: Apply Spike 20P at recommended rates. Overseeding involving burning or chaining of treated brush should not be attempted for at least two growing seasons after application. Apply seed and fertilizer at recommended rates into ash as soon as possible after burning or just prior to chaining. Cool season grasses are normally seeded in early fall and warm season grasses in the spring after the expected frost-free date. Aerial seeding without burning or chaining may be attempted in the fall or spring following an application of Spike 20P, but natural seedbed conditions must be relied upon for seedling establishment. Consult local range management specialists for recommendations on locally adapted species, seeding time, and grazing management.

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Application of Spike 20P

Individual Plant Treatments

Individual plants, multistem clumps, or small stands of woody vegetation may be hand treated. For individual plant treatments apply Spike 20P evenly over the area occupied by the target plant(s).

Pasture and Rangeland

- In areas receiving 20 inches or less average annual rainfall: Apply Spike 20P at a rate of 3/8 oz per 100 sq ft (equivalent broadcast rate = 10 lb/acre).
- In areas receiving more than 20 inches average annual rainfall: Apply Spike 20P at a rate of 3/4 oz per 100 sq ft (equivalent broadcast rate = 20 lb/acre).

Non-Cropland

- Apply Spike 20P at a rate of 3/8 oz to 1 1/8 oz per 100 sq ft (equivalent broadcast rate = 10 to 30 lb/acre).

Broadcast Treatments

Spike 20P must be applied with ground or aerial application equipment capable of accurate calibration and able to provide a uniform distribution of pellets on the soil surface. Use of equipment not capable of confining the spread of pellets to the target area may result in injury or death of vegetation outside the intended treatment area. Contact a Dow AgroSciences sales representative for recommendations on application equipment for different use situations.

Spike 20P may be applied by ground or air broadcast by/or under the supervision of U.S. Government Agencies.

Broadcast Application Rates

Pasture and Rangeland: Do not apply more than 10 pounds per acre Spike 20P in areas receiving 20 inches or less average annual rainfall. Do not apply more than 20 pounds per acre in areas receiving 20 inches or more average annual rainfall.

Non-Cropland: Do not apply more than 20 pounds per acre of Spike 20P on non-cropland.

Note: Refer to General Information section for limitations on maximum use rates, frequency of application, and total application rates allowed during a given period of time. Refer to Environmental Hazards section under "Use Restrictions for Ground Water Protection" for other rate limitations on "vulnerable" sites.

Woody Plants Controlled by Spike 20P

Rangeland, Pastureland, and Non-Cropland:

Apply Spike 20P at 3.75 to 5 lb per acre on the following woody plant species:

Note: On rangeland and pastureland, apply 3.75 to 5 lb/acre of Spike 20P where a higher degree of control is required (See "Factors in Herbicidal Response" in "General Information" section of this label). Spike 20P may be applied at rates as low as 2.5 lb per acre on sites with shallow, rocky and coarse textured soils having low organic matter content, or where partial control is desired.

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Common Name	Scientific Name
burroweed (Density less than 1/sq ft)	<i>Haplopappus tenuisectus</i>
ceniza	<i>Leucophyllum frutescens</i>
creosotebush	<i>Larrea tridentata</i>
mimosa, catclaw (wait-a-minute-bush)	<i>Mimosa pigra</i>
Paloverde	<i>Cercidium spp.</i>
sagebrush, big	<i>Artemisia tridentata</i>
sagebrush, sand	<i>Artemisia filifolia</i>
snakeweed, broom (Density less than 1/sq ft)	<i>Gutierrezia sarothrae</i>
tarbush	<i>Flourensia cernua</i>
whitethorn	<i>Acacia constricta</i>

Rangeland, Pastureland, and Non-Cropland:**Apply Spike 20P at 2.5 to 10.0 lb per acre on the following woody plant species:**

Common Name	Scientific Name
oak, sand shinnery†	<i>Quercus havardii</i>

†**Note:** A wide rate range is provided to accommodate the broad range of soil and climatic variation which occurs in areas occupied by sand shinnery. Use the lowest application rate only on shallow sands in southern part of species range or where partial control is desired. Use a higher dose in indicated rate range for deeper sands and dunes, and on shinnery varieties with tall and dense growth habit which become more prevalent in the mid-to-northern part of the species range (See "Factors in Herbicidal Response" in "General Information" section of this label).

Rangeland, Pastureland, and Non-Cropland:**Apply Spike 20P at 5 to 10 lb per acre on the following woody plant species:**

Common Name	Scientific Name
oak, bigelow† (Partial control)	<i>Quercus durandi</i>
oak, mohr† (Partial control)	<i>Quercus mohriana</i>
oak, running live† (Partial control)	<i>Quercus virginiana</i>
whitebrush	<i>Aloysia lycoides</i>
wolfberry, Berlandier	<i>Lycium berlanderi</i>

†**Note:** Use a higher dosage in indicated rate range on tall and dense stands.

Rangeland, Pastureland, and Non-Cropland:**Apply Spike 20P at 10 to 20 lb per acre on the following woody plant species:**

Common Name	Scientific Name
acacia, blackbrush	<i>Acacia rigidula</i>
acacia, catclaw	<i>Acacia greggii</i>
acacia, twisted	<i>Acacia tortuosa</i>
apple-of-sodom	<i>Solanum sodomeum</i>
birch, gray	<i>Betula populifolia</i>
blueberry	<i>Vaccinium spp.</i>
bluewood (Brazil)	<i>Condalia obovata</i>
buckbrush	<i>Symphoricarpos orbiculatus</i>

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cherry, bitter	<i>Prunus emarginata</i>
dogwood, roughleaf	<i>Cornus drummondii</i>
elm, American	<i>Ulmus americana</i>
elm, winged	<i>Ulmus alata</i>
guajillo	<i>Acacia berlanderi</i>
guava	<i>Psidium guajava</i>
hackberry, spiny (granjeno)	<i>Celtis pallida</i>
hackberry, western	<i>Celtis occidentalis</i>
hawthorn	<i>Crataegus spp.</i>
huckleberry	<i>Gaylussacia spp.</i>
koa haole	<i>Leucaena leucocephala</i>
locust, black	<i>Robinia pseudoacacia</i>
manzanita	<i>Arctostaphylos spp.</i>
mulberry, red	<i>Morus rubra</i>
oak, black	<i>Quercus velutina</i>
oak, blackjack	<i>Quercus marilandica</i>
oak, blue	<i>Quercus douglasii</i>
oak, bur	<i>Quercus macrocarpa</i>
oak, post	<i>Quercus stellata</i>
oak, shrub live	<i>Quercus turbinella</i>
oak, southern red	<i>Quercus falcata</i>
oak, white	<i>Quercus alba</i>
rose, multiflora	<i>Rosa multiflora</i>
sage, black	<i>Salvia melifera</i>
sumac, dwarf	<i>Rhus copallina</i>
sumac, littleleaf	<i>Rhus microphylla</i>
sumac, skunkbush	<i>Rhus trilobata</i>
sumac, smooth	<i>Rhus glabra</i>
sumac, staghorn	<i>Rhus typhina</i>
thornapple, desert	<i>Datura discolor</i>
yaupon	<i>Ilex vomitoria</i>
yaupon, desert	<i>Schaefferia cuneifolia</i>

†Note: Use a higher dosage in indicated rate range on all sites.

Rangeland, Pastureland, and Non-Cropland:

Apply Spike 20P at 20 lb per acre on the following woody plant species:

Common Name	Scientific Name
alder, red	<i>Alnus rubra</i>
alder, speckled†	<i>Alnus rugosa</i>
aspen, bigtooth	<i>Populus grandidentata</i>
beech, American	<i>Fagus grandifolia</i>
blackberry	<i>Rubus spp.</i>
boxelder	<i>Acer negundo</i>
chamise	<i>Adenostoma fasciculatum</i>
cherry, black	<i>Prunus serotina</i>
chokecherry, common	<i>Prunus virginiana</i>
colubrina, Texas	<i>Colubrina texensis</i>
cottonwood, eastern†	<i>Populus deltoides</i>
creeper, Virginia	<i>Parthenocissus quinquefolia</i>
dogwood, flowering	<i>Cornus florida</i>
douglasfir	<i>Pseudotsuga menziesii</i>
fir, balsam†	<i>Abies balsamea</i>
guayacan	<i>Porlieria angustifolia</i>
hardhack†	<i>Spiraea tomentosa</i>

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hickory, bitternut	<i>Caraya cordiformis</i>
hickory, black	<i>Caraya texana</i>
hickory, pignut	<i>Caraya glabra</i>
hickory, shagbark	<i>Caraya ovata</i>
huisache†	<i>Acacia farnesiana</i>
kidneywood, Texas	<i>Eysenhardtia texana</i>
kudzu	<i>Pueraria lobata</i>
leatherstem	<i>Jatropha dioica</i>
lotebush (condalia)	<i>Ziziphus obtusifolia</i>
maple, bigleaf	<i>Acer macrophyllum</i>
maple, sugar†	<i>Acer saccharum</i>
melaleuca†	<i>Melaleuca quinquenervia</i>
mountain mahogany,	<i>Cercocarpus betuloides</i>
birchleaf	<i>Quercus dumosa</i>
oak, California scrub	<i>Quercus virginiana</i>
oak, live	<i>Quercus palustris</i>
oak, pin	<i>Quercus rubra</i>
oak, red	<i>Quercus alba</i>
oak, white	<i>Casuarina</i> spp.
pine, Australian	<i>Pinus</i> spp.
pine	<i>Populus balsamifera</i>
poplar, balsam†	<i>Rubus occidentalis</i>
raspberry, black	<i>Rosa bracteata</i>
rose, McCartney†	<i>Picea glauca</i>
spruce, white†	<i>Liquidambar styraciflua</i>
sweetgum	<i>Larix laricina</i>
tamarack†	<i>Campsis radicans</i>
trumpet creeper	<i>Salix</i> spp.
willow	

†Note: Use a higher dosage in indicated rate range on all sites.

Rangeland, Pastureland, and Non-Cropland (Individual Plant Treatment Only):

Common Name	Scientific Name
ash, green	<i>Fraxinus pennsylvanica</i>
ash, white	<i>Fraxinus americana</i>
blackberry, cutleaf	<i>Rubus laciniatus</i>
ceanothus, wedgeleaf	<i>Ceanothus cuneatus</i>
chaparral, whitethorn	<i>Ceanothus leucodermis</i>
coyotebush	<i>Baccharis pilularis</i>
elm, Chinese	<i>Ulmus parvifolia</i>
elm, slippery	<i>Ulmus rubra</i>
greenbriar, roundleaf	<i>Smilax rotundifolia</i>
hawthorn, cockspur	<i>Crataegus crus-calli</i>
lantana	<i>Lantana camara</i>
manzanita, greenleaf	<i>Arctostaphylos patula</i>
maple, Norway	<i>Acer platanoides</i>
maple, silver	<i>Acer saccharinum</i>
maple, vine	<i>Acer circinatum</i>
peppertree, Brazilian	<i>Schinus terebinthifolius</i>
privet	<i>Ligustrum</i> spp.
redcedar, eastern	<i>Juniperus virginiana</i>
Russianolive	<i>Eleagnus angustifolia</i>
salal	<i>Gaultheria shallon</i>
sumac, laurel	<i>Rhus laurina</i>
sycamore, American	<i>Platanus occidentalis</i>

tallowtree, Chinese
tuliptree

Sapium sebiferum
Liriodendron tulipifera

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