

## **EPA Reports About Herbicides in Drinking Water**

Contents.....	1
EPA Report “Basic Information about 2,4,5-TP (Silvex) in Drinking Water” .....	2
EPA Report “Basic Information about 2,4-D in Drinking Water” .....	4
EPA Report “Basic Information about Picloram in Drinking Water” .....	6
EPA Report “Organic Arsenicals” in Drinking Water .....	7

## Water: Basic Information about Regulated Drinking Water Contaminants

Contact Us Share

You are here: [Water](#) » [Drinking Water](#) » [Drinking Water Contaminants](#) » [Basic Information about Regulated Drinking Water Contaminants](#) » [Basic Information about 2,4,5-TP \(Silvex\) in Drinking Water](#)

# Basic Information about 2,4,5-TP (Silvex) in Drinking Water

[Drinking Water Contaminants Home](#) [Basic Information about Drinking Water Contaminants](#)

EPA regulates 2,4,5-TP in drinking water to protect public health. 2,4,5-TP may cause health problems if present in public or private water supplies in amounts greater than the drinking water standard set by EPA.

- [What is 2,4,5-TP?](#)
- [Uses for 2,4,5-TP.](#)
- [What are 2,4,5-TP's health effects?](#)
- [What are EPA's drinking water regulations for 2,4,5-TP?](#)
- [How does 2,4,5-TP get into my drinking water?](#)
- [How will I know if 2,4,5-TP is in my drinking water?](#)
- [How will 2,4,5-TP be removed from my drinking water?](#)
- [How do I learn more about my drinking water?](#)

### What is 2,4,5-TP?

2,4,5-TP is a white organic powder with little odor.

### Uses for 2,4,5-TP.

Until Silvex was banned in 1985, the greatest use of 2,4,5-TP was as a postemergence herbicide for control of woody plants and broadleaf herbaceous weeds in rice and bluegrass turf, in sugarcane, in rangeland improvement programs, and on lawns. Aquatic uses included control of weeds in ditches and riverbanks, on floodways, along canals, reservoirs, streams, and along southern waterways.

If you are concerned about 2,4,5-TP in a private well, please visit:

- [EPA's private drinking water wells Web site](#)
- [Water Systems Council Web site](#) [EXIT Disclaimer](#)

### What are 2,4,5-TP's health effects?

Some people who drink water containing 2,4,5-TP well in excess of the maximum contaminant level (MCL) for many years could experience liver problems.

This health effects language is not intended to catalog all possible health effects for 2,4,5-TP. Rather, it is intended to inform consumers of some of the possible health effects associated with 2,4,5-TP in drinking water when the rule was finalized.

[Top of page](#)

### What are EPA's drinking water regulations for 2,4,5-TP?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine the level of contaminants in drinking water at which no adverse health effects are likely to occur. These non-enforceable health goals, based solely on possible health risks and exposure over a lifetime with an adequate margin of safety, are called maximum contaminant level goals (MCLG). Contaminants are any physical, chemical, biological or radiological substances or matter in water.

The MCLG for 2,4,5-TP is 0.05 mg/L or 50 ppb. EPA has set this level of protection based on the best available science to prevent potential health problems. EPA has set an enforceable regulation for 2,4,5-TP, called a maximum contaminant level (MCL), at 0.05 mg/L or 50 ppb. MCLs are set as close to the health goals as possible, considering cost, benefits and the ability of public water systems to detect and remove contaminants using suitable treatment

### 2,4,5-TP (Silvex) at a Glance

Maximum Contaminant Level (MCL) = 0.05 milligrams per Liter (mg/L) or 50 parts per billion (ppb)

Maximum Contaminant Level Goal (MCLG) = 0.05 mg/L or 50 ppb

#### Health Effects

Some people who drink water containing 2,4,5-TP in excess of the MCL over many years could experience liver problems.

[Drinking Water Health Advisories provide more information on health effects](#)

Chemical Abstract Service Registry Number  
93-72-1

Sources of Contamination  
Residue of banned herbicide

[List of all Regulated Contaminants \(PDF\)](#) (6 pp, 396K, About PDF)

Water Home

Drinking Water

Analytical Methods and Laboratories

Consumer Information  
Drinking Water Standards  
Emergency Preparedness  
Local Drinking Water Information

Private Wells

Virtual Tour of Water

Treatment Plant

Water Contaminants

Water Security

Water on Tap:  
Consumer's Guide

Education & Training

Grants & Funding

Laws & Regulations

Our Waters

Pollution Prevention & Control

Resources & Performance

Science & Technology

Water Infrastructure

What You Can Do

**The EPA shows there is no doubt that these herbicides were in use in all kinds of weed control up until the mid 1980s.**

**Silvex (2-4-5-TP) gets into drinking water from the residue of this herbicide's use before it was banned in 1985.**

technologies. In this case, the MCL equals the MCLG, because analytical methods or treatment technology do not pose any limitation.

The Phase II Rule, the regulation for 2,4,5-TP, became effective in 1992. The Safe Drinking Water Act requires EPA to periodically review the national primary drinking water regulation for each contaminant and revise the regulation, if appropriate. EPA reviewed 2,4,5-TP as part of the Six Year Review and determined that the 0.05 mg/L or 50 ppb MCLG and 0.05 mg/L or 50 ppb MCL for 2,4,5-TP are still protective of human health.

- [More information on the Six Year Review of Drinking Water Standards.](#)

States may set more stringent drinking water MCLGs and MCLs for 2,4,5-TP than EPA.

 [Top of page](#)

**How does 2,4,5-TP get into my drinking water?**

**The major source of 2,4,5-TP in drinking water is residue of the banned herbicide.**



A federal law called the Emergency Planning and Community Right to Know Act (EPCRA) requires facilities in certain industries, which manufacture, process, or use significant amounts of toxic chemicals, to report annually on their releases of these chemicals. For more information on the uses and releases of chemicals in your state, contact the Community Right-to-Know Hotline: (800) 424-9346.

- [EPA's Toxics Release Inventory \(TRI\) Web site provides information about the types and amounts of toxic chemicals that are released each year to the air, water, and land.](#)

 [Top of page](#)

**How will I know if 2,4,5-TP is in my drinking water?**

**When routine monitoring indicates that 2,4,5-TP levels are above the MCL, your water supplier must take steps to reduce the amount of 2,4,5-TP so that it is below that level. Water suppliers must notify their customers as soon as practical, but no later than 30 days after the system learns of the violation. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.**

- [See EPA's public notification requirements for public water systems.](#)

If your water comes from a household well, check with your health department or local water systems that use ground water for information on contaminants of concern in your area.

- [For more information on wells, go to EPA's Web site on private wells.](#)

 [Top of page](#)

**How will 2,4,5-TP be removed from my drinking water?**

The following treatment method(s) have proven to be effective for removing 2,4,5-TP to below 0.05 mg/L or 50 ppb: granular activated carbon.

 [Top of page](#)

**How do I learn more about my drinking water?**

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect the supply of safe drinking water and upgrade the community water system. Your water bill or telephone book's government listings are a good starting point for local information.

Contact your water utility. EPA requires all community water systems to prepare and deliver an annual consumer confidence report (CCR) (sometimes called a water quality report) for their customers by July 1 of each year. If your water provider is not a community water system, or if you have a private water supply, request a copy from a nearby community water system.

- [The CCR summarizes information regarding sources used \(i.e., rivers, lakes, reservoirs, or aquifers\), detected contaminants, compliance and educational information.](#)
- [Some water suppliers have posted their annual reports on EPA's Web site.](#)

Other EPA Web sites

- Find an answer or ask a question about drinking water contaminants on [EPA's Question and Answer Web site](#)

## Water: Basic Information about Regulated Drinking Water Contaminants

[Contact Us](#) [Share](#)

You are here: [Water](#) » [Drinking Water](#) » [Drinking Water Contaminants](#) » [Basic Information about Regulated Drinking Water Contaminants](#) » [Basic Information about 2,4-D \(2,4-Dichlorophenoxyacetic Acid\) in Drinking Water](#)

# Basic Information about 2,4-D (2,4-Dichlorophenoxyacetic Acid) in Drinking Water

[Drinking Water Contaminants Home](#) | [Basic Information about Drinking Water Contaminants](#)

EPA regulates 2,4-D in drinking water to protect public health. 2,4-D may cause health problems if present in public or private water supplies in amounts greater than the drinking water standard set by EPA.

- [What is 2,4-D?](#)
- [Uses for 2,4-D.](#)
- [What are 2,4-D's health effects?](#)
- [What are EPA's drinking water regulations for 2,4-D?](#)
- [How does 2,4-D get into my drinking water?](#)
- [How will I know if 2,4-D is in my drinking water?](#)
- [How will 2,4-D be removed from my drinking water?](#)
- [How do I learn more about my drinking water?](#)

### What is 2,4-D?

2,4-D is a colorless, odorless powder.

### Uses for 2,4-D.

2,4-D is used as a herbicide for the control of broad-leaf weeds in agriculture, and for control of woody plants along roadsides, railways, and utilities rights of way.

If you are concerned about 2,4-D in a private well, please visit:

- [EPA's private drinking water wells Web site](#)
- [Water Systems Council Web site](#) [EXIT Disclaimer](#)

### What are 2,4-D's health effects?

Some people who drink water containing 2,4-D well in excess of the maximum contaminant level (MCL) for many years could experience problems with their kidneys, liver, or adrenal glands.

This health effects language is not intended to catalog all possible health effects for 2,4-D. Rather, it is intended to inform consumers of some of the possible health effects associated with 2,4-D in drinking water when the rule was finalized.

[Top of page](#)

### What are EPA's drinking water regulations for 2,4-D?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine the level of contaminants in drinking water at which no adverse health effects are likely to occur. These non-enforceable health goals, based solely on possible health risks and exposure over a lifetime with an adequate margin of safety, are called maximum contaminant level goals (MCLG). Contaminants are any physical, chemical, biological or radiological substances or matter in water.

The MCLG for 2,4-D is 0.07 mg/L or 70 ppb. EPA has set this level of protection based on the best available science to prevent potential health problems. EPA has set an enforceable regulation for 2,4-D, called a maximum contaminant level (MCL), at 0.07 mg/L or 70 ppb. MCLs are set as close to the health goals as possible, considering cost, benefits and the ability of public water systems to detect and remove contaminants using suitable treatment technologies. In this case, the MCL equals the MCLG, because analytical methods or treatment technology do not pose any limitation.

### 2,4-D (2,4-Dichlorophenoxyacetic Acid) at a Glance

Maximum Contaminant Level (MCL) = 0.07 milligrams per Liter (mg/L) or 70 parts per billion (ppb)

Maximum Contaminant Level Goal (MCLG) = 0.07 mg/L or 70 ppb

**Health Effects**  
Some people who drink water containing 2,4-D in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.

[Drinking Water Health Advisories provide more information on health effects](#)

Chemical Abstract Service Registry Number  
94-75-7

Sources of Contamination  
Runoff from herbicide used on row crops

[List of all Regulated Contaminants \(PDF\)](#) (6 pp, 396K, [About PDF](#))

- Water Home
- Drinking Water
  - Analytical Methods and Laboratories
  - Consumer Information
  - Drinking Water Standards
  - Emergency Preparedness
  - Local Drinking Water Information
  - Private Wells
  - Virtual Tour of Water Treatment Plant
  - Water Contaminants
  - Water Security
  - Water on Tap: Consumer's Guide
- Education & Training
- Grants & Funding
- Laws & Regulations
- Our Waters
- Pollution Prevention & Control
- Resources & Performance
- Science & Technology
- Water Infrastructure
- What You Can Do

**The EPA shows there is no doubt that these herbicides were in use in all kinds of weed control.**

**2-4-D herbicide gets into the drinking water from runoff of the residue from the use of this herbicide to kill weeds.**

The Phase II Rule, the regulation for 2,4-D, became effective in 1992. The Safe Drinking Water Act requires EPA to periodically review the national primary drinking water regulation for each contaminant and revise the regulation, if appropriate. EPA reviewed 2,4-D as part of the Six Year Review and determined that the 0.07 mg/L or 70 ppb MCLG and 0.07 mg/L or 70 ppb MCL for 2,4-D are still protective of human health.

- [More information on the Six Year Review of Drinking Water Standards.](#)

States may set more stringent drinking water MCLGs and MCLs for 2,4-D than EPA.

 [Top of page](#)

**How does 2,4-D get into my drinking water?**

**The major source of 2,4-D in drinking water is runoff from herbicide used on row crops.** 

A federal law called the Emergency Planning and Community Right to Know Act (EPCRA) requires facilities in certain industries, which manufacture, process, or use significant amounts of toxic chemicals, to report annually on their releases of these chemicals. For more information on the uses and releases of chemicals in your state, contact the Community Right-to-Know Hotline: (800) 424-9346.

- [EPA's Toxics Release Inventory \(TRI\) Web site provides information about the types and amounts of toxic chemicals that are released each year to the air, water, and land.](#)

 [Top of page](#)

How will I know if 2,4-D is in my drinking water?

When routine monitoring indicates that 2,4-D levels are above the MCL, your water supplier must take steps to reduce the amount of 2,4-D so that it is below that level. Water suppliers must notify their customers as soon as practical, but no later than 30 days after the system learns of the violation. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

- [See EPA's public notification requirements for public water systems.](#)

If your water comes from a household well, check with your health department or local water systems that use ground water for information on contaminants of concern in your area.

- [For more information on wells, go to EPA's Web site on private wells.](#)

 [Top of page](#)

How will 2,4-D be removed from my drinking water?

The following treatment method(s) have proven to be effective for removing 2,4-D to below 0.07 mg/L or 70 ppb: granular activated carbon.

 [Top of page](#)

How do I learn more about my drinking water?

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect the supply of safe drinking water and upgrade the community water system. Your water bill or telephone book's government listings are a good starting point for local information.

Contact your water utility. EPA requires all community water systems to prepare and deliver an annual consumer confidence report (CCR) (sometimes called a water quality report) for their customers by July 1 of each year. If your water provider is not a community water system, or if you have a private water supply, request a copy from a nearby community water system.

- [The CCR summarizes information regarding sources used \(i.e., rivers, lakes, reservoirs, or aquifers\), detected contaminants, compliance and educational information.](#)
- [Some water suppliers have posted their annual reports on EPA's Web site.](#)

Other EPA Web sites

- Find an answer or ask a question about drinking water contaminants on [EPA's Question and Answer Web site](#) or call EPA's Safe Drinking Water Hotline at (800) 426-4791
- [EPA Integrated Risk Information System](#)
- [EPA Substance Registry System](#)

## Water: Basic Information about Regulated Drinking Water Contaminants

Contact Us Share

You are here: [Water](#) » [Drinking Water](#) » [Drinking Water Contaminants](#) » [Basic Information about Regulated Drinking Water Contaminants](#) » [Basic Information about Picloram in Drinking Water](#)

# Basic Information about Picloram in Drinking Water

[Drinking Water Contaminants Home](#) | [Basic Information about Drinking Water Contaminants](#)

EPA regulates picloram in drinking water to protect public health. Picloram may cause health problems if present in public or private water supplies in amounts greater than the drinking water standard set by EPA.

- [What is picloram?](#)
- [Uses for picloram.](#)
- [What are picloram's health effects?](#)
- [What are EPA's drinking water regulations for picloram?](#)
- [How does picloram get into my drinking water?](#)
- [How will I know if picloram is in my drinking water?](#)
- [How will picloram be removed from my drinking water?](#)
- [How do I learn more about my drinking water?](#)

### Agent White

#### What is picloram?

Picloram, a synthetic organic chemical, is a crystalline organic solid with a chlorine odor.

#### Uses for picloram.

Picloram is used in salt form as a systemic herbicide for controlling annual weeds in crops, and in combination with 2,4-D or 2,4,5-T against perennials on non-croplands for brush control.

If you are concerned about picloram in a private well, please visit:

- [EPA's private drinking water wells Web site](#)
- [Water Systems Council Web site](#) [EXIT Disclaimer](#)

#### What are picloram's health effects?

Some people who drink water containing picloram well in excess of the maximum contaminant level (MCL) for many years could experience liver problems.

This health effects language is not intended to catalog all possible health effects for picloram. Rather, it is intended to inform consumers of some of the possible health effects associated with picloram in drinking water when the rule was finalized.

[Top of page](#)

#### What are EPA's drinking water regulations for picloram?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine the level of contaminants in drinking water at which no adverse health effects are likely to occur. These non-enforceable health goals, based solely on possible health risks and exposure over a lifetime with an adequate margin of safety, are called maximum contaminant level goals (MCLG). Contaminants are any physical, chemical, biological or radiological substances or matter in water.

The MCLG for picloram is 0.5 mg/L or 500 ppb. EPA has set this level of protection based on the best available science to prevent potential health problems. EPA has set an enforceable regulation for picloram, called a maximum contaminant level (MCL), at 0.5 mg/L or 500 ppb. MCLs are set as close to the health goals as possible, considering cost, benefits and the ability of public water systems to detect and remove contaminants using suitable treatment technologies. In this case, the MCL equals the MCLG, because analytical methods or treatment technology do not pose any limitation.

#### Picloram at a Glance

Maximum Contaminant Level (MCL) = 0.5 milligrams per Liter (mg/L) or 500 parts per billion (ppb)

Maximum Contaminant Level Goal (MCLG) = 0.5 mg/L or 500 ppb

#### Health Effects

Some people who drink water containing picloram in excess of the MCL over many years could experience liver problems.

[Drinking Water Health Advisories provide more information on health effects](#)

Chemical Abstract Service Registry Number  
1918-02-1

Sources of Contamination  
Herbicide runoff

[List of all Regulated Contaminants \(PDF\)](#) (6 pp, 396K, [About PDF](#))

Water Home

Drinking Water

Analytical Methods and Laboratories

Consumer Information

Drinking Water Standards

Emergency Preparedness

Local Drinking Water

Information

Private Wells

Virtual Tour of Water

Treatment Plant

Water Contaminants

Water Security

Water on Tap:

Consumer's Guide

Education & Training

Grants & Funding

Laws & Regulations

Our Waters

Pollution Prevention & Control

Resources & Performance

Science & Technology

Water Infrastructure

What You Can Do

**The EPA is aware that these herbicides were the industry standard for weed control for the military and civilian use world wide up until the mid 1980s when they were banned or restricted. Why is the VA trying to ignore the facts?**



# Pesticides: Reregistration



[Recent Additions](#) | [Contact Us](#)

Search:  All EPA  This Area

You are here: [EPA Home](#) » [Pesticides](#) » [Regulating Pesticides](#) » [Reregistration](#) » Organic Arsenicals

**This is one of the herbicides on the VA "Herbicide Exposure List"**



**Pesticide  
Chemical Search**

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Note: EPA no longer updates this page.

Refer to Chemical Search for the latest information.



You may want to reset your bookmark to Chemical Search.

## Organic Arsenicals

**Cacodylic acid also known  
as Agent Blue**

Current as of June 2009

In January and February 2009, EPA reached agreement with the technical registrants of all existing organic arsenicals manufacturing-use products to eliminate, phase out, and modify certain uses. The organic arsenicals consist of monosodium methanearsonate (MSMA), disodium methanearsonate (DSMA), calcium acid methanearsonate (CAMA), and cacodylic acid and its sodium salt.

- [Agreement in Principle, January 16, 2009](#)
- [Agreement in Principle, February 5, 2009](#)

The voluntary agreements steadily remove all organic arsenical pesticide product uses, except the use of MSMA on cotton, from the market and implement new restrictions to **better protect drinking water resources**. **Phasing out these uses is expected to accelerate the transition to new, lower risk herbicides.**

Under the agreements, many uses, **including use on residential lawns**, will be canceled by the end of 2009 and mitigation measures to protect water resources will be implemented quickly.

- By mid-March 2009, the registrants were to submit voluntary cancellation requests for all uses, other than the use of MSMA on cotton.
- By the end of 2009, many existing uses will be phased out and cancelled including use on residential lawns, forestry, non-bearing fruit and nut trees, and citrus orchards.
- **Over the next four years, a subset of uses (golf courses, sod farms, and highway rights of way) will be phased out, promoting transition to alternatives.**

For products used on cotton and products phased out after 2009, new use restrictions and mitigation measures will be added to increase protections to water resources.

The agreements also provide for scientific review of any new toxicity or benefits data prior to the final cancellation of major uses, if the data are provided by the date set forth in the agreements.

On this page you will find:

- [Changes since the 2006 RED](#)
- [MSMA Cotton Use is Eligible for Reregistration with Mitigation](#)
- [All Other Uses will be Phased Out and Canceled](#)
- [How Organic Arsenical Herbicides Are Used](#)
- [Exposure through Drinking Water](#)
- [Exposure from Treated Residential Lawns](#)
- [Safe Use and Disposal of Homeowner Products](#)
- [Alternatives to Organic Arsenicals for Homeowner Use](#)
- [RED Amendment and Opportunities for Public Comment](#)

### Changes since the 2006 RED

In the Agency's 2006 Reregistration Eligibility Decision (RED) for MSMA, DSMA, CAMA, and cacodylic acid and its sodium salt, EPA concluded that all uses of the organic arsenical herbicides were ineligible for reregistration. Following application, **these pesticides convert over time to a more toxic form in soil, inorganic arsenic, and potentially contaminate drinking water through soil runoff.**

Since MSMA is used on cotton, EPA also believed at that time that residues of inorganic arsenic could enter the

[Pesticides Home](#)

[Regulating Pesticides Home](#)

[Reregistration Home](#)

[About Reregistration](#)

[Schedule for Decisions](#)

[Public Participation](#)

[Reregistration Status](#)

[Progress & Status Reports](#)

**This herbicide is now being phased out.**

#### Quick Resources

- [RED Amendment - April 2009](#)
- [MSMA, DSMA, CAMA, and Cacodylic Acid RED - July 2006](#) (70 pp, 742 KB, [About PDF](#))
- [Agreements in Principle:](#)
  - [January 16, 2009](#)
  - [February 5, 2009](#)
- [Guidance for Products Containing the Organic Arsenicals\(PDF\)](#) (8p., 351K, [About PDF](#)) (February 18, 2009)
- [Methanearsonic Acid Salts](#)
- [Cacodylic Acid and Salts](#)
- [Organic Arsenicals Dockets:](#)
  - [EPA-OPP-HQ-2006-0201](#)
  - [EPA-OPP-HQ-2009-0191](#)

human food supply through the meat and milk of animals fed cotton by-products (seeds, hulls, and gin by-products) that have been treated with MSMA. In completing the RED, EPA found that the aggregate dietary risks from exposure to inorganic arsenic in food and drinking water combined did not meet the reasonable certainty of no harm standard under the Federal Food, Drug, and Cosmetic Act (FFDCA).

During the last two years, stakeholders have submitted to the Agency additional data on organic arsenicals that previously were not available. These data indicate that no residues of inorganic arsenic are likely to remain in the meat and milk of animals fed cotton by-products that have been grown in fields treated with MSMA, or in food crops that are rotated with cotton that has been treated with MSMA.

Cotton growers also have documented the increasing spread of Palmer amaranth or pigweed, a glyphosate-resistant weed that can significantly reduce cotton yields and could have a negative effect on conservation tillage efforts. Currently, no alternative herbicides to MSMA are registered on cotton to control this pest.

[Top of page](#)

## MSMA Cotton Use is Eligible for Reregistration with Mitigation

In light of the new information, the agreements allow for the reregistration of MSMA use on cotton only, contingent on the development and acceptance of confirmatory data demonstrating that no residues of inorganic arsenic are likely to remain in the meat and milk of animals fed cotton by-products. These data must be provided to EPA by August 2010. If the data are not provided or if they do not confirm the current scientific understanding, the Agency will proceed to cancel the cotton use.

EPA is also rescheduling MSMA for registration review beginning in 2013. At that time, the risks and benefits of MSMA will be reevaluated considering any new toxicity information as well as the availability of new, lower-risk herbicides that should be entering the market.

The agreements require certain mitigation measures for MSMA use on cotton to protect water resources. Pre-plant cotton use will be deleted. The cotton use will be limited to two post-emergent applications per year of two pounds active ingredient per acre each. Cotton growers also must maintain a 50-foot buffer zone around permanent water bodies.

[Top of page](#)

## All Other Uses will be Phased Out and Canceled

All use of the organic arsenical herbicides, except MSMA use on cotton, will be canceled in two phases. In addition to products used on cotton, MSMA products with uses phasing out over several years will include new restrictions, summarized below, to protect water resources.

**Phase 1** – Many existing uses will be canceled as of December 31, 2009, with use of existing stocks permitted through 2010. These uses include among others: residential turf, forestry, non-bearing fruit and nuts, citrus (bearing and non-bearing), various grasses, and drainage ditch banks, certain rights-of-way, fence rows, storage yards and similar non-crop areas.

**Phase 2** – MSMA use on golf courses, sod farms, and highway rights-of-way will be canceled as of December 31, 2012, with use of existing stocks permitted through 2013. The following new use restrictions will apply.

### For golf courses:

- Spot treatments only (100 sq feet per spot), not to exceed 25 percent of the total golf course acreage per year
- One broadcast treatment for newly constructed courses only

### For sod farms:

- 1-2 broadcast applications
- 25 foot buffer around permanent water bodies

### For highway rights-of-way:

- Two broadcast applications ONLY on highway rights-of-way
- 100 foot buffer around permanent water bodies

[Top of page](#)

## How Organic Arsenical Herbicides Are Used

MSMA, DSMA, and CAMA are herbicides currently registered for applications to cotton, bearing and non-bearing fruit and nut trees, commercial turf, golf courses, athletic fields, parks, and residential lawns, among other sites. MSMA, DSMA, and CAMA are selective, post-emergent herbicides that kill weeds without damaging grass and can be applied after weeds are visible.

Common trade names for MSMA, DSMA, or CAMA include *Scotts Post Emergent Crabgrass Control*, *Gordon's Crabgrass and Nutgrass Killer*, and *Ferti-Lome Crabgrass and Dallis Grass Killer*.

Cacodylic acid is a defoliant that is used to edge and renovate lawns. Unlike MSMA, DSMA, and CAMA, cacodylic acid is non-selective, meaning that it kills weeds and surrounding grass. Common trade names for cacodylic acid include *Scotts Spot Grass & Weed Control*, *Liquid Edger*, and *Liquid Fence & Grass Edger*.

[↑Top of page](#)

## Exposure through Drinking Water

For the cotton use and all uses being phased out, EPA is immediately requiring new restrictions that are designed to prevent exposure to inorganic arsenic in drinking water. These include limiting use in areas of particularly vulnerable ground water, implementing buffer zones around surface water bodies, limiting the number of applications, and restricting golf course use to spot treatment only.

For residential areas, it is important to follow label instructions and minimize runoff (e.g., do not apply to sidewalks and other impermeable surfaces; do not apply near storm drains or water bodies).

## Exposure from Treated Residential Lawns

Short-term use of organic arsenical products used according to label directions does not present an imminent risk. The Agency's primary concern is for these products to transform over time to the more toxic inorganic form of arsenic in soil and subsequently be transported to sources of drinking water. This issue is being addressed through new label restrictions. Because this transformation occurs beneath the soil surface, long-term residential exposure to inorganic arsenic in soil is unlikely. To further minimize potential exposure on lawns, keep children and pets off treated areas.

## Safe Use and Disposal of Homeowner Products

It remains legal to purchase and use organic arsenical herbicides according to label directions and precautions. Use of these products according to label directions does not pose an imminent hazard. EPA has initiated action to address the potential for these chemicals to transform over time and contaminate sources of drinking water. Consumers who choose to use these products should take special care to always read and follow the label precautions and directions.

If you choose to discontinue use, contact your state or local hazardous waste disposal programs or your local solid waste collection service for information on proper disposal. See also [Safe Disposal of Pesticides](#).

[↑Top of page](#)

## Alternatives to Organic Arsenicals for Homeowner Use

The primary manner in which grass weeds such as crabgrass and dallisgrass can be effectively controlled is through the maintenance of a high quality turf. This includes developing healthy soil, using types of grass that thrive in your climate, and correcting thatch build-up. See additional information about [Lawn and Garden pest control](#) using integrated pest management and other environmentally friendly practices.

## RED Amendment and Opportunities for Public Comment

EPA amended the 2006 Organic Arsenicals RED to reflect the provisions of the agreement and published a [Federal Register Notice](#) announcing the Availability of the [RED Amendment](#) on May 6, 2009.

Public comment opportunities will be provided when EPA publishes Federal Register notices announcing the Agency's receipt of registrants' requests for voluntary cancellation of uses.

[↑Top of page](#)

[Publications](#) | [Glossary](#) | [A-Z Index](#) | [Jobs](#)

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