



# Health Advisory Summaries

EPA has prepared the attached Health Advisory Summaries for participants in the National Pesticide Survey and is now making them available to the general public. The Survey is testing a statistically representative sample of 1,350 wells — some in every state — in order to provide a national assessment of pesticide contamination of drinking water wells.

Health advisory information has been prepared for the substances listed below because of their potential for reaching drinking water. These pesticides are among the more than 100 pesticides and breakdown products that the Survey is testing for during its two-year study of private and community water system wells. The Health Advisory Summaries describe possible health effects of these pesticides and suggest actions that may be taken by a well owner or community system operator to ensure a safe drinking water supply.

The Summaries are based on longer, more technical scientific documents called Health Advisories, which identify, for each contaminant, the level of pesticide concentration in drinking water that would not pose a health risk. These levels, based on human data or experimental animal studies, include a "margin of safety."

Appropriate Health Advisory Summaries are sent to well owners and operators when the National Pesticide Survey finds pesticides in their drinking water wells. This information is also being made available to federal, state, and local officials and to industry, farm and environmental groups for further distribution. Health Advisory levels are offered as guidance. They are subject to change as new information becomes available. Experts can advise well owners on the appropriate actions to take if pesticides are found in drinking water.

Information on how to obtain the full Health Advisories or the Summaries can be obtained by calling the EPA's Safe Drinking Water Hotline's toll-free number, Monday to Friday, 8:30 a.m. - 4:30 p.m. EST. The number is 1-800-426-4791 or, in Washington, D.C., 382-5533.

For more information on the Survey, write to: Director, National Pesticide Survey, Office of Drinking Water (WH-550A), U.S. EPA, 401 M Street, S.W., Washington, D.C. 20460.

## LIST OF HEALTH ADVISORY SUMMARIES on DC 20004

Acifluorfen	Chlordane	Endrin	Pentachlorophenol
Alachlor	Chlorothalonil	Ethylene dibromide	Picloram
Aldicarb &	Cyanazine	Ethylene thiourea	Prometon
Aldicarb sulfone &	Dalapon	Fenamiphos	Pronamide
Aldicarb sulfoxide	2,4-D	Fluometuron	Propachlor
Ametryn	DBCP	Heptachlor &	Propazine
Atrazine	Diazinon	Heptachlor epoxide	Propham
Baygon	Dicamba	Hexachlorobenzene	Simazine
Bentazon	1,2-Dichloropropane	Hexazinone	2,4,5-T
Bromacil	1,3-Dichloropropene	Methomyl	2,4,5-TP (Silvex)
Butylate	Dieldrin	Methoxychlor	Tebuthiuron
Carbaryl	Dinoseb	Metolachlor	Terbacil
Carbofuran	Diphenamid	Metribuzin	Terbufos
Carboxin	Disulfoton	Nitrate/Nitrite	Trifluralin
Chloramben	Diuron	Oxamyl	



## HEALTH ADVISORY SUMMARY

### Acifluorfen

#### What is a Health Advisory?

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#### What is Acifluorfen?

Acifluorfen, also known as Blazer®, Carbofluorfen, Tackle®, and RH-6201, is a herbicide used to control weeds and grasses in soybeans and peanuts.

#### What Health Effects Might Be Caused by Acifluorfen in My Water?

**Non-Cancer Effects.** Consuming Acifluorfen at high levels over a long period of time has been shown to result in adverse health effects in animal studies, including damage to the heart, liver, and kidneys, changes in the blood, and delayed fetal development.

**Cancer Risk.** Acifluorfen also causes cancer in laboratory animals that are given high doses of the pesticide over the course of their lifetimes. Therefore, EPA considers Acifluorfen to be a probable human carcinogen (cancer causing agent). EPA estimates that if an individual consumes water containing Acifluorfen at **1 microgram per liter\*** over his or her entire lifetime, that person would have no more than a one-in-a-million chance of developing cancer as a direct result of drinking water containing this pesticide.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

These people can assist you in interpreting your sampling results. They may recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often retesting should be done.

Depending on the results of testing, your state or county health officials may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

At present, activated carbon adsorption and reverse osmosis appear to be possible methods for removing Aclfluorfen from water. However, these techniques may not be appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



## HEALTH ADVISORY SUMMARY

### Alachlor

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Alachlor.

#### What is Alachlor?

Alachlor, also known as Lasso®, is a herbicide, used to control annual grasses and broadleaf weeds in field corn, soybeans, and peanuts.

#### What Health Effects Might Be Caused by Alachlor in My Water?

**Non-Cancer Effects.** Consuming Alachlor has been shown to result in damage to the liver, kidneys, spleen, and eyes in animal studies.

**Cancer Risk.** Alachlor also causes cancer in laboratory animals that are given high doses of the pesticide over the course of their lifetimes. Therefore, EPA considers Alachlor to be a probable human carcinogen (cancer causing agent). EPA estimates that if an individual consumes water containing Alachlor at **0.4 micrograms per liter\*** over his or her entire lifetime, that person would theoretically have no more than a one-in-a-million chance of developing cancer as a direct result of drinking water containing this pesticide.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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These people can assist you in interpreting your sampling results. They may recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often retesting should be done.

Depending on the results of retesting, your state or county health officials may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or dig a new or deeper well. Treatment by granular activated carbon can remove Alachlor from water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

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## HEALTH ADVISORY SUMMARY

### Aldicarb (Sulfone and Sulfoxide)

#### What is a Health Advisory?

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#### What is Aldicarb?

Aldicarb, also known as Temik®, is a pesticide applied both to the soil and directly to plants to control insects, nematodes, and mites. Aldicarb sulfone and Aldicarb sulfoxide are oxidation derivatives of Aldicarb formed by many plants and animals after exposure to Aldicarb. Aldicarb sulfone, also known as Aldoxycarb, may also be used as a pesticide to control insects and mites. The detection of sulfone and sulfoxide oxidation products of Aldicarb indicates the use of Aldicarb. Therefore, this Health Advisory Summary for Aldicarb can also be used as guidance for Aldicarb sulfone and Aldicarb sulfoxide.

#### What Health Effects Might Be Caused by Aldicarb in My Water?

**Non-Cancer Effects.** EPA has set Lifetime Health Advisory levels of **1 microgram per liter\*** for concentrations of Aldicarb and Aldicarb sulfoxide in drinking water, and **2 micrograms per liter** for Aldicarb sulfone. (The Lifetime Health Advisory level for the combination of Aldicarb sulfone and either Aldicarb or Aldicarb sulfoxide in water is **1 microgram per liter**.) These levels include a margin of safety to protect human health and should be regarded as guidelines. EPA believes that water containing Aldicarb at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

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However, consuming water containing Aldicarb at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in inhibition of an enzyme called cholinesterase, in both humans and animals. Symptoms associated with inhibition of this enzyme in humans include nausea, vomiting, blurred vision, stomach cramps, excessive sweating, muscle weakness, headaches, and rapid heart rate.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Aldicarb can increase the risk of cancer in humans.

### **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Aldicarb or its derivatives is detected in your drinking well at or below the levels indicated above, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Aldicarb or its derivatives is detected in your water and confirmed by retesting at a level above the Lifetime Health Advisory level, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment by activated carbon adsorption can remove Aldicarb from water. However, this technique may not be appropriate or available in every circumstance. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8.30 A.M. to 4.30 P.M. E.S.T. at 1-800-426-4791

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# HEALTH ADVISORY SUMMARY

## Ametryn

### What is a Health Advisory?

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### What is Ametryn?

Ametryn, also known as Ametrex, or Gesapax®, is a herbicide used to control broadleaf and grassy weeds in pineapple, sugarcane, bananas, and plantains. Ametryn is also used on corn, potatoes and for general weed control.

### What Health Effects Might Be Caused by Ametryn in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Ametryn in drinking water at **60 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Ametryn at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Ametryn at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in liver damage in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Ametryn can increase the risk of cancer in humans.

### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Ametryn is detected in your drinking well at or below 60 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Ametryn is detected in your water and confirmed by retesting at a level above 60 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment by granular activated carbon can remove Ametryn from water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

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# HEALTH ADVISORY SUMMARY

## Atrazine

### What is a Health Advisory?

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### What is Atrazine?

Atrazine, also known as Atranex, or Crisazina®, is a herbicide used to control certain weeds in corn, sorghum, sugarcane, pineapple, and citrus fruits. It is also used for general weed control on industrial and non-cropped land.

### What Health Effects Might Be Caused by Atrazine in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Atrazine in drinking water at **3 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Atrazine at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Atrazine at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including tremors, changes in organ weights, and damage to the liver and heart.

**Cancer Risk.** Atrazine is considered by EPA to be a possible human carcinogen (cancer causing agent). There is limited or uncertain information indicating that Atrazine causes cancer in animals receiving high doses of the chemical over the course of their lifetimes. Because Atrazine in drinking water may possibly increase the risk of cancer in humans, the Lifetime Health Advisory includes an additional margin of safety.

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## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Atrazine is detected in your drinking well at or below 3 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Atrazine is detected in your water and confirmed by retesting at a level above 3 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment technologies that can remove Atrazine from water include granular and powdered activated carbon adsorption. Other technologies such as ion exchange, reverse osmosis, ozone oxidation, and ultraviolet irradiation are in the experimental stages for this pesticide and are not necessarily appropriate or available in every situation. Certain treatment methods are more suitable for large community water systems than for individual domestic wells. Your state or county health officials should be able to advise you on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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## HEALTH ADVISORY SUMMARY

### Baygon

#### What is a Health Advisory?

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#### What is Baygon?

Baygon, also known as Propoxur, Unden®, or Blattanex®, is an insecticide used against several kinds of insects, especially cockroaches, flies, and mosquitos.

#### What Health Effects Might Be Caused by Baygon in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Baygon in drinking water at **3 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Baygon at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Baygon at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in damage to various organs and the nervous system in animal studies, as well as inhibition of an enzyme called cholinesterase, in both humans and animals. Symptoms associated with inhibition of this enzyme include nausea, vomiting, blurred vision, stomach cramps, excessive sweating, muscle weakness, headaches, and rapid heart rate.

**Cancer Risk.** Baygon is considered by EPA to be a possible human carcinogen (cancer causing agent), based on limited or uncertain information that Baygon causes cancer in animals receiving high doses of the chemical over the course of their lifetimes. Because Baygon in drinking water may possibly increase the risk of cancer in humans, the Lifetime Health Advisory includes an additional margin of safety. EPA is currently reviewing recent evidence that may indicate that Baygon has a stronger potential to cause cancer than previously thought.

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## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Baygon is detected in your drinking well at or below 3 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Baygon is detected in your water and confirmed by retesting at a level above 3 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

At present, treatment by granular activated carbon adsorption appears to be a possible method for removing Baygon from water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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# HEALTH ADVISORY SUMMARY

## Bentazon

### What is a Health Advisory?

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### What is Bentazon?

Bentazon, also known as Basagran®, is a herbicide used to control broadleaf weeds in soybeans, rice, corn, peanuts, beans, peas, and mint.

### What Health Effects Might Be Caused by Bentazon in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Bentazon in drinking water at **20 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Bentazon at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Bentazon at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in excessive weight loss and inflammation of the prostate gland in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Bentazon can increase the risk of cancer in humans

### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Bentazon is detected in your drinking well at or below 20 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Bentazon is detected in your water and confirmed by retesting at a level above 20 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or dig a new or deeper well. At present, EPA has no information on treatment technologies that can effectively remove Bentazon from water.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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## HEALTH ADVISORY SUMMARY

### Bromacil

#### What is a Health Advisory?

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#### What is Bromacil?

Bromacil, also known as Borea®, Hyvar®, or Uragan®, is a herbicide used for general weed and brush control in noncrop areas. It is particularly useful against perennial grasses.

#### What Health Effects Might Be Caused by Bromacil in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Bromacil in drinking water at **90 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Bromacil at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Bromacil at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in damage to the testes, liver, and thyroid in animal studies.

**Cancer Risk.** Bromacil is considered by EPA to be a possible carcinogen (cancer causing agent). There is limited or uncertain information indicating that Bromacil causes cancer in animals receiving high doses of the chemical over the course of their lifetimes. Because Bromacil in drinking water may possibly increase the risk of cancer in humans, the Lifetime Health Advisory includes an additional margin of safety.

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## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Bromacil is detected in your drinking well at or below 90 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Bromacil is detected in your water and confirmed by retesting at a level above 90 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or dig a new or deeper well. At present, EPA has no information on treatment technologies that can effectively remove Bromacil from drinking water.

## **Where Can I Get More Information?**

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# HEALTH ADVISORY SUMMARY

## Butylate

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### What is Butylate?

Butylate, also known as R-1910 or Sutan®, is a herbicide used to control most grassy weeds, including nutgrass, in corn.

### What Health Effects Might Be Caused by Butylate in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Butylate in drinking water at **350 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Butylate at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Butylate at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including damage to the testes, liver, and kidneys, and delayed fetal development.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Butylate can increase the risk of cancer in humans.

### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Butylate is detected in your drinking well at or below 350 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Butylate is detected in your water and confirmed by retesting at a level above 350 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or dig a new or deeper well. At present, EPA has no information on the effectiveness of treatment technologies in removing Butylate from drinking water, but activated carbon adsorption is considered likely to be effective.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



## HEALTH ADVISORY SUMMARY

### Carbaryl

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Carbaryl.

#### What is Carbaryl?

Carbaryl, also known as Sevin®, is an insecticide used for the control of pests on more than 100 different crops, and on forests, lawns, ornamentals, shade trees and rangeland.

#### What Health Effects Might Be Caused by Carbaryl in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Carbaryl in drinking water at **700 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Carbaryl at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Carbaryl at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in damage to the liver and kidneys and reduced fertility in animal studies, as well as inhibition of an enzyme called cholinesterase, in both humans and animals. Symptoms associated with inhibition of this enzyme in humans include nausea, vomiting, blurred vision, stomach cramps, excessive sweating, muscle weakness, headaches, and rapid heart rate.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Carbaryl can increase the risk of cancer in humans.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Carbaryl is detected in your drinking well at or below 700 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Carbaryl is detected in your water and confirmed by retesting at a level above 700 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment technologies that can remove Carbaryl from water include activated carbon adsorption, ozonation, and conventional water treatment (coagulation, settling, and filtration). However, these techniques are not necessarily appropriate or available in every situation. Certain treatment methods are more suitable for large community water systems than for individual domestic wells. Your state or county health officials should be able to advise you on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378



# HEALTH ADVISORY SUMMARY

## Carbofuran

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Carbofuran.

### What is Carbofuran?

Carbofuran, also known as Furadan, or Curater®<sup>®</sup>, is a pesticide used to control insects, mites, and nematodes on corn and a variety of other crops.

### What Health Effects Might Be Caused by Carbofuran in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Carbofuran in drinking water at **40 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Carbofuran at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Carbofuran at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in damage to the testes and uterus in animal studies, as well as inhibition of an enzyme called cholinesterase, in both humans and animals. Symptoms associated with inhibition of this enzyme in humans include nausea, vomiting, blurred vision, stomach cramps, excessive sweating, muscle weakness, headaches, and rapid heart rate.

**Cancer Risk.** Sufficient data are available from animal studies to indicate that Carbofuran does not increase the risk of cancer in humans.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Carbofuran is detected in your drinking well at or below 40 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Carbofuran is detected in your water and confirmed by retesting at a level above 40 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

A number of treatment technologies may be effective in removing Carbofuran from water, including granular or powdered activated carbon adsorption and lime softening. However, these techniques are not necessarily appropriate or available in every situation. Certain treatment methods are more suitable for large community water systems than for individual domestic wells. Reverse osmosis and oxidation by ozone or ozone/ultraviolet light are also possible treatment technologies, although they are still considered experimental for removal of Carbofuran from water. Your state or county health officials should be able to advise you on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



# HEALTH ADVISORY SUMMARY

## Carboxin

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available laboratory studies in animals and conducts an expert evaluation of potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Carboxin.

### What is Carboxin?

Carboxin, also known as D-735, DCMO, or Vitavax®, is used as a seed protectant and wood preservative and to control fungus.

### What Health Effects Might Be Caused by Carboxin in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Carboxin in drinking water at **700 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Carboxin at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Carboxin at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including damage to the kidneys and liver and reduced growth in offspring.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Carboxin can increase the risk of cancer in humans.

### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion



These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Carboxin is detected in your drinking well at or below 700 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Carboxin is detected in your water and confirmed by retesting at a level above 700 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Activated carbon adsorption and reverse osmosis may be effective treatment methods for removing Carboxin from water. However, these techniques are not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



# HEALTH ADVISORY SUMMARY

## Chloramben

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Chloramben.

### What is Chloramben?

Chloramben, also known as Amiben, or Vegiben®, is a herbicide used for weed control in corn, beans, peanuts, asparagus, soybeans, squash, sunflowers, sweet potatoes, and other crops.

### What Health Effects Might Be Caused by Chloramben in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Chloramben in drinking water at **100 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Chloramben at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Chloramben at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in liver damage, delayed fetal development, and higher fetal mortality in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Chloramben can increase the risk of cancer in humans.

### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Chloramben is detected in your drinking well at or below 100 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Chloramben is detected in your water and confirmed by retesting at a level above 100 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Activated carbon adsorption and ion exchange appear to be possible treatment methods for removing Chloramben from water. However, these techniques are not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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# HEALTH ADVISORY SUMMARY

## Chlordane

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Chlordane.

### What is Chlordane?

Chlordane, also known as Dichlorodene, Octachlor®, or Velsicol-1068®, is a pesticide that was formerly used to control termites in homes and to control other insects on a variety of food crops. Chlordane is manufactured by the Velsicol Chemical Corporation. Most uses of Velsicol-formulations were cancelled by EPA in November 1987. Registration with EPA of Chlordane by the Velsicol Chemical Corporation for limited use in pre- and post-construction was allowed until April 1988. Use of non-Velsicol formulations of Chlordane for commercial treatment was allowed until April 15, 1988. All uses of Chlordane were conditionally cancelled by EPA in April 1988.

EPA and Velsicol reached an agreement that Velsicol would be permitted to conditionally register Chlordane with the EPA for selected pre- and post-construction uses pending the results of 4 months of satisfactory testing. Any detection of Chlordane in a test of a specific use of the chemical will result in a cancellation of that use. Conditional registration of Chlordane would also require additional post-test monitoring for 2 years. If Chlordane were to be detected at any time during the 2-year period, registration would be cancelled by EPA. Results of any testing by Velsicol are not yet available.

### What Health Effects Might Be Caused by Chlordane in My Water?

**Non-Cancer Effects.** Consuming Chlordane has been shown to result in liver damage and central nervous system effects in animal studies.

**Cancer Risk.** Chlordane also causes cancer in laboratory animals that are given high doses of the pesticide over the course of their lifetimes. Therefore, EPA considers Chlordane to be a probable human carcinogen (cancer causing agent). EPA estimates that if an individual consumes water containing Chlordane at ***0.03 micrograms per liter\**** over his or her entire lifetime, that person would theoretically have about a one-in-a-million chance of developing cancer as a direct result of drinking water containing this pesticide.

## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people can assist you in interpreting your sampling results. They may recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often retesting should be done.

Depending on the results of retesting, your state or county health officials may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Chlordane can be removed from water by granular or powdered activated carbon adsorption and possibly by aeration. However, these treatment techniques are not necessarily appropriate or available in every situation. Certain treatment methods are more suitable for large community water systems than for individual domestic wells. Your state or county health officials should be able to advise you on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.U.S

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.



# HEALTH ADVISORY SUMMARY

## Chlorothalonil

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Chlorothalonil.

### What is Chlorothalonil?

Chlorothalonil, also known as Bravo, or Daconil®, is a pesticide used to control fungus on beans, carrots, celery, corn, conifers, peanuts, ornamentals, and many other crops.

### What Health Effects Might Be Caused by Chlorothalonil in My Water?

**Non-Cancer Effects.** Consuming Chlorothalonil has been shown to result in kidney damage and excessive weight loss in animal studies.

**Cancer Risk.** Chlorothalonil also causes cancer in laboratory animals that are given high doses of the pesticide over the course of their lifetimes. Therefore, EPA considers Chlorothalonil to be a probable human carcinogen (cancer causing agent). EPA estimates that if an individual consumes water containing Chlorothalonil at **2 micrograms per liter\*** over his or her entire lifetime, that person would theoretically have no more than a one-in-a-million chance of developing cancer as a direct result of drinking water containing this pesticide.

### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.

These people can assist you in interpreting your sampling results. They may recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often retesting should be done.

Depending on the results of retesting, your state or county health officials may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water, or dig a new or deeper well.

At present, treatment by activated carbon adsorption and reverse osmosis appear to be possible methods for removing Chlorothalonil from water. However, these techniques may not be appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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## HEALTH ADVISORY SUMMARY

### Cyanazine

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Cyanazine.

#### What is Cyanazine?

Cyanazine, also known as Bladex, is used as a herbicide for the control of annual grasses and broadleaf weeds.

#### What Health Effects Might Be Caused by Cyanazine in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Cyanazine in drinking water at **10 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Cyanazine at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Cyanazine at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including damage to the liver, changes in organ weights, changes in the blood, birth defects, and convulsions.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Cyanazine can increase the risk of cancer in humans.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.



These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Cyanazine is detected in your drinking well at or below 10 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Cyanazine is detected in your water and confirmed by retesting at a level above 10 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment by granular activated carbon adsorption can remove Cyanazine from water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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## HEALTH ADVISORY SUMMARY

### Dalapon

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Dalapon.

#### What is Dalapon?

Dalapon, also known as Dowpon, or Ded-Weed®, is a herbicide used to control grasses in crops, along railroads and drainage ditches, and in industrial areas.

#### What Health Effects Might Be Caused by Dalapon in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Dalapon in drinking water at **200 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Dalapon at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Dalapon at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in changes in kidney and liver weights in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Dalapon can increase the risk of cancer in humans.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Dalapon is detected in your drinking well at or below 200 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Dalapon is detected in your water and confirmed by retesting at a level above 200 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Activated carbon adsorption and ion exchange may be effective treatment methods for removing Dalapon from drinking water. However, EPA has little experimental information on which to base a recommendation for selecting treatment technologies. Your state or county health officials should be consulted on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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## HEALTH ADVISORY SUMMARY

### 2,4-Dichlorophenoxyacetic Acid (2,4-D)

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for 2,4-Dichlorophenoxyacetic Acid.

#### What is 2,4-Dichlorophenoxyacetic Acid

2,4-Dichlorophenoxyacetic Acid, also known as 2,4-D or Aqua Kleen®, is a herbicide used on wheat, corn, and barley, and on rangeland, pasture, and lawns.

#### What Health Effects Might Be Caused by 2,4-D in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for 2,4-D in drinking water at **70 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing 2,4-D at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming 2,4-D at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in damage to the liver and kidneys, gastrointestinal irritation, changes in the blood, and decreased fetal weight in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if 2,4-D can increase the risk of cancer in humans.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if 2,4-D is detected in your drinking well at or below 70 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If 2,4-D is detected in your water and confirmed by retesting at a level above 70 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Conventional treatment methods such as coagulation and filtration are not effective for removal of 2,4-D from water. Treatment technologies that may be effective include adsorption by granular or powdered activated carbon and reverse osmosis. However, these techniques are not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



## HEALTH ADVISORY SUMMARY

### 1,2-Dibromo-3-Chloropropane (DBCP)

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for DBCP.

#### What is DBCP?

DBCP, also known as Nemaflume®, is a pesticide which was widely used until 1979 to control nematodes on more than 40 crops. All uses of DBCP in the U.S. have been cancelled by EPA.

#### What Health Effects Might Be Caused by DBCP in My Water?

**Non-Cancer Effects.** Consuming DBCP has been shown to result in adverse health effects in animal studies, including decreased sperm production and damage to the kidneys, liver, and testes.

**Cancer Risk.** DBCP also causes cancer in laboratory animals that are given high doses of the pesticide over the course of their lifetimes. Therefore, EPA considers DBCP to be a probable human carcinogen (cancer causing agent). EPA estimates that if an individual consumes water containing DBCP at **0.03 micrograms per liter\*** over his or her entire lifetime, that person would theoretically have no more than a one-in-a-million chance of developing cancer as a direct result of drinking water containing this pesticide.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

These people can assist you in interpreting your sampling results. They may recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often retesting should be done.

Depending on the results of retesting, your state or county health officials may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water, or dig a new or deeper well.

Treatment technologies that can remove DBCP from water include aeration and carbon adsorption. However, these techniques are not necessarily appropriate or available in every situation. Certain treatment methods are more suitable for large community water systems than for individual domestic wells. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



# HEALTH ADVISORY SUMMARY

## Diazinon

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Diazinon.

### What is Diazinon?

Diazinon, also known as Spectracide®, Basudin®, or AG-500, is a soil insecticide used to control insects in fruit, vegetables, tobacco, forage, and other field crops, and on pasture and grass lands. It is also used for nematode control in turf and for seed treatment and fly control.

### What Health Effects Might Be Caused by Diazinon in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Diazinon in drinking water at **0.6 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Diazinon at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Diazinon at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in inhibition of an enzyme called cholinesterase, in both humans and animals. Symptoms associated with inhibition of this enzyme in humans include nausea, vomiting, blurred vision, stomach cramps, excessive sweating, muscle weakness, headaches, and rapid heart rate.

**Cancer Risk.** Sufficient data are available from animal studies to indicate that Diazinon does not increase the risk of cancer in humans.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion



## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Diazinon is detected in your drinking well at or below 0.6 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Diazinon is detected in your water and confirmed by retesting at a level above 0.6 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment technologies that can remove Diazinon from water to varying degrees include reverse osmosis, granular activated carbon adsorption, and ozonation. However, not all of these techniques are necessarily appropriate or available in every situation. Certain treatment methods are more suitable for large community water systems than for individual domestic wells. Your state or county health officials should be able to advise you on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



# HEALTH ADVISORY SUMMARY

## Dicamba

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Dicamba.

### What is Dicamba?

Dicamba, also known as Banvel®, is a herbicide used to control broadleaf weeds in corn, sorghum, grains, asparagus, and grass seed crops, and on pasture, rangeland, and non-cropland areas such as fence rows and roadways. It is also used to control brush and vines in non-cropland, pasture, and rangeland areas.

### What Health Effects Might Be Caused by Dicamba in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Dicamba in drinking water at **200 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Dicamba at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Dicamba at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including changes in the liver and a decrease in body weight.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Dicamba can increase the risk of cancer in humans.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Dicamba is detected in your drinking well at or below 200 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Dicamba is detected in your water and confirmed by retesting at a level above 200 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

At present, granular activated carbon adsorption appears to be a possible treatment method for removing Dicamba from water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be consulted on the best course of action.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



## HEALTH ADVISORY SUMMARY

### 1,2-Dichloropropane

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for 1,2-Dichloropropane.

#### What is 1,2-Dichloropropane?

1,2-Dichloropropane, also known as Propylene dichloride or 1,2-DCP, is used as a solvent for oils and fats, as a solvent for dry cleaning and degreasing operations, and as a component of soil fumigants.

#### What Health Effects Might Be Caused by 1,2-Dichloropropane in My Water?

**Non-Cancer Effects.** Consuming 1,2-Dichloropropane has been shown to result in liver damage in animal studies.

**Cancer Risk.** 1,2-Dichloropropane also causes cancer in laboratory animals that are given high doses of the pesticide over the course of their lifetimes. Therefore, EPA considers 1,2-Dichloropropane to be a probable human carcinogen (cancer causing agent). EPA estimates that if an individual consumes water containing 1,2-Dichloropropane at **0.6 micrograms per liter\*** over his or her entire lifetime, that person would theoretically have no more than a one-in-a-million chance of developing cancer as a direct result of drinking water containing this pesticide.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

These people can assist you in interpreting your sampling results. They may recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often retesting should be done.

Depending on the results of retesting, your state or county health officials may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water, or dig a new or deeper well.

The best available treatment technologies for removing 1,2-Dichloropropane from water are granular activated carbon adsorption and packed tower aeration (air stripping). However, these techniques are not necessarily appropriate or available in every situation. Certain treatment methods are more suitable for large community water systems than for individual domestic wells. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



## HEALTH ADVISORY SUMMARY

### 1,3-Dichloropropene

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for 1,3-Dichloropropene.

#### What is 1,3-Dichloropropene?

1,3-Dichloropropene, also known as DCP or Telone, is a soil fumigant used to control a wide variety of plant pests. Its major use is for nematode control on crops grown in sandy soils of the Eastern, Southern, and Western United States.

#### What Health Effects Might Be Caused by 1,3-Dichloropropene in My Water?

**Non-Cancer Effects.** Consuming 1,3-Dichloropropene has been shown to result in damage to the bladder and kidneys in animal studies.

**Cancer Risk.** 1,3-Dichloropropene also causes cancer in laboratory animals that are given high doses of the pesticide over the course of their lifetimes. Therefore, EPA considers 1,3-Dichloropropene to be a probable human carcinogen (cancer causing agent). EPA estimates that if an individual consumes water containing 1,3-Dichloropropene at **0.2 micrograms per liter\*** over his or her entire lifetime, that person would theoretically have no more than a one-in-a-million chance of developing cancer as a direct result of drinking water containing this pesticide.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

These people can assist you in interpreting your sampling results. They may recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often retesting should be done.

Depending on the results of retesting, your state or county health officials may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water, or dig a new or deeper well.

At present, granular activated carbon adsorption may be a possible treatment method for removing 1,3-Dichloropropene from water. However, this technique is not necessarily appropriate or available in every situation. EPA has no information on any other treatment methods that are effective for removing 1,3-Dichloropropene. Your state or county health officials should therefore be consulted on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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# HEALTH ADVISORY SUMMARY

## Dieldrin

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Dieldrin.

### What is Dieldrin?

Dieldrin, also known as HEOD or Dieldrex®, is a pesticide that was formerly used to control soil insects, termites, and many other pests. These uses have been cancelled, and manufacture of Dieldrin has been discontinued in the United States.

### What Health Effects Might Be Caused by Dieldrin in My Water?

**Non-Cancer Effects.** Consuming Dieldrin has been shown to result in adverse health effects in animal studies, including damage to the bladder and liver, convulsions, chromosomal abnormalities, weight loss, and birth defects (in one species of animal but not in others).

**Cancer Risk.** Dieldrin also causes cancer in laboratory animals that are given high doses of the pesticide over the course of their lifetimes. Therefore, EPA considers Dieldrin to be a probable human carcinogen (cancer causing agent). EPA estimates that if an individual consumes water containing Dieldrin at **0.002 micrograms per liter\*** over his or her entire lifetime, that person would theoretically have no more than a one-in-a-million chance of developing cancer as a direct result of drinking water containing this pesticide.

### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion



These people can assist you in interpreting your sampling results. They may recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often retesting should be done.

Depending on the results of retesting, your state or county health officials may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water, or dig a new or deeper well.

There are a number of treatment technologies that can remove Dieldrin from water to varying degrees, including reverse osmosis, granular activated carbon adsorption, ozonation, and conventional treatment. However, these techniques are not necessarily appropriate or available in every situation. Certain treatment methods are more suitable for large community water systems than for individual domestic wells. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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# HEALTH ADVISORY SUMMARY

## Dinoseb

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Dinoseb.

### What is Dinoseb?

Dinoseb, also known as DNBP or Dinitro, is used as a herbicide, desiccant, and dormant fruit spray.

### What Health Effects Might Be Caused by Dinoseb in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Dinoseb in drinking water at **7 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Dinoseb at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Dinoseb at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including changes in liver and thyroid weights, reduced fertility, decreased sperm count, increased incidences of abnormal sperm, reduced fetal weight and survival, and birth defects.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Dinoseb can increase the risk of cancer in humans.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.

## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Dinoseb is detected in your drinking well at or below 7 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Dinoseb is detected in your water and confirmed by retesting at a level above 7 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment technologies that can remove Dinoseb from water include activated carbon adsorption and ion exchange. However, these techniques are not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



## HEALTH ADVISORY SUMMARY

### Diphenamid

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Diphenamid.

#### What is Diphenamid?

Diphenamid, also known as Dymid® or Enide®, is a herbicide used for tomatoes, peanuts, alfalfa, soybean, cotton and other crops.

#### What Health Effects Might Be Caused by Diphenamid in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Diphenamid in drinking water at **200 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Diphenamid at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Diphenamid at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in damage to the liver and thyroid in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Diphenamid can increase the risk of cancer in humans.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Diphenamid is detected in your drinking well at or below 200 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Diphenamid is detected in your water and confirmed by retesting at a level above 200 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment by granular activated carbon can remove Diphenamid from water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791

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# HEALTH ADVISORY SUMMARY

## Disulfoton

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Disulfoton.

### What is Disulfoton?

Disulfoton, also known as Disyston® or Dithiodemeton®, is applied to seeds to control various species of insects and mites

### What Health Effects Might Be Caused by Disulfoton in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Disulfoton in drinking water at **0.3 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Disulfoton at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Disulfoton at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including changes in organ weights, damage to the eyes, genetic mutations, and inhibition of an enzyme called cholinesterase. Symptoms associated with inhibition of cholinesterase in humans include nausea, vomiting, blurred vision, stomach cramps, excessive sweating, muscle weakness, headaches, and rapid heart rate.

**Cancer Risk.** In a review of available laboratory information, EPA has determined that there is no evidence that Disulfoton can increase the risk of cancer in humans.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Disufoton is detected in your drinking well at or below 0.3 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Disufoton is detected in your water and confirmed by retesting at a level above 0.3 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or dig a new or deeper well. At present, EPA has no information on treatment technologies that can effectively remove Disulfoton from water.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



# HEALTH ADVISORY SUMMARY

## Diuron

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Diuron.

### What is Diuron?

Diuron, also known as DCMU or Karmex®, is a herbicide used to control broadleaf and grassy weeds in numerous crops, including sugarcane, pineapple, alfalfa, grapes, cotton, and peppermint.

### What Health Effects Might Be Caused by Diuron in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Diuron in drinking water at **10 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Diuron at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Diuron at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including damage to the spleen, abnormal fetal development, and a blood condition called methemoglobinemia. Methemoglobinemia, also known as blue baby syndrome, is characterized by a reduced ability of the blood to carry oxygen.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Diuron can increase the risk of cancer in humans.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.



## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Diuron is detected in your drinking well at or below 10 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Diuron is detected in your water and confirmed by retesting at a level above 10 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Conventional water treatment techniques (coagulation, sedimentation, and filtration) do not appear to be effective in removing Diuron from water. Treatment technologies that are effective include granular or powdered activated carbon adsorption and chlorination. However, these techniques are not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



## HEALTH ADVISORY SUMMARY

### Endrin

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Endrin.

#### What is Endrin?

Endrin is a pesticide that was formerly used to control cutworms, grasshoppers, and moles. Endrin is currently registered for use only for the control of pest birds (bird perch treatment). All other uses have been cancelled by EPA. The Endrin technical product is no longer available in the United States. When the current supply of Endrin is depleted, the use of Endrin for bird perch treatment will also be eliminated.

#### What Health Effects Might Be Caused by Endrin in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Endrin in drinking water at **2 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Endrin at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Endrin at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in convulsions and damage to the liver in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Endrin can increase the risk of cancer in humans.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Endrin is detected in your drinking well at or below 2 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Endrin is detected in your water and confirmed by retesting at a level above 2 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

There are a number of treatment technologies that can remove Endrin from water, including granular or powdered activated carbon adsorption, reverse osmosis, and coagulation/filtration. However, not all these techniques are necessarily appropriate or available in every situation. Certain treatment methods are more suitable for large community water systems than for individual domestic wells. Your state or county health officials should be able to advise you on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



## HEALTH ADVISORY SUMMARY

### Ethylene Dibromide

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Ethylene Dibromide.

#### What is Ethylene Dibromide?

Ethylene Dibromide, also known as EDB, Dowfume®, and Pestmaster®, was formerly used as a pesticide and fumigant for soil, grain, and fruit. In the last few years, all pesticidal uses of EDB have been cancelled by EPA.

#### What Health Effects Might Be Caused by Ethylene Dibromide in My Water?

**Non-Cancer Effects.** Consuming Ethylene Dibromide has been shown to result in adverse health effects in animal studies, including damage to the liver, kidneys, and testes (including effects on sperm), genetic mutations, and chromosomal damage.

**Cancer Risk.** Ethylene Dibromide also causes cancer in laboratory animals that are given high doses of the pesticide over the course of their lifetimes. Therefore, EPA considers Ethylene Dibromide to be a probable human carcinogen (cancer causing agent). EPA estimates that if an individual consumes water containing Ethylene Dibromide at **0.0004 micrograms per liter\*** over his or her entire lifetime, that person would theoretically have no more than a one-in-a-million chance of developing cancer as a direct result of drinking water containing this pesticide.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.

These people can assist you in interpreting your sampling results. They may recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often retesting should be done.

Depending on the results of retesting, your state or county health officials may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water, or dig a new or deeper well.

At present, aeration, boiling, and activated carbon adsorption appear to be possible methods for removing Ethylene Dibromide from water. However, these treatment techniques are not necessarily appropriate or available in every situation. Certain treatment methods are more suitable for large community water systems than for individual domestic wells. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



## HEALTH ADVISORY SUMMARY

### Ethylene Thiourea

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Ethylene Thiourea.

#### What is Ethylene Thiourea?

Ethylene Thiourea, also known as ETU, is not a pesticide itself and is no longer used in commerce. ETU is a breakdown product of several other pesticides called EBDC (ethylene bisdithiocarbamate) pesticides. EBDC pesticides are used to control fungus on roses and other flowers and a broad range of crops including potatoes, tomatoes, lettuce, apples, pears, and hops.

#### What Health Effects Might Be Caused by Ethylene Thiourea in My Water?

**Non-Cancer Effects.** Consuming Ethylene Thiourea has been shown to result in damage to the thyroid gland, genetic mutations, and birth defects in animal studies.

**Cancer Risk.** Ethylene Thiourea also causes cancer in laboratory animals that are given high doses of the chemical over the course of their lifetimes. Therefore, EPA considers Ethylene Thiourea to be a probable human carcinogen (cancer causing agent). EPA estimates that if an individual consumes water containing Ethylene Thiourea at **0.2 micrograms per liter\*** over his or her entire lifetime, that person would theoretically have no more than a one-in-a-million chance of developing cancer as a direct result of drinking water containing Ethylene Thiourea.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

These people can assist you in interpreting your sampling results. They may recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often retesting should be done.

Depending on the results of retesting, your state or county health officials may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or dig a new or deeper well. At present, EPA has no information on treatment technologies that can effectively remove Ethylene Thiourea from water. Based on the chemical and physical properties of Ethylene Thiourea, EPA believes that treatment by ion exchange or aeration would probably not be effective.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



## HEALTH ADVISORY SUMMARY

### Fenamiphos

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Fenamiphos.

#### What is Fenamiphos?

Fenamiphos, also known as Nemacur®, is a pesticide used for nematode control on cotton, peanuts, soybeans, certain vegetables, deciduous fruit, citrus, pineapple, tobacco, turf, and certain ornamentals.

#### What Health Effects Might Be Caused by Fenamiphos in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Fenamiphos in drinking water at **2 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Fenamiphos at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Fenamiphos at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including changes in organ weights, reduced fetal weight and survival, abnormalities in fetal bone development, and inhibition of an enzyme called cholinesterase. Symptoms associated with inhibition of this enzyme in humans include nausea, vomiting, blurred vision, stomach cramps, excessive sweating, muscle weakness, headaches, and rapid heart rate.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Fenamiphos can increase the risk of cancer in humans.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion



## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Fenamiphos is detected in your drinking well at or below 2 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Fenamiphos is detected in your water and confirmed by retesting at a level above 2 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or dig a new or deeper well. At present, EPA has no information on treatment technologies that can effectively remove Fenamiphos from water.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



# HEALTH ADVISORY SUMMARY

## Fluometuron

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Fluometuron.

### What is Fluometuron?

Fluometuron, also known as Cotoron® or C-2059, is a herbicide used to control annual grasses and broadleaf weeds.

### What Health Effects Might Be Caused by Fluometuron in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Fluometuron in drinking water at **90 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Fluometuron at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Fluometuron at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in damage to the liver, kidneys, and spleen in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Fluometuron can increase the risk of cancer in humans.

### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Fluometuron is detected in your drinking well at or below 90 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Fluometuron is detected in your water and confirmed by retesting at a level above 90 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment by granular activated carbon is the most promising method for removing Fluometuron from water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



## HEALTH ADVISORY SUMMARY

### Heptachlor and Heptachlor Epoxide

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Heptachlor and Heptachlor Epoxide.

#### What are Heptachlor and Heptachlor Epoxide?

Heptachlor, also known as 3-Chlorochlordene, is an insecticide which was formerly used on corn, alfalfa, hay and vegetables, and for the control of termites. All uses of Heptachlor have been cancelled by EPA as of April 1988. Heptachlor epoxide is an oxidation derivative of Heptachlor formed by many plants and animals, including humans, after exposure to Heptachlor. Heptachlor epoxide also exists as a contaminant in Heptachlor. The detection of the epoxide breakdown product of Heptachlor indicates the use of Heptachlor.

#### What Health Effects Might Be Caused by Heptachlor and Heptachlor Epoxide in My Water?

**Non-Cancer Effects.** Consuming Heptachlor or Heptachlor Epoxide has been shown to result in damage to the liver and chromosomes in animal studies.

**Cancer Risk.** Heptachlor and Heptachlor epoxide also cause cancer in laboratory animals that are given high doses of these pesticides over the course of their lifetimes. Therefore, EPA considers Heptachlor and Heptachlor Epoxide to be probable human carcinogens (cancer causing agents). EPA estimates that if an individual consumes water containing Heptachlor at **0.008 micrograms per liter\*** or Heptachlor Epoxide at **0.004 micrograms per liter** over his or her entire lifetime, that person would theoretically have no more than a one-in-a-million chance of developing cancer as a direct result of drinking water containing these pesticides.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

### **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people can assist you in interpreting your sampling results. They may recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often retesting should be done.

Depending on the results of retesting, your state or county health officials may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water, or dig a new or deeper well.

Treatment technologies that may be effective in removing Heptachlor from water include granular activated carbon adsorption and packed tower aeration (air stripping). However, these techniques are not necessarily appropriate or available in every situation. Certain treatment methods are more suitable for large community water systems than for individual domestic wells. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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# HEALTH ADVISORY SUMMARY

## Hexachlorobenzene

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Hexachlorobenzene.

### What is Hexachlorobenzene?

Hexachlorobenzene, also known as HCB or Perchlorobenzene, is an ingredient of pesticides used to control fungus on wheat.

### What Health Effects Might Be Caused by Hexachlorobenzene in My Water?

**Non-Cancer Effects.** Consuming Hexachlorobenzene has been shown to result in adverse health effects in animal studies, including damage to the liver, kidneys, ovaries, and skin, decreased fetal weight, and adverse effects on the nervous system.

**Cancer Risk.** Hexachlorobenzene also causes cancer in laboratory animals that are given high doses of the pesticide over the course of their lifetimes. Therefore, EPA considers Hexachlorobenzene to be a probable human carcinogen (cancer causing agent). EPA estimates that if an individual consumes water containing Hexachlorobenzene at **0.02 micrograms per liter\*** over his or her entire lifetime, that person would theoretically have no more than a one-in-a-million chance of developing cancer as a direct result of drinking water containing this pesticide.

### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

These people can assist you in interpreting your sampling results. They may recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often retesting should be done.

Depending on the results of retesting, your state or county health officials may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water, or dig a new or deeper well.

At present, activated carbon adsorption appears to be a possible method for removing Hexachlorobenzene from water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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# HEALTH ADVISORY SUMMARY

## Hexazinone

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Hexazinone.

### What is Hexazinone?

Hexazinone, also known as Velpar®, is used as a herbicide in a variety of applications including plantations of coniferous trees, utilities, pipelines, drainage ditches, and sugar and alfalfa croplands.

### What Health Effects Might Be Caused by Hexazinone in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Hexazinone in drinking water at **200 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Hexazinone at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Hexazinone at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including damage to the liver and blood, reduced body weight in offspring, and chromosomal damage.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Hexazinone can increase the risk of cancer in humans.

### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.



These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Hexazinone is detected in your drinking well at or below 200 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Hexazinone is detected in your water and confirmed by retesting at a level above 200 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or dig a new or deeper well. At present, EPA has no information on treatment technologies that can effectively remove Hexazinone from water.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



## HEALTH ADVISORY SUMMARY

### Methomyl

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Methomyl.

#### What is Methomyl?

Methomyl, also known as Dupont 1179, Lannate®, or Nudrin®, is an insecticide used to control a variety of insects in agricultural and ornamental crops.

#### What Health Effects Might Be Caused by Methomyl in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Methomyl in drinking water at **200 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Methomyl at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Methomyl at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse effects on the kidney, spleen, liver, and bone marrow in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Methomyl can increase the risk of cancer in humans.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Methomyl is detected in your drinking well at or below 200 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Methomyl is detected in your water and confirmed by retesting at a level above 200 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment by granular activated carbon can remove Methomyl from water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



# HEALTH ADVISORY SUMMARY

## Methoxychlor

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Methoxychlor.

### What is Methoxychlor?

Methoxychlor, also known as Malate®, DMDT, or Methoxy-DDT, is used as an insecticide to control mosquito larvae, horseflies, and many other species of insects. It is used on fruit and shade trees, vegetables, dairy and beef cattle, home gardens, and around farm buildings.

### What Health Effects Might Be Caused by Methoxychlor in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Methoxychlor in drinking water at **400 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Methoxychlor at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Methoxychlor at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in inhibition of growth in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Methoxychlor can increase the risk of cancer in humans.

### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Methoxychlor is detected in your drinking well at or below 400 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Methoxychlor is detected in your water and confirmed by retesting at a level above 400 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment technologies that can remove Methoxychlor from water include granular activated carbon adsorption and reverse osmosis. However, these techniques are not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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## HEALTH ADVISORY SUMMARY

### Metolachlor

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Metolachlor.

#### What is Metolachlor?

Metolachlor, also known as Dual® or Primextra®, is a herbicide used for weed control in woody ornamentals, sunflowers, corn, soybeans, peanuts, pod crops, cotton, and other crops.

#### What Health Effects Might Be Caused by Metolachlor in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Metolachlor in drinking water at **100 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Metolachlor at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Metolachlor at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including damage to the testes and a blood condition known as methemoglobinemia. Methemoglobinemia, also known as blue baby syndrome, is characterized by a reduced ability of the blood to carry oxygen.

**Cancer Risk.** Metolachlor is considered by EPA to be a possible human carcinogen (cancer causing agent). There is limited or uncertain information that Metolachlor causes cancer in animals receiving high doses of the chemical over the course of their lifetimes. Because Metolachlor in drinking water may possibly increase the risk of cancer in humans, the Lifetime Health Advisory includes an additional margin of safety.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Metolachlor is detected in your drinking well at or below 100 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Metolachlor is detected in your water and confirmed by retesting at a level above 100 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

At present, treatment by granular activated carbon appears to be the most promising method for removing Metolachlor from water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be consulted on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



## HEALTH ADVISORY SUMMARY

### Metribuzin

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Metribuzin.

#### What is Metribuzin?

Metribuzin, also known as Lexone® or Sencor®, is a herbicide used for the control of a large number of grass and broadleaf weeds infesting agricultural crops.

#### What Health Effects Might Be Caused by Metribuzin in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Metribuzin in drinking water at **200 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Metribuzin at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Metribuzin at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in kidney damage in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Metribuzin can increase the risk of cancer in humans.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.



These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Metribuzin is detected in your drinking well at or below 200 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Metribuzin is detected in your water and confirmed by retesting at a level above 200 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Granular activated carbon can remove Metribuzin from water. However, this treatment technique may not be appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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## HEALTH ADVISORY SUMMARY

### Nitrate/Nitrite

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Nitrate and Nitrite.

#### What are Nitrate and Nitrite?

Nitrate and Nitrite are naturally occurring inorganic ions which make up part of the nitrogen cycle. Nitrates occur naturally in a number of foods, particularly vegetables. Both Nitrate and Nitrite also are added to meat products as preservatives. The major use of Nitrate is in inorganic fertilizers.

#### What Health Effects Might Be Caused by Nitrate and Nitrite in My Water?

**Non-Cancer Effects.** EPA has set a Guidance level for Nitrate in drinking water at **10 milligrams per liter\*** and a Guidance level for Nitrite in drinking water at **1 milligram per liter**. The Guidance level for the combination of Nitrate and Nitrite in drinking water is **10 milligrams per liter**. These levels include a margin of safety to protect human health and should be regarded as guidelines. EPA believes that water containing Nitrate or Nitrite at or below these levels is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, in infants, exposure to Nitrate at levels in excess of 10 milligrams per liter can result in a blood condition called methemoglobinemia. Methemoglobinemia, also known as blue baby syndrome, is characterized by a reduced ability of the blood to carry oxygen. Methemoglobinemia related to drinking water contamination has only been observed in infants up to the age of about 6 months.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Nitrate and Nitrite can increase the risk of cancer in humans.

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\* Milligrams per liter are a common unit of measurement for Nitrate/Nitrite in water, equivalent to parts per million.

## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of chemicals found in your well.

Upon retesting, if Nitrate is detected in your drinking well at or below 10 milligrams per liter or if Nitrite is detected in your well at or below 1 milligram per liter, (or if the sum of Nitrate plus Nitrite exceeds 10 milligrams per liter), you should continue to retest your well periodically.

Significant Nitrite contamination is usually a sign of microbiological contamination resulting from human or animal waste. Thus, if there is significant Nitrite contamination, a check for microbiological contamination should be made as well. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Nitrate is detected in your water and confirmed by retesting at a level above 10 milligrams per liter or if Nitrite is detected in your water at a level above 1 milligram per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment technologies that are currently used to remove Nitrates from water include ion exchange, distillation, and reverse osmosis. However, these techniques are not necessarily appropriate or available in every situation. Conventional coagulation and lime softening are not effective treatment methods for the removal of this contaminant. Your state or county health officials should be able to advise you on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8 30 A M to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.U.S.



## HEALTH ADVISORY SUMMARY

### 4-Nitrophenol

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for 4-Nitrophenol.

#### What is 4-Nitrophenol?

4-Nitrophenol is not a pesticide itself. 4-Nitrophenol is a breakdown product of parathion, which is used as an insecticide.

#### What Health Effects Might Be Caused by 4-Nitrophenol in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for 4-Nitrophenol in drinking water at **60 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing 4-Nitrophenol at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming 4-Nitrophenol at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including damage to the liver, respiratory stress, and gastritis.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if 4-Nitrophenol can increase the risk of cancer in humans.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if 4-Nitrophenol is detected in your drinking well at or below 60 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If 4-Nitrophenol is detected in your water and confirmed by retesting at a level above 60 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment by granular activated carbon adsorption can remove 4-Nitrophenol from water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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## HEALTH ADVISORY SUMMARY

### Oxamyl

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Oxamyl.

#### What is Oxamyl?

Oxamyl, also known as Vydate® or DPX-1410, is a pesticide used to control insects, mites, and nematodes on many field crops, vegetables, fruits, and ornamentals.

#### What Health Effects Might Be Caused by Oxamyl in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Oxamyl in drinking water at **200 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Oxamyl at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Oxamyl at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including decreased body and organ weights, decreased fetal survival, and inhibition of an enzyme called cholinesterase. Symptoms associated with inhibition of this enzyme in humans include nausea, vomiting, blurred vision, stomach cramps, excessive sweating, muscle weakness, headaches, and rapid heart rate.

**Cancer Risk.** Sufficient data are available from animal studies to indicate that Oxamyl does not increase the risk of cancer in humans.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Oxamyl is detected in your drinking well at or below 200 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Oxamyl is detected in your water and confirmed by retesting at a level above 200 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Activated carbon adsorption is an effective treatment method for removing Oxamyl from water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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## HEALTH ADVISORY SUMMARY

### Pentachlorophenol (PCP)

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Pentachlorophenol.

#### What is Pentachlorophenol?

Pentachlorophenol, also known as PCP, is used as a wood preservative, herbicide, antimicrobial agent, disinfectant, mossicide, and defoliant.

#### What Health Effects Might Be Caused by Pentachlorophenol in My Water?

**Non-Cancer Effects.** Consuming high levels of Pentachlorophenol over a long period of time has been shown to result in liver and kidney damage and delayed fetal development in animal studies. There is also weak evidence that PCP causes genetic mutations.

**Cancer Risk.** Pentachlorophenol also causes cancer in laboratory animals that are given high doses of the pesticide over the course of their lifetimes. Therefore, EPA considers Pentachlorophenol to be a probable human carcinogen (cancer causing agent). EPA estimates that if an individual consumes water containing Pentachlorophenol at **0.1 micrograms per liter\*** over his or her entire lifetime, that person would theoretically have no more than a one-in-one hundred thousand chance of developing cancer as a direct result of drinking water containing this pesticide.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.



These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often retesting should be done.

Depending on the results of retesting, your state or county health officials may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

At present, activated carbon adsorption is the only treatment method likely to be effective in removing Pentachlorophenol from your water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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## HEALTH ADVISORY SUMMARY

### Picloram

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Picloram.

#### What is Picloram?

Picloram, also known as Tordon®, is a broad-spectrum herbicide used to control broadleaf and woody plants in rangelands, pastures, and rights-of-way for powerlines and highways.

#### What Health Effects Might Be Caused by Picloram in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Picloram in drinking water at **500 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Picloram at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Picloram at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in damage to the liver, thyroid, testes, and arteries, and possibly reduced fertility, in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Picloram can increase the risk of cancer in humans.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Picloram is detected in your drinking well at or below 500 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Picloram is detected in your water and confirmed by retesting at a level above 500 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or dig a new or deeper well.

At present, granular activated carbon adsorption is the best available treatment method for removing Picloram from water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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# HEALTH ADVISORY SUMMARY

## Prometon

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Prometon.

### What is Prometon?

Prometon, also known as Gesafram® or Pramitol®, is a herbicide used to control perennial broadleaf weeds and grasses.

### What Health Effects Might Be Caused by Prometon in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Prometon in drinking water at **100 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Prometon at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Prometon at high levels well above the Lifetime Health Advisory level over a long period of time has been shown in animal studies to result in adverse effects on growth.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Prometon can increase the risk of cancer in humans.

### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Prometon is detected in your drinking well at or below 100 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Prometon is detected in your water and confirmed by retesting at a level above 100 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment technologies that can remove Prometon from water to varying degrees include granular activated carbon adsorption, resin adsorption, and reverse osmosis. However, these techniques are not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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# HEALTH ADVISORY SUMMARY

## Pronamide

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Pronamide.

### What is Pronamide?

Pronamide, also known as Kerb® or Propyzamide, is a herbicide used for weed and grass control in lettuce, legumes, turf, woody ornamentals, nursery stock, and Christmas trees.

### What Health Effects Might Be Caused by Pronamide in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Pronamide in drinking water at **50 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Pronamide at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Pronamide at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in liver damage in animal studies.

**Cancer Risk.** Pronamide is considered by EPA to be a possible human carcinogen (cancer causing agent). There is limited or uncertain information indicating that Pronamide causes cancer in animals receiving high doses of the chemical over the course of their lifetimes. Because Pronamide in drinking water may possibly increase the risk of cancer in humans, the Lifetime Health Advisory includes an additional margin of safety.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.

## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Pronamide is detected in your drinking well at or below 50 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Pronamide is detected in your water and confirmed by retesting at a level above 50 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

At present, reverse osmosis appears to be the only effective method for removing Pronamide from water. Activated carbon adsorption may also be helpful, but EPA has no information on its effectiveness in removing Pronamide from water. Your state or county health officials should be consulted on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



# HEALTH ADVISORY SUMMARY

## Propachlor

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Propachlor.

### What is Propachlor?

Propachlor, also known as Bexton® or Ramrod®, is a herbicide used to control many grasses and certain broadleaf weeds.

### What Health Effects Might Be Caused by Propachlor in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Propachlor in drinking water at **90 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Propachlor at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Propachlor at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in damage to the liver, kidneys, and blood in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Propachlor can increase the risk of cancer in humans.

### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion



These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Propachlor is detected in your drinking well at or below 90 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Propachlor is detected in your water and confirmed by retesting at a level above 90 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment by granular or powdered activated carbon, ozonation, and reverse osmosis appear to be possible methods for removing Propachlor from water. However, these techniques have not been widely tested for Propachlor and are not necessarily appropriate or available in every situation. Certain treatment methods are more suitable for large community water systems than for individual domestic wells. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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# HEALTH ADVISORY SUMMARY

## Propazine

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Propazine.

### What is Propazine?

Propazine, also known as Gesomil®, Milogard®, or Primatol P®, is a herbicide used for the control of annual broadleaf weeds and annual grasses in sorghum.

### What Health Effects Might Be Caused by Propazine in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Propazine in drinking water at **10 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Propazine at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Propazine at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in decreased fetal weight gain and delayed fetal bone development in animal studies.

**Cancer Risk.** Propazine is considered by EPA to be a possible human carcinogen (cancer causing agent). There is limited or uncertain information indicating that Propazine causes cancer in animals receiving high doses of the chemical over the course of their lifetimes. Because Propazine in drinking water may possibly increase the risk of cancer in humans, the Lifetime Health Advisory includes an additional margin of safety.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Propazine is detected in your drinking well at or below 10 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Propazine is detected in your water and confirmed by retesting at a level above 10 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or dig a new or deeper well. At present, EPA has no information on the effectiveness of treatment technologies in removing Propazine from water, although activated carbon adsorption and reverse osmosis may be effective.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



## HEALTH ADVISORY SUMMARY

### Propham

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Propham.

#### What is Propham?

Propham, also known as IPC or Beet-Kleen®, is a herbicide used for control of weeds in alfalfa, lettuce, spinach, sugarbeets, lentils, and peas.

#### What Health Effects Might Be Caused by Propham in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Propham in drinking water at **100 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Propham at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Propham at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in delayed fetal development in animal studies and inhibition of an enzyme called cholinesterase, in both humans and animals. Symptoms associated with inhibition of this enzyme in humans include nausea, vomiting, blurred vision, stomach cramps, excessive sweating, muscle weakness, headaches, and rapid heart rate.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Propham can increase the risk of cancer in humans.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.

## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Protham is detected in your drinking well at or below 100 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Protham is detected in your water and confirmed by retesting at a level above 100 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment by granular activated carbon will remove Protham from water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



# HEALTH ADVISORY SUMMARY

## Simazine

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Simazine.

### What is Simazine?

Simazine, also known as Princep®, or Aquazine®, is primarily used as a herbicide for control of annual grasses and broadleaf weeds in corn, alfalfa, asparagus, certain fruit and nuts, and certain ornamental and tree nursery stock. It is also used to inhibit the growth of algae and to control weeds in industrial areas.

### What Health Effects Might Be Caused by Simazine in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Simazine in drinking water at **1 microgram per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Simazine at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Simazine at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including tremors, damage to the testes, kidneys, liver, and thyroid, disturbances in sperm production, and gene mutations.

**Cancer Risk.** Simazine is considered by EPA to be a possible human carcinogen (cancer causing agent). There is limited or uncertain information indicating that Simazine may cause cancer in animals receiving high doses of the chemical over the course of their lifetimes. Because Simazine in drinking water may possibly increase the risk of cancer in humans, the Lifetime Health Advisory includes an additional margin of safety.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.

## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Simazine is detected in your drinking well at or below 1 microgram per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Simazine is detected in your water and confirmed by retesting at a level above 1 microgram per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Activated carbon adsorption is the most reliable treatment method for removing Simazine from water. Other treatment technologies, including ion exchange, and oxidation by chlorine, chlorine dioxide, ozone, hydrogen peroxide, and potassium permanganate, are still considered experimental for removing Simazine and are not necessarily appropriate or available in every situation. Certain treatment methods are more suitable for large community water systems than for individual domestic wells. Your state or county health officials should be able to advise you on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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## HEALTH ADVISORY SUMMARY

### 2,4,5-Trichlorophenoxyacetic Acid (2,4,5-T)

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for 2,4,5-Trichlorophenoxyacetic Acid.

#### What is 2,4,5-Trichlorophenoxyacetic Acid?

2,4,5-Trichlorophenoxyacetic Acid, also known as 2,4,5-T, Dacamine®, or Fence Rider®, was formerly used to control woody plants on industrial sites and rangeland and to control weeds in rice. All uses of 2,4,5-T have been cancelled by EPA.

#### What Health Effects Might Be Caused by 2,4,5-T in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for 2,4,5-T in drinking water at **70 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing 2,4,5-T at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming 2,4,5-T at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in liver, kidney and lung damage, reduced fetal weight, and birth defects in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if 2,4,5-T can increase the risk of cancer in humans.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion



These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if 2,4,5-T is detected in your drinking well at or below 70 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If 2,4,5-T is detected in your water and confirmed by retesting at a level above 70 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Both granular and powdered activated carbon adsorption will remove 2,4,5-T from water. However, these techniques are not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



# HEALTH ADVISORY SUMMARY

## 2,4,5-TP (Silvex)

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for 2,4,5-TP.

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

2,4,5-TP, also known as Silvex, is a herbicide that was formerly used for weed and brush control. All uses of 2,4,5-TP have been banned by EPA.

### What Health Effects Might Be Caused by 2,4,5-TP in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for 2,4,5-TP in drinking water at **50 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing 2,4,5-TP at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming 2,4,5-TP at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse effects on the liver and kidneys in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if 2,4,5-TP can increase the risk of cancer in humans.

### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if 2,4,5-TP is detected in your drinking well at or below 50 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If 2,4,5-TP is detected in your water and confirmed by retesting at a level above 50 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Activated carbon adsorption is the best available technology for removing 2,4,5-TP from water. However, this technique is not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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## HEALTH ADVISORY SUMMARY

### Tebuthiuron

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Tebuthiuron.

#### What is Tebuthiuron?

Tebuthiuron, also known as Graslan® or Spike®, is a herbicide used for total vegetation/woody plant control in noncropland areas and for brush and weed control in rangeland.

#### What Health Effects Might Be Caused by Tebuthiuron in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Tebuthiuron in drinking water at **500 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Tebuthiuron at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Tebuthiuron at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in excessive weight loss and damage to the pancreas in animal studies.

**Cancer Risk.** Data from laboratory studies are inadequate for EPA to determine if Tebuthiuron can increase the risk of cancer in humans.

#### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Tebuthiuron is detected in your drinking well at or below 500 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Tebuthiuron is detected in your water and confirmed by retesting at a level above 500 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or dig a new or deeper well. At present, EPA has no information on the effectiveness of treatment technologies in removing Tebuthiuron from water, although activated carbon adsorption is considered likely to be effective.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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# HEALTH ADVISORY SUMMARY

## Terbacil

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Terbacil.

### What is Terbacil?

Terbacil, also known as Sinbar®, is a herbicide used to control annual and perennial weeds in crops such as sugarcane, alfalfa, pecans, and certain fruits.

### What Health Effects Might Be Caused by Terbacil in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Terbacil in drinking water at **90 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Terbacil at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Terbacil at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including liver damage, reduced fetal weight, and disturbances in fetal development.

**Cancer Risk.** Sufficient data are available from animal studies to indicate that Terbacil does not increase the risk of cancer in humans.

### What Actions Should I Take?

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Terbacil is detected in your drinking well at or below 90 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Terbacil is detected in your water and confirmed by retesting at a level above 90 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or dig a new or deeper well. No treatment technologies currently available have been tested for their effectiveness in removing Terbacil from drinking water.

### **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

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## HEALTH ADVISORY SUMMARY

### Terbufos

#### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Terbufos.

#### What is Terbufos?

Terbufos, also known as Counter®, is used for the control of soil insects and nematodes infesting corn, maggots in sugarbeets, and green bug on grain sorghum.

#### What Health Effects Might Be Caused by Terbufos in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Terbufos in drinking water at **0.9 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Terbufos at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Terbufos at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in adverse health effects in animal studies, including damage to the eye and stomach, disturbances in fetal development, and inhibition of an enzyme called cholinesterase. Symptoms associated with inhibition of this enzyme in humans include nausea, vomiting, blurred vision, stomach cramps, excessive sweating, muscle weakness, headaches, and rapid heart rate.

**Cancer Risk.** Sufficient data are available from animal studies to indicate that Terbufos does not increase the risk of cancer in humans.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion



## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Terbufos is detected in your drinking well at or below 0.9 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Terbufos is detected in your water and confirmed by retesting at a level above 0.9 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment by activated carbon adsorption and ion exchange appear to be possible methods for removing Terbufos from water. However, these techniques have not been widely tested for Terbufos and are not necessarily appropriate or available in every situation. Your state or county health officials should be able to advise you on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791.

Additional information on the health effects of pesticides is available from the National Pesticide Telecommunications Network, toll-free, 24 hours a day, 1-800-858-7378.



# HEALTH ADVISORY SUMMARY

## Trifluralin

### What is a Health Advisory?

Health Advisories are guidance documents issued by the U.S. Environmental Protection Agency to assist federal, state, and local officials in responding to drinking water contamination. The Health Advisories contain information on health risks and treatment technologies, and specify levels of chemical concentrations in water that are acceptable for drinking. In preparing Health Advisories, EPA reviews available human data and experimental animal studies in evaluating potential human health effects. The Health Advisories are updated as new information becomes available. This summary presents key highlights from the Health Advisory for Trifluralin.

### What is Trifluralin?

Trifluralin, also known as Treflan®, is a herbicide used for control of annual grasses and broadleaf weeds in soybean, cotton and vegetable crops, fruit and nut trees, shrubs, and flowers. It is also used on golf courses, rights of way, and domestic and industrial sites.

### What Health Effects Might Be Caused by Trifluralin in My Water?

**Non-Cancer Effects.** EPA has set a Lifetime Health Advisory level for Trifluralin in drinking water at **5 micrograms per liter\***. This level includes a margin of safety to protect human health and should be regarded as a guideline. EPA believes that water containing Trifluralin at or below this level is acceptable for drinking every day over the course of one's lifetime, and does not pose any health concerns.

However, consuming Trifluralin at high levels well above the Lifetime Health Advisory level over a long period of time has been shown to result in liver and kidney damage, decreased fetal weight and size, and increased numbers of miscarriages in animal studies.

**Cancer Risk.** Trifluralin is considered by EPA to be a possible human carcinogen (cancer causing agent). There is limited or uncertain information indicating that Trifluralin may cause cancer in animals receiving high doses of the chemical over the course of their lifetimes. Because Trifluralin in drinking water may possibly increase the risk of cancer in humans, the Lifetime Health Advisory includes an additional margin of safety.

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\* Micrograms per liter are the units of measurement for contaminants in water, equivalent to parts per billion

## **What Actions Should I Take?**

Your first step should be to get the advice of your state or county health officials. Other experts in your state environmental agency or agriculture department may also be helpful to you.

These people are likely to recommend that you retest your well to get an accurate overall picture of the water quality. Seasonal precipitation changes and changes in pesticide use can cause wide variations in the amount of pesticides found in your well.

Upon retesting, if Trifluralin is detected in your drinking well at or below 5 micrograms per liter, you should continue to retest your well periodically. Your state or county health officials can refer you to approved testing services, advise you on the cost of testing, and recommend how often you should retest.

If Trifluralin is detected in your water and confirmed by retesting at a level above 5 micrograms per liter, once again consult your state or county health officials. They may advise you to continue periodic retesting, or in some cases, to use an alternative drinking water supply (such as bottled water) or treat the water or dig a new or deeper well.

Treatment technologies that can remove Trifluralin from water include reverse osmosis, granular activated carbon adsorption, conventional treatment (coagulation, sedimentation, and filtration), and possibly air stripping. However, these techniques are not necessarily appropriate or available in every situation. Certain treatment methods are more suitable for large community water systems than for individual domestic wells. Your state or county health officials should be able to advise you on the best approach to follow.

## **Where Can I Get More Information?**

In addition to your state and county experts, EPA has two toll-free lines you can call. For further information on drinking water quality, treatment technologies, and EPA's Health Advisories, please contact EPA's toll-free Safe Drinking Water Hotline, Monday thru Friday, 8:30 A.M. to 4:30 P.M. E.S.T. at 1-800-426-4791

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