Rules of
Department of Natural Resources
Division 60—Public Drinking Water Program
Chapter 8—Public Notification

Title 10—DEPARTMENT OF NATURAL RESOURCES
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10 CSR 60-8.010 Public Notification of Conditions Affecting a Public Water Supply

PURPOSE: This rule lists the requirements and methods for notifying the public of violations of the public drinking water rules and for reporting grants of variances and exemptions.

(1) Maximum Contaminant Level (MCL), Treatment Technique and Variance and Exemption Schedule Violations. If a public water system fails to comply with an MCL or required treatment technique or fails to comply with the requirements of any schedule prescribed pursuant to a variance or exemption, the supplier of water shall notify persons served by the system as follows:

(A) The supplier of water must give notice—

1. By publication in a daily newspaper of general circulation in the area served by the system as soon as possible, but in no case later than fourteen (14) days after the violation or failure. If the area served by a public water system is not served by a daily newspaper of general circulation, notice shall instead be given by publication in a weekly newspaper of general circulation serving the area;

2. By mail delivery (by direct mail or with the water bill) or by hand delivery not later than forty-five (45) days after the violation or failure. The department may waive mail or hand delivery if it determines that the supplier of water in violation has corrected the violation or failure within the forty-five (45)-day period. The department must make the waiver in writing and within the forty-five (45)-day period; and

3. For violations of the MCLs of contaminants that the department determines may pose an acute risk to human health, by furnishing a copy of the notice to the radio and television stations serving the area served by the public water system as soon as possible, but in no case later than seventy-two (72) hours after the violation;

(B) Following the initial notice given under subsection (1)(A) of this rule, the supplier of water must give notice at least once every three (3) months by mail delivery (by direct mail or with the water bill) or by hand delivery for as long as the violation or failure exists;

(C) The department may allow the supplier of water for a community water system to give notice within fourteen (14) days after the violation or failure by hand delivery or by continuous posting in conspicuous places within the area served by the system, in lieu of the requirements of paragraph (1)(A)1. of this rule. Posting must continue for as long as the violation or failure exists. Notice by hand delivery must be repeated at least every three (3) months for as long as the violation or failure exists; and

(D) In lieu of the requirements of subsections (1)(A) and (B) of this rule, the supplier of water for a noncommunity water system may give notice within fourteen (14) days after the violation or failure by hand delivery or by continuous posting in conspicuous places within the area served by the system. Posting must continue for as long as the violation or failure exists. Notice by hand delivery must be repeated at least every three (3) months for as long as the violation or failure exists.

(2) Other Violations, Variances, Exemptions. If a water system fails to perform required monitoring or to comply with a testing procedure required by these rules or is granted a variance or an exemption, the supplier of water shall notify persons served by the system as follows:

(A) The supplier of water must give notice within forty-five (45) days of the violation or granting of a variance or exemption by publication in a daily newspaper of general circulation in the area served by the system. If the area served by a public water system is not served by a daily newspaper of general circulation, notice shall instead be given by publication in a weekly newspaper of general circulation serving the area;

(B) Following the initial notice, the supplier of water must give notice at least once every three (3) months by mail delivery (by direct mail or with the water bill) or by hand delivery for as long as the violation exists or a variance or exemption remains in effect;

(C) The department may allow the supplier of water for a community water system to give notice, within forty-five (45) days of the violation or granting of the variance or exemption, by hand delivery or by continuous posting in conspicuous places within the area served by the system, in lieu of the requirements of subsections (2)(A) and (B). Posting must continue for as long as the violation exists or a variance or exemption remains in effect. Notice by hand delivery must be repeated at least every three (3) months for as long as the violation exists or a variance or exemption remains in effect;

(D) In lieu of the requirements of subsections (2)(A) and (B) of this rule, the supplier of water for a noncommunity water system may give notice, within forty-five (45) days of the violation or the granting of the variance or exemption, by hand delivery or by continuous posting in conspicuous places within the area served by the system. Posting must continue for as long as the violation exists or a variance or exemption remains in effect. Notice by hand delivery must be repeated at least every three (3) months for as long as the violation exists or a variance or exemption remains in effect; and

(E) At the discretion of the department, the supplier of water may provide less frequent notice than required by this section for minor monitoring violations and for existing variances and exemptions. Notice of these violations must be given no less frequently than annually.

(3) Notice to New Billing Units. The supplier of water for a community water system must give a copy of the most recent public notice for any outstanding violation of any MCL or any treatment technique requirement or any variance or exemption schedule to all new billing units or new hookups prior to or at the time service begins.

(4) A community water system which exceeds the secondary MCL for fluoride shall notify—

(A) All billing units annually; and

(B) All new billing units at the time the service begins.

(5) If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the department may allow the system to give public notice to only the area served by that portion of the system which is out of compliance.

(6) General Content of Public Notice. Each notice required by this section must provide a clear and readily understandable explanation of the violation, any potential adverse health effects, the population at risk, the steps that the public water system is taking to correct that violation, the necessity for seeking alternative water supplies, if any, and any preventative measures the consumer should take until the violation is corrected. Each notice shall be conspicuous and shall not contain unduly technical language, unduly small print or similar problems that frustrate the purpose of the notice. Each notice shall include the address and telephone number of the owner, operator or designee of the public water system as a source of additional information concerning the notice.

(7) Mandatory Health Effects Language.. When providing the information on potential adverse health effects required by section (6), in notices of violations of MCLs or treatment technique requirements, notices of the granting or the continued existence of exemptions or variances, or notices of failures to comply with a variance or exemption schedule, the supplier of water shall include the language specified as follows for each contaminant (if language for a particular contaminant is not specified as follows at the time notice is required, this section does not apply):

(A) Inorganic Contaminants.

1. Antimony. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that antimony is a health concern at certain levels of exposure. This inorganic chemical occurs naturally in soils, groundwater and is often used in the flame retardant industry. It is also used in ceramics, glass, batteries, fireworks and explosives. It may get into drinking water through natural weathering of rock, industrial production, municipal waste disposal or manufacturing processes. This chemical has been shown to decrease longevity and alter blood levels of cholesterol and glucose in laboratory animals, such as rats, when the animals are exposed to high levels during their lifetimes. DNR has set the drinking water standard for antimony at 0.006 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to antimony."

2. Asbestos. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that asbestos fibers greater than ten micrometers (10µ) in length are a health concern at certain levels of exposure. Asbestos is a naturally occurring mineral. Most asbestos fibers in drinking water are less than ten micrometers (10µ) in length and occur in drinking water from natural sources and from corroded asbestos-cement pipes in the distribution system. The major uses of asbestos were in the production of cements, floor tiles, paper products, paint and caulking; in transportation-related applications; and in the production of textiles and plastics. Asbestos was once a popular insulating and fire retardant material. Inhalation studies have shown that various forms of asbestos have produced lung tumors in laboratory animals. The available information on the risk of developing gastrointestinal tract cancer associated with the ingestion of asbestos from drinking water is limited. Ingestion of intermediate-range chrysotile asbestos fibers greater than ten micrometers (10µ) in length is associated with causing benign tumors in male rats. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for asbestos at seven (7) million long fibers per liter to reduce the potential risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to asbestos."

3. Barium. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that barium is a health concern at certain levels of exposure. This inorganic chemical (IOC) occurs naturally in some aquifers that serve as sources of groundwater. It is also used in oil and gas drilling muds, automotive paints, bricks, tiles and jet fuels. It generally gets into drinking water after dissolving from naturally occurring minerals in the ground. This chemical may damage the heart and cardiovascular system, and is associated with high blood pressure in laboratory animals, such as rats, exposed to high levels during their lifetimes. In humans, the DNR believes that effects from barium on blood pressure should not occur below two parts per million (2 ppm) in drinking water. DNR has set the drinking water standard for barium at two (2) ppm to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to barium."

4. Beryllium. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that beryllium is a health concern at certain levels of exposure. This inorganic metal occurs naturally in soils, groundwater and surface waters and is often used in electrical equipment and electrical components. It generally gets into water from runoff from mining operations, discharge from processing plants and improper waste disposal. Beryllium compounds have been associated with damage to the bones and lungs and induction of cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. There is limited evidence to suggest that beryllium may pose a cancer risk via drinking water exposure. Therefore, DNR based the health assessment on noncancer effects with an extra uncertainty factor to account for possible carcinogenicity. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for beryllium at 0.004 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to beryllium."

5. Cadmium. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that cadmium is a health concern at certain levels of exposure. Food and the smoking of tobacco are common sources of general exposure. This inorganic metal is a contaminant in the metals used to galvanize pipe. It generally gets into water by corrosion of galvanized pipes or by improper waste disposal. This chemical has been shown to damage the kidney in animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the kidney. DNR has set the drinking water standard for cadmium at 0.005 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to cadmium."

6. Chromium. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that chromium is a health concern at certain levels of exposure. This inorganic metal occurs naturally in the ground and is often used in the electroplating of metals. It generally gets into water from runoff from old mining operations and improper waste disposal from plating operations. This chemical has been shown to damage the kidney, nervous system and the circulatory system of laboratory animals, such as rats and mice, when the animals are exposed at high levels. Some humans who were exposed to high levels of this chemical suffered liver and kidney damage, dermatitis and respiratory problems. DNR has set the drinking water standard for chromium at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to chromium."

7. Copper. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that copper is a health concern at certain levels of exposure. Copper, a reddish-brown metal, is often used to plumb residential and commercial structures that are connected to water

distribution systems. Copper contaminating drinking water as a corrosion by-product occurs as the result of the corrosion of copper pipes that remain in contact with water for a prolonged period of time. Copper is an essential nutrient, but at high doses it has been shown to cause stomach and intestinal distress, liver and kidney damage, and anemia. Persons with Wilson's disease may be at a higher risk of health effects due to copper than the general public. The DNR drinking water rule requires all public water systems to install optimal corrosion control to minimize copper contamination resulting from the corrosion of plumbing materials. Public water systems serving fifty thousand (50,000) people or fewer that have copper concentrations below 1.3 parts per million (ppm) in more than ninety percent (90%) of tap water samples (the DNR action level) are not required to install or improve their treatment. Any water system that exceeds the action level must also monitor its source water to determine whether treatment to remove copper in source water is needed."

8. Cyanide. "The Department of Natural Resources (DNR) sets drinking water standards and has determined that cyanide is a health concern at certain levels of exposure. This inorganic chemical is used in electroplating, steel processing, plastics, synthetic fabrics and fertilizer products. It usually gets into water as a result of improper waste disposal. This chemical has been shown to damage the spleen, brain and liver of humans fatally poisoned with cyanide. DNR has set the drinking water standard for cyanide at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the DNR standard is associated with little to none of the risk and should be considered safe with respect to cyanide."

9. Fluoride. "Dear User, The Missouri Department of Natural Resources requires that we send you this notice on the level of fluoride in your drinking water. The drinking water in your community has a fluoride concentration of * milligrams per liter (mg/l). "State regulations require that fluoride, which occurs naturally in your water supply, not exceed a concentration of 4.0 mg/l in drinking water. This is an enforceable standard called a Maximum Contaminant Level (MCL), and it has been established to protect the public health. Exposure to drinking water levels above 4.0 mg/l for many years may result in some cases of crippling skeletal fluorosis, which is a serious bone disorder. "State regulations also require that we notify you when monitoring indicates that the fluoride in your drinking water exceeds 2.0 mg/l. This is intended to alert families about dental problems that might affect children under nine years of age. The fluoride concentration of your water exceeds these guidelines. "Fluoride in children's drinking water at levels of approximately 1 mg/l reduces the number of dental cavities. However, some children exposed to levels of fluoride greater than about 2.0 mg/l may develop dental fluorosis. Dental fluorosis, in its moderate and severe forms, is brown staining, pitting of the permanent teeth, or both. "Because dental fluorosis occurs only when developing teeth (before they erupt from the gums) are exposed to elevated fluoride levels, households without children are not expected to be affected by this level of fluoride. Families with children under the age of nine (9) are encouraged to seek other sources of drinking water for their children to avoid the possibility of staining and pitting. "Your water supplier can lower the concentration of fluoride in your water so that you will still receive the benefits of cavity prevention while the possibility of stained and pitted teeth is minimized. Removal of fluoride may increase your water costs. Treatment systems are also commercially available for home use. Information on such systems is available at the address given below. Low fluoride bottled drinking water that would meet all standards is also commercially available.

"For further information, contact ** at your water system.

*Public water system shall insert the compliance result which triggered notification.

**The public water system shall insert the address and telephone number of the owner, operator or designee of the public water system."

10. Lead. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that lead is a health concern at certain levels of exposure. Materials that contain lead have frequently been used in the construction of water supply distribution systems and plumbing systems in private homes and other buildings. The most commonly found materials include service lines, pipes, brass and bronze fixtures, and solders and fluxes. Lead in these materials can contaminate drinking water as a result of the corrosion that takes place when water comes into contact with those materials. Lead can cause a variety of adverse health effects in humans. At relatively low levels of exposure, these effects may include interference with red blood cell chemistry, delays in normal physical and mental development in babies and young children, slight deficits in the attention span, hearing and learning abilities of children, and slight increases in the blood pressure of some adults. DNR drinking water rule requires all public water systems to optimize corrosion control to minimize lead contamination resulting from the corrosion of plumbing materials. Public water systems serving fifty thousand (50,000) people or fewer that have lead concentrations below fifteen (15) parts per billion (ppb) in more than ninety percent (90%) of tap water samples (the DNR action level) have optimized their corrosion control treatment. Any water system that exceeds the action level must also monitor its source water to determine whether treatment to remove lead in source water is needed. Any water system that continues to exceed the action level after installation of corrosion control or source water treatment, or both, must eventually replace all lead service lines contributing in excess of fifteen (15) ppb of lead to drinking water. Any water system that exceeds the action level must also undertake a public education program to inform consumers of ways they can reduce their exposure to potentially high levels of lead in drinking water."

11. Mercury. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that mercury is a health concern at certain levels of exposure. This inorganic metal is used in electrical equipment and some water pumps. It usually gets into water as a result of improper waste disposal. This chemical has been shown to damage the kidney of laboratory animals, such as rats, when the animals are exposed at high levels over their lifetimes. DNR has set the drinking water standard for mercury at 0.002 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to mercury."

12. Nitrate. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that nitrate poses an acute health concern at certain levels of exposure. Nitrate is used in fertilizer and is found in sewage and wastes from human or farm animals, or both, and generally gets into drinking water from those activities. Excessive levels of nitrate in drinking water have caused serious illness and sometimes death in infants under six (6) months of age. The serious illness in infants is caused because nitrate is converted to nitrite in the body. Nitrite interferes with the oxygen-carrying capacity of the child's blood. This is an acute disease in that symptoms can develop rapidly in infants. In most cases, health deteriorates over a period of days. Symptoms include shortness of breath and blueness of

the skin. Clearly, expert medical advice should be sought immediately if these symptoms occur. The purpose of this notice is to encourage parents and other responsible parties to provide infants with an alternate source of drinking water. Local and department health authorities are the best source for information concerning alternate sources of drinking water for infants. DNR has set the drinking water standard at ten parts per million (10 ppm) for nitrate to protect against the risk of these adverse effects. DNR also has set a drinking water standard for nitrite at one (1) ppm. To allow for the fact that the toxicity of nitrate and nitrite are additive, the DNR has also established a standard for the sum of nitrate and nitrite at ten (10) ppm. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to nitrate."

13. Nitrite. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that nitrite poses an acute health concern at certain levels of exposure. This IOC is used in fertilizers and is found in sewage and wastes from humans or farm animals, or both, and generally gets into drinking water as a result of those activities. While excessive levels of nitrite in drinking water have not been observed, other sources of nitrite have caused serious illness and sometimes death in infants under six (6) months of age. The serious illness in infants is caused because nitrite interferes with the oxygen-carrying capacity of the child's blood. This is an acute disease in that symptoms can develop rapidly. However, in most cases, health deteriorates over a period of days. Symptoms include shortness of breath and blueness of the skin. Clearly, expert medical advice should be sought immediately if these symptoms occur. The purpose of this notice is to encourage parents and other responsible parties to provide infants with an alternate source of drinking water. Local and department health authorities are the best source for information concerning alternate sources of drinking water for infants. DNR has set the drinking water standard at one part per million (1 ppm) for nitrite to protect against the risk of these adverse effects. DNR has also set a drinking water standard for nitrate (converted to nitrite in humans) at ten (10) ppm and for the sum of nitrate and nitrite at ten (10) ppm. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to nitrite."

14. Selenium. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that selenium is a health concern at certain high levels of exposure. Selenium is also an essential nutrient at low levels of exposure. This IOC is found naturally in food and soils and is used in electronics, photocopy operations, the manufacture of glass, chemicals, drugs, and as a fungicide and a feed additive. In humans, exposure to high levels of selenium over a long period of time has resulted in a number of adverse health effects, including a loss of feeling and control in the arms and legs. DNR has set the drinking water standard for selenium at 0.05 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to selenium."

15. Thallium. "The Department of Natural Resources (DNR) sets drinking water standards and has determined that thallium is a health concern at certain levels of exposure. This inorganic metal is found naturally in soils and is used in electronics, pharmaceuticals and the manufacture of glass and alloys. This chemical has been shown to damage the kidney, liver, brain and intestines of laboratory animals when the animals are exposed at high levels over their lifetimes. DNR has set the drinking water standards for thallium at 0.002 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to thallium";

(B) Microbiological Contaminants and Treatment Techniques.

1. Fecal coliforms/*Escherichia coli (E. coli)*. This language is used when there is a violation of 10 CSR 60-4.020(7)(B) or a violation of both 10 CSR 60-4.020(7)(A) and (B). "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that the presence of fecal coliforms or *E. coli* is a serious health concern. Fecal coliforms and *E. coli* are generally not harmful themselves, but their presence in drinking water is serious because they usually are associated with sewage or animal wastes. The presence of these bacteria in drinking water is generally a result of a problem with water treatment or the pipes which distribute the water and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea and possibly jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water but also may be caused by a number of factors other than your drinking water. DNR has set an enforceable drinking water standard for total coliforms to reduce the risk of these adverse health effects. Under this standard, all drinking water samples must be free of these bacteria. Drinking water which meets this standard is associated with little or none of this risk and should be considered safe. State and local health authorities recommend that consumers take the following precautions: "Boil water vigorously for three (3) minutes prior to use for cooking and drinking and disinfect food contact surfaces (dishes) by immersing them for at least one (1) minute in clean water containing at least fifty (50) parts per million (ppm) free chlorine. Adding one (1) teaspoon of unscented household bleach to each gallon of water (or 1.3 milliliters of bleach per liter of water) should result in a solution with more than fifty (50) parts per million (ppm) free chlorine provided the water is free of hydrogen sulfide and significant levels of dissolved metallic and organic compounds.

"For further information, contact * at your water system.**

*The public water system shall insert the address and telephone number of the owner, operator or designee of the public water system.

**Other information as the public water system deems necessary should follow at this point."

2. Treatment techniques and turbidity MCLs. Used when there is a violation of the treatment technique requirements in 10 CSR 60-4.055 and of the turbidity MCL requirements of 10 CSR 60-4.050 for surface water systems and groundwater systems under the direct influence of surface water. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that the presence of microbiological contaminants are a health concern at certain levels of exposure. If water is inadequately treated, microbiological contaminants in that water may cause disease. Disease symptoms may include diarrhea, cramps, nausea and possibly jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water but also may be caused by a number of factors other than your drinking water. DNR has set enforceable requirements for treating drinking water to reduce the risk of these adverse health effects. Treatment such as filtering and disinfecting the water removes or destroys microbiological contaminants. Drinking water which is treated to department requirements is associated with little to none of this risk and should be considered safe."

3. Total coliforms. This language is used when there is a violation of 10 CSR 60-4.020(7)(A) and not a violation of 10 CSR 60-4.020(7)(B). "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that the presence of total coliforms is a possible health concern. Total coliforms are common in the environment and are generally not harmful themselves. The presence of these bacteria in drinking water, however, generally is a result of a problem with water treatment or the pipes which distribute the water and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea and possibly jaundice, and any associated headaches and fatigue. The symptoms, however, are not just associated with disease-causing organisms in drinking water but also may be caused by a number of factors other than your drinking water. DNR has set an enforceable drinking water standard for total coliforms to reduce the risk of these adverse health effects. Under this standard, no more than five percent (5.0%) of the samples collected during a month can contain these bacteria, except that systems collecting fewer than forty (40) samples per month that have one (1) total coliform-positive sample per month are not violating the standard. Drinking water which meets this standard is usually not associated with a health risk from disease-causing bacteria and should be considered safe.

"For further information, contact * at your water system.**

*The public water system shall insert the address and telephone number of the owner, operator or designee of the public water system.

**Other information as the public water system deems necessary should follow at this point"; and

(C) Organic Contaminants.

1. 2,4,5-TP (Silvex). "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that 2,4,5-TP is a health concern at certain levels of exposure. This organic chemical was once used as herbicide. When soil and climatic conditions are favorable, 2,4,5-TP may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to damage the liver and kidney of laboratory animals, such as rats and dogs, exposed to high levels during their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the nervous system. DNR has set the drinking water standard for 2,4,5-TP at 0.05 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to 2,4,5-TP."

2. 2,4-D. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that 2,4-D is a health concern at certain levels of exposure. This organic chemical is used as a herbicide and to control algae in reservoirs. When soil and climatic conditions are favorable, 2,4-D may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to damage the liver and kidney of laboratory animals, such as rats, exposed at high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. DNR has set the drinking water standard for 2,4-D at 0.07 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to 2,4-D."

3. 2,3,7,8-TCDD (Dioxin). "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that dioxin is a health concern at certain levels of exposure. This organic chemical is an impurity in the production of some pesticides. It may get into drinking water by industrial discharge of wastes. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for dioxin at 0.00000003 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to dioxin."

4. Acrylamide. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that acrylamide is a health concern at certain levels of exposure. Polymers made from acrylamide are sometimes used to treat water supplies to remove particulate contaminants. Acrylamide has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. Sufficiently large doses of acrylamide are known to cause neurological injury. DNR has set the drinking water standard for acrylamide using a treatment technique to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. This treatment technique limits the amount of acrylamide in the polymer and the amount of the polymer which may be added to drinking water to remove particulates. Drinking water systems which comply with this treatment technique have little to no risk and are considered safe with respect to acrylamide."

5. Alachlor. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that alachlor is a health concern at certain levels of exposure. This organic chemical is a widely used pesticide. When soil and climatic conditions are favorable, alachlor may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for alachlor at 0.002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to alachlor."

6. Aldicarb. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that aldicarb is a health concern at certain levels of exposure. Aldicarb is a widely used pesticide. Under certain soil and climatic conditions (for example, sandy soil and high rainfall), aldicarb may leach into groundwater after normal agricultural applications to crops, such as potatoes or peanuts, or may enter drinking water supplies as a result of surface runoff. This chemical has been shown to damage the nervous system in laboratory animals, such as rats and dogs, exposed to high levels. DNR has set the drinking water standard for aldicarb at 0.003 parts per million (ppm) to protect against the risk of adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to aldicarb."

7. Aldicarb Sulfone. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that aldicarb sulfone is a health concern at certain levels of exposure. Aldicarb is a widely used pesticide. Aldicarb sulfone is formed from the breakdown of aldicarb and is considered for registration as a pesticide under the name aldoxycarb. Under certain soil and climatic conditions (for example, sandy soil and high rainfall), aldicarb sulfone may leach into groundwater after normal agricultural applications to crops, such as potatoes or peanuts, or may enter drinking water supplies as a result of surface runoff. This chemical has been shown to damage the nervous system in laboratory animals, such as rats and dogs, exposed to high levels. DNR has set the drinking water standard for aldicarb sulfone at 0.002 parts per million (ppm) to protect against the risk of adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to aldicarb sulfone."

8. Aldicarb Sulfoxide. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that aldicarb sulfoxide is a health concern at certain levels of exposure. Aldicarb is a widely used pesticide. Aldicarb sulfoxide in groundwater is primarily a breakdown product of aldicarb. Under certain soil and climatic conditions (for example, sandy soil and high rainfall), aldicarb sulfoxide may leach into groundwater after normal agricultural applications to crops, such as potatoes or peanuts, or may enter drinking water supplies as a result of surface runoff. This chemical has been shown to damage the nervous system in laboratory animals, such as rats and dogs, exposed to high levels. DNR has set the drinking water standard for aldicarb sulfoxide at 0.004 parts per million (ppm) to protect against the risk of adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to aldicarb sulfoxide."

9. Atrazine. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that atrazine is a health concern at certain levels of exposure. This organic chemical is a herbicide. When soil and climatic conditions are favorable, atrazine may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to affect offspring of rats and the hearts of dogs. DNR has set the drinking water standard for atrazine at 0.003 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to atrazine."

10. Benzene. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that benzene is a health concern at certain levels of exposure. This chemical is used as a solvent and degreaser of metals. It is also a major component of gasoline. Drinking water contamination generally results from leaking underground gasoline and petroleum tanks or improper waste disposal. This chemical has been associated with significantly increased risks of leukemia among certain industrial workers who were exposed to relatively large amounts of this chemical during their working careers. This chemical has also been shown to cause cancer in laboratory animals when the animals are exposed at high levels over their lifetimes. Chemicals that cause increased risk of cancer among exposed industrial workers and in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. DNR has set the enforceable drinking water standard for benzene at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in humans and laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe."

11. Benzo(a)pyrene. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that benzo(a)pyrene is a health concern at certain levels of exposure. Cigarette smoke and charbroiled meats are common sources of general exposure. The major source of benzo(a)pyrene in drinking water is the leaching from coal tar lining and sealants in water storage tanks. This chemical has been shown to cause cancer in animals, such as rats and mice, when the animals are exposed at high levels. DNR has set the drinking water standard for benzo(a)pyrene at 0.0002 parts per million (ppm) to protect against the risk of cancer. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to benzo(a)pyrene."

12. Carbofuran. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that carbofuran is a health concern at certain levels of exposure. This organic chemical is a pesticide. When soil and climatic conditions are favorable, carbofuran may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to damage the nervous and reproductive systems of laboratory animals, such as rats and mice, exposed at high levels over their lifetimes. Some humans who were exposed to relatively large amounts of this chemical during their working careers also suffered damage to the nervous system. Effects on the nervous system are generally rapidly reversible. DNR has set the drinking water standard for carbofuran at 0.04 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to carbofuran."

13. Carbon tetrachloride. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that carbon tetrachloride is a health concern at certain levels of exposure. This chemical was once a popular household cleaning fluid. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. DNR has set the enforceable drinking water standard for carbon tetrachloride at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe."

14. Chlordane. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that chlordane is a health concern at certain levels of exposure. This organic chemical is a pesticide used to control termites. Chlordane is not very mobile in soils. It usually gets into drinking water after application in water supply intakes or wells. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for chlordane at 0.002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to chlordane."

15. Dalapon. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that dalapon is a health concern at certain levels of exposure. This organic chemical is a widely used herbicide. It may get into drinking water after application of control grasses in crops, drainage ditches and along railroads. This chemical has been shown to cause damage to the kidney and liver in laboratory animals when the animals are exposed to high levels over their lifetimes. The DNR has set the drinking water standard for dalapon at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to dalapon.

16. Dibromochloropropane (DBCP). "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that DBCP is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, DBCP may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for DBCP at 0.0002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to DBCP."

17. 1,2-Dichloroethane. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that 1,2-dichloroethane is a health concern at certain levels of exposure. This chemical is used as a cleaning fluid for fats, oils, waxes and resins. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. DNR has set the enforceable drinking water standard for 1,2-dichloroethane at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe."

18. o-Dichlorobenzene. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that o-dichlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a solvent in the production of pesticides and dyes. It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, kidney and the blood cells of laboratory animals, such as rats and mice, exposed to high levels during their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the liver, nervous system and circulatory system. DNR has set the drinking water standard for o-dichlorobenzene at 0.6 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to o-dichlorobenzene."

19. 1,1-Dichloroethylene. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that 1,1-dichloroethylene is a health concern at certain levels of exposure. This chemical is used in industry and is found in drinking water as a result of the breakdown of related solvents. The solvents are used as cleaners and degreasers of metals and generally get into drinking water by improper waste disposal. This chemical has been shown to cause liver and kidney damage in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals which cause adverse effects in laboratory animals also may cause adverse health effects in humans who are exposed at lower levels over long periods of time. DNR has set the enforceable drinking water standard for 1,1-dichloroethylene at 0.007 parts per million (ppm) to reduce the risk of these adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe."

20. cis-1,2-Dichloroethylene. "The Missouri Department of Natural Resources (DNR) establishes drinking water standards and has determined that cis-1,2-dichloroethylene is a health concern at certain levels of exposure. This organic chemical is used as a solvent and intermediate in chemical production. It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, nervous system and circulatory system of laboratory animals, such as rats and mice, when exposed at high levels over their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. DNR has set the drinking water standard for cis-1,2-dichloroethylene at 0.07 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to cis-1,2-dichloroethylene."

21. trans-1,2-Dichloroethylene. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that trans-1,2-dichloroethylene is a health concern at certain levels of exposure. This organic chemical is used as a solvent and intermediate in chemical production. It generally gets into drinking water by improper waste disposal. This chemical has been shown to damage the liver, nervous system and the circulatory system of laboratory animals, such as rats and mice, when exposed at high levels over their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. DNR has set the drinking water standard for trans-1,2-dichloroethylene at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to trans-1,2-dichloroethylene."

22. Dichloromethane. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that dichloromethane (methylene chloride) is a health concern at certain levels of exposure. This organic chemical is a widely used solvent. It is used in the manufacture of paint remover, as a metal degreaser and as an aerosol propellant. It generally gets into drinking water after improper discharge or waste disposal. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals may also increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for dichloromethane at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of the risk and should be

considered safe with respect to dichloromethane."

23. 1,2-Dichloropropane. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that 1,2-dichloropropane is a health concern at certain levels of exposure. This organic chemical is used as a solvent and pesticide. When soil and climatic conditions are favorable, 1,2-dichloropropane may get into drinking water by runoff into surface water or by leaching into groundwater. It may also get into drinking water through improper waste disposal. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for 1,2-dichloropropane at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to 1,2-dichloropropane."

24. Di(2-ethylhexyl)adipate. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that di(2-ethylhexyl)adipate is a health concern at certain levels of exposure. Di(2-ethylhexyl)adipate is a widely used plasticizer in a variety of products, including synthetic rubber, food packaging materials and cosmetics. It may get into drinking water after improper waste disposal. This chemical has been shown to damage liver and testes in laboratory animals, such as rats and mice exposed to high levels. DNR has set the drinking water standard of di(2-ethylhexyl)adipate at 0.4 parts per million (ppm) to protect against the risk of adverse health effects. Drinking water which meets the DNR standards is associated with little to none of the risk and should be considered safe with respect to di(2-ethylhexyl)adipate."

25. Di(2-ethylhexyl)phthalate. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that di(2-ethylhexyl)phthalate is a health concern at certain levels of exposure. Di(2-ethylhexyl)phthalate is a widely used plasticizer, which is primarily used in the production of polyvinyl chloride (PVC) resins. It may get into drinking water after improper waste disposal. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their lifetimes. DNR has set the drinking water standard for di(2-ethylhexyl)phthalate at 0.006 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to di(2-ethylhexyl)phthalate."

26. Dinoseb. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that dinoseb is a health concern at certain levels of exposure. Dinoseb is a widely used pesticide and generally gets into drinking water after application on orchards, vineyards and other crops. This chemical has been shown to damage the thyroid and reproductive organs in laboratory animals, such as rats, when the animals are exposed to high levels. DNR has set the drinking water standard for dinoseb at 0.007 parts per million (ppm) to protect against the risk of adverse health effects. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to dinoseb."

27. Diquat. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that diquat is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control terrestrial and aquatic weeds. It may get into drinking water by runoff into surface water. This chemical has been shown to damage the liver, kidney and gastrointestinal tract and causes cataract formation in laboratory animals, such as dogs and rats, when the animals are exposed at high levels over their lifetimes. DNR has set the drinking water standard for diquat at 0.02 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to diquat."

28. Endothall. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that endothall is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control terrestrial and aquatic weeds. It may get into water by runoff into surface water. This chemical has been shown to damage the liver, kidney, gastrointestinal tract and reproductive system of laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. DNR has set the drinking water standards for endothall at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to endothall."

29. Endrin. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that endrin is a health concern at certain levels of exposure. This organic chemical is a pesticide no longer registered for use in the United States. However, this chemical is persistent in treated soils and accumulates in sediments and aquatic and terrestrial biota. This chemical has been shown to cause damage to the liver, kidney and heart in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. DNR has set the drinking water standard for endrin at 0.002 parts per million (ppm) to protect against the risk of these adverse health effects which have been observed in laboratory animals. Drinking water that meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to endrin."

30. Epichlorohydrin. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that epichlorohydrin is a health concern at certain levels of exposure. Polymers made from epichlorohydrin are sometimes used in the treatment of water supplies as a flocculent to remove particulates. Epichlorohydrin generally gets into drinking water by improper use of these polymers. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for epichlorohydrin using a treatment technique to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. This treatment technique limits the amount of epichlorohydrin in the polymer and the amount of the polymer which may be added to drinking water as a flocculent to remove particulates. Drinking water systems which comply with this treatment technique have little to no risk and are considered safe with respect to epichlorohydrin."

31. Ethylbenzene. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined ethylbenzene is a health concern at certain levels of exposure. This organic chemical is a major component of gasoline. It generally gets into water by improper waste disposal or leaking gasoline tanks. This chemical has

been shown to damage the kidney, liver and nervous system of laboratory animals, such as rats, exposed to high levels during their lifetimes. DNR has set the drinking water standard for ethylbenzene at 0.7 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to ethylbenzene."

32. Glyphosate. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that glyphosate is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control grasses and weeds. It may get into drinking water by runoff into surface water. This chemical has been shown to cause damage to the liver and kidneys in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. DNR has set the drinking water standard for glyphosate at 0.7 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to glyphosate."

33. Ethylene Dibromide (EDB). "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that EDB is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, EDB may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for EDB at 0.00005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to EDB."

34. Heptachlor. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that heptachlor is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, heptachlor may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standards for heptachlor at 0.0004 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to heptachlor."

35. Hexachlorobenzene. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that hexachlorobenzene is a health concern at certain levels of exposure. This organic chemical is produced as an impurity in the manufacture of certain solvents and pesticides. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels during their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for hexachlorobenzene at 0.001 parts per million (ppm) to protect against the risk of cancer and other adverse health effects. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to hexachlorobenzene."

36. Hexachlorocyclopentadiene. "The Missouri Department of Natural Resources (DNR) establishes drinking water standards and has determined that hexachlorocyclopentadiene is a health concern at certain levels of exposure. This organic chemical is used as an intermediate in the manufacture of pesticides and flame retardants. It may get into water by discharge from production facilities. This chemical has been shown to damage kidney and the stomach of laboratory animals when exposed to high levels over their lifetimes. DNR has set the drinking standard for hexachlorocyclopentadiene at 0.05 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to hexachlorocyclopentadiene.

37. Heptachlor epoxide. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that heptachlor epoxide is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, heptachlor epoxide may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standards for heptachlor epoxide at 0.0002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to heptachlor epoxide."

38. Lindane. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that lindane is a health concern at certain levels of exposure. This organic chemical is used as a pesticide. When soil and climatic conditions are favorable, lindane may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to damage the liver, kidney, nervous system and immune system of laboratory animals, such as rats, mice and dogs, exposed at high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system and circulatory system. DNR has established the drinking water standard for lindane at 0.0002 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to lindane."

39. Methoxychlor. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that methoxychlor is a health concern at certain levels of exposure. This organic chemical is used as a pesticide. When soil and climatic conditions are favorable, methoxychlor may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to damage the liver, kidney, nervous system and reproductive system of laboratory animals, such as rats, exposed at high levels during their lifetimes. It has also been shown to produce growth retardation in rats. DNR has set the drinking water standard for methoxychlor at 0.04 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of

this risk and is considered safe with respect to methoxychlor."

40. Oxamyl. "The Missouri Department of Natural Resources (DNR) establishes drinking water standards and has determined that oxamyl is a health concern at certain levels of exposure. This organic chemical is used as a pesticide for the control of insects and other pests. It may get into drinking water by runoff into surface water or leaching into groundwater. This chemical has been shown to damage the kidneys of laboratory animals, such as rats, when the animals are exposed at high levels over their lifetimes. DNR has set the drinking water standard for oxamyl at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to oxamyl."

41. Monochlorobenzene. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that monochlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a solvent. It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, kidney and nervous system of laboratory animals, such as rats and mice, exposed to high levels during their lifetimes. DNR has set the drinking water standard for monochlorobenzene at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to monochlorobenzene."

42. Para-Dichlorobenzene. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that para-dichlorobenzene is a health concern at certain levels of exposure. This chemical is a component of deodorizers, moth balls and pesticides. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause liver and kidney damage in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals which cause adverse effects in laboratory animals also may cause adverse health effects in humans who are exposed at lower levels over long periods of time. DNR has set the enforceable drinking water standard for para-dichlorobenzene at 0.075 parts per million (ppm) to reduce the risk of these adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe."

43. Pentachlorophenol. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that pentachlorophenol is a health concern at certain levels of exposure. This organic chemical is used as a wood preservative, herbicide, disinfectant and defoliant. It generally gets into drinking water by runoff into surface water or leaching into groundwater. This chemical has been shown to produce adverse reproductive effects and to damage the liver and kidneys of laboratory animals, such as rats, exposed to high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the liver and kidneys. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed to high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for pentachlorophenol at 0.001 parts per million (ppm) to protect against the risk of cancer or other adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to pentachlorophenol."

44. Picloram. "The Missouri Department of Natural Resources (DNR) establishes drinking water standards and has determined that picloram is a health concern at certain levels of exposure. This organic chemical is used as a pesticide for broadleaf weed control. It may get into drinking water by runoff into surface water or leaching into groundwater as a result of pesticide application and improper waste disposal. This chemical has been shown to cause damage to the kidneys and liver in laboratory animals, such as rats, when the animals are exposed at high levels over their lifetimes. DNR has set the drinking water standard for picloram at 0.5 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to picloram."

45. Simazine. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that simazine is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control annual grasses and broadleaf weeds. It may leach into groundwater or runs off into surface water after application. This chemical may cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels during their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for simazine at 0.004 parts per million (ppm) to reduce the risk of cancer or other adverse health effects. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to simazine."

46. Polychlorinated Biphenyls (PCBs). "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that PCBs are a health concern at certain levels of exposure. These organic chemicals were once widely used in electrical transformers and other industrial equipment. They generally get into drinking water by improper waste disposal or leaking electrical industrial equipment. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for PCBs at 0.0005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to PCBs."

47. Styrene. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that styrene is a health concern at certain levels of exposure. This organic chemical is commonly used to make plastics and is sometimes a component of resins used for drinking water treatment. Styrene may get into drinking water from improper waste disposal. This chemical has been shown to damage the liver and nervous system in laboratory animals when exposed at high levels during their lifetimes. DNR has set the drinking water standard for styrene at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to styrene."

48. Tetrachloroethylene. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that tetrachloroethylene is a health concern at certain levels of exposure. This organic chemical has been a popular solvent,

particularly for dry cleaning. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for tetrachloroethylene at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to tetrachloroethylene."

49. Toluene. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that toluene is a health concern at certain levels of exposure. This organic chemical is used as a solvent and in the manufacture of gasoline for airplanes. It generally gets into water by improper waste disposal or leaking underground storage tanks. This chemical has been shown to damage the kidney, nervous system and circulatory system of laboratory animals, such as rats and mice, exposed to high levels during their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the liver, kidney and nervous system. DNR has set the drinking water standard for toluene at one (1) parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to toluene."

50. Toxaphene. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that toxaphene is a health concern at certain levels of exposure. This organic chemical was once a pesticide widely used on cotton, corn, soybeans, pineapples and other crops. When soil and climatic conditions are favorable, toxaphene may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. DNR has set the drinking water standard for toxaphene at 0.003 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to toxaphene."

51. 1,2,4-Trichlorobenzene. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that 1,2,4-trichlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a dye carrier and as a precursor in herbicide manufacture. It generally gets into drinking water by discharges from industrial activities. This chemical has been shown to cause damage to several organs, including the adrenal glands. DNR has set the drinking water standard for 1,2,4-trichlorobenzene at 0.07 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to 1,2,4-trichlorobenzene."

52. 1,1,1-Trichloroethane. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that 1,1,1-trichloroethane is a health concern at certain levels of exposure. This chemical is used as a cleaner and degreaser of metals. It generally gets into drinking water by improper waste disposal. This chemical has been shown to damage the liver, nervous system and circulatory system of laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during their working careers also suffered damage to the liver, nervous system and circulatory system. Chemicals which cause adverse effects among exposed industrial workers and in laboratory animals also may cause adverse health effects in humans who are exposed at lower levels over long periods of time. DNR has set the enforceable drinking water standard for 1,1,1-trichloroethane at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects which have been observed in humans and laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe."

53. 1,1,2-Trichloroethane. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that 1,1,2-trichloroethane is a health concern at certain levels of exposure. This organic chemical is an intermediate in the production of 1,1-dichloroethylene. It generally gets into water by industrial discharge of wastes. This chemical has been shown to damage the kidney and liver of laboratory animals, such as rats, when the animals are exposed to high levels during their lifetimes. DNR has set the drinking water standard for 1,1,2-trichloroethane at 0.005 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the DNR standard is associated with little to none of this risk and should be considered safe with respect to 1,1,2-trichloroethane."

54. Trichloroethylene. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that trichloroethylene is a health concern at certain levels of exposure. This chemical is a common metal cleaning and dry cleaning fluid. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals, such as rats and mice, when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. DNR has set the enforceable drinking water standard for trichloroethylene at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe."

55. Vinyl chloride. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that vinyl chloride is a health concern at certain levels of exposure. This chemical is used in industry and is found in drinking water as a result of the breakdown of related solvents. The solvents are used as cleaners and degreasers of metals and generally get into drinking water by improper waste disposal. This chemical has been associated with significantly increased risks of cancer among certain industrial workers who were exposed to relatively large amounts of this chemical during their working careers. This chemical has also been shown to cause cancer in laboratory animals when the animals are exposed at high levels over their lifetimes. Chemicals that cause increased risk of cancer among exposed industrial workers and in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. DNR has set the enforceable drinking water standard for vinyl chloride at 0.002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in humans and laboratory animals. Drinking

water which meets this standard is associated with little to none of this risk and should be considered safe."

56. Xylenes. "The Missouri Department of Natural Resources (DNR) sets drinking water standards and has determined that xylene is a health concern at certain levels of exposure. This organic chemical is used in the manufacture of gasoline for airplanes and as a solvent for pesticides, and as a cleaner and degreaser of metals. It usually gets into water by improper waste disposal. This chemical has been shown to damage the liver, kidney and nervous system of laboratory animals, such as rats and dogs, exposed to high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. DNR has set the drinking water standard for xylene at ten (10) ppm to protect against the risk of these adverse health effects. Drinking water that meets the DNR standard is associated with little to none of this risk and is considered safe with respect to xylene."

(8) Public Notification by the State. The department may give notice to the public required by this rule on behalf of the supplier of water. However, the supplier of water remains legally responsible for ensuring that the requirements of this rule are met.

AUTHORITY: section 640.100, RSMo (1994). Original rule filed May 4, 1979, effective Sept. 14, 1979. Amended: Filed April 14, 1981, effective Oct. 11, 1981. Amended: Filed Aug. 4, 1987, effective Jan. 1, 1988. Rescinded and readopted: Filed June 2, 1988, effective Aug. 31, 1988. Amended: Filed Dec. 4, 1990, effective July 8, 1991. Amended: Filed March 31, 1991, effective Dec. 3, 1992. Amended: Filed Aug. 4, 1992, effective May 6, 1993. Amended: Filed May 4, 1993, effective Jan. 13, 1994. Amended: Filed Feb. 1, 1996, effective Oct. 30, 1996.*

**Original authority 1939, amended 1978, 1981, 1982, 1988, 1989, 1992, 1993, 1995.*

10 CSR 60-8.020 Public Notice Requirements Pertaining to Lead
(Rescinded October 30, 1996)