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

Title 10—DEPARTMENT OF NATURAL RESOURCES
Division 60—Public Drinking Water Program
Chapter 8—Public Notification

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 treatment techniques, the MCLs of contaminants or maximum residual disinfectant levels (MRDs) 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. Acute violations include but may not be limited to:

A. Violation of the MCL for nitrate or nitrite;

B. Violation of the MCL for total coliforms, when fecal coliforms or *E. coli* are present in the water distribution system;

C. Violations of the MRDL for chlorine dioxide;

D. Confirmed sample results exceeding five (5) turbidity units; and

E. Any violations specified by the department as posing an acute risk to human health.

(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 maximum residual disinfectant level, 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 non-cancer 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."

(D) Disinfectants.

1. Chlorine. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that chlorine is a health concern at certain levels of exposure. Chlorine is added to drinking water as a disinfectant to kill bacteria and other disease-causing microorganisms and is also added to provide continuous disinfection throughout the distribution system. Disinfection is required for surface water systems. However, at high doses for extended periods of time, chlorine has been shown to affect blood and the liver in laboratory animals. EPA has set a drinking water standard for chlorine to protect against the risk of these adverse effects. Drinking water which meets this EPA standard is associated with little to none of this risk and should be considered safe with respect to chlorine.

2. Chloramines. The United States Environmental Protection Agency (EPA) sets

drinking water standards and has determined that chloramines are a health concern at certain levels of exposure. Chloramines are added to drinking water as a disinfectant to kill bacteria and other disease-causing microorganisms and are also added to provide continuous disinfection throughout the distribution system. Disinfection is required for surface water systems. However, at high doses for extended periods of time, chloramines have been shown to affect blood and the liver in laboratory animals. EPA has set a drinking water standard for chloramines to protect against the risk of these adverse effects. Drinking water which meets this EPA standard is associated with little to none of this risk and should be considered safe with respect to chloramines.

3. Chlorine dioxide. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that chlorine dioxide is a health concern at certain levels of exposure. Chlorine dioxide is used in water treatment to kill bacteria and other disease-causing microorganisms and can be used to control tastes and odors. Disinfection is required for surface water systems. However, at high doses, chlorine dioxide-treated drinking water has been shown to affect blood in laboratory animals. Also, high levels of chlorine dioxide given to laboratory animals in drinking water have been shown to cause neurological effects on the developing nervous system. These neurodevelopmental effects may occur as a result of a short-term excessive chlorine dioxide exposure. To protect against such potentially harmful exposures, EPA requires chlorine dioxide monitoring at the treatment plant, where disinfection occurs, and at representative points in the distribution system serving water users. EPA has set a drinking water standard for chlorine dioxide to protect against the risk of these adverse effects.

A. Systems with a violation at the treatment plant, but not in the distribution system, are required to use the following additional language and treat the violation as a nonacute violation: The chlorine dioxide violations reported today are the result of exceedances at the treatment facility only, and do not include violations within the distribution system serving users of this water supply. Continued compliance with chlorine dioxide levels within the distribution system minimizes the potential risk of these violations to present consumers.

B. Systems with a violation in the distribution system are required to use the following additional language and treat the violation as an acute violation: The chlorine dioxide violations reported today include exceedances of the EPA standard within the distribution system serving water users. Violations of the chlorine dioxide standard within the distribution system may harm human health based on short-term exposures. Certain groups, including pregnant women, infants, and young children, may be especially susceptible to adverse effects of excessive exposure to chlorine dioxide-treated water. The purpose of this notice is to advise that such persons should consider reducing their risk of adverse effects from these chlorine dioxide violations by seeking alternate sources of water for human consumption until such exceedances are rectified. Local and state health authorities are the best sources for information concerning alternate drinking water; and

(E) Disinfection By-Products.

1. Disinfection by-products and treatment technique for DBPs. The United States Environmental Protection Agency (EPA) sets drinking water standards and requires the disinfection of drinking water. However, when used in the treatment of drinking water, disinfectants react with naturally-occurring organic and inorganic matter present in water to form chemicals called disinfection by-products (DBPs). EPA has determined that a number of DBPs are a health concern at certain levels of exposure. Certain DBPs, including some trihalomethanes (THMs) and some haloacetic acids (HAAs), have been shown to cause cancer in laboratory animals. Other DBPs have been shown to affect the liver and the nervous system, and cause reproductive or developmental effects in laboratory animals. Exposure to certain DBPs may produce similar effects in people. EPA has set standards to limit exposure to THMs, HAAs, and other DBPs.

2. Bromate. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that bromate is a health concern at certain levels of exposure. Bromate is formed as a by-product of ozone disinfection of drinking water. Ozone reacts with naturally occurring bromide in the water to form bromate. Bromate has been shown to produce cancer in rats. EPA has set a drinking water standard to limit exposure to bromate.

3. Chlorite. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that chlorite is a health concern at certain levels of exposure. Chlorite is formed from the breakdown of chlorine dioxide, a drinking water disinfectant. Chlorite in drinking water has been shown to affect blood and the developing nervous system. EPA has set a drinking water standard for chlorite to protect against these effects. Drinking water which meets this standard is associated with little to none of these risks and should be considered safe with respect to chlorite.

(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 Supp. 1999. 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. Amended: Filed Dec. 15, 1999, effective Sept. 1, 2000.*

**Original authority: 640.100, RSMo 1939, amended 1978, 1981, 1982, 1988, 1989, 1992, 1993, 1995, 1996, 1998, 1999.*

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

AUTHORITY: section 640.100, RSMo Supp. 1992. Original filed June 2, 1988, effective Aug. 31, 1988. Rescinded: Filed Feb. 1, 1996, effective Oct. 30, 1996.

10 CSR 60-8.030 Consumer Confidence Reports

PURPOSE: This rule establishes the minimum requirements for the content of annual reports that community water systems must deliver to their customers. These reports must contain information on the quality of the water delivered by the systems and characterize the risks (if any) from exposure to contaminants detected in the drinking water in an accurate and understandable manner.

(1) Applicability, Definitions, and General Requirements.

(A) This rule applies only to community water systems.

(B) The definitions in 10 CSR 60-2.015 apply to this rule with the following exceptions:

1. For the purpose of this rule, customers are defined as billing units or service connections to which water is delivered by a community water system; and

2. For the purpose of this rule, detected means—at or above the levels prescribed by 10 CSR 60-5.010(6) for organic, inorganic, and radioactive contaminants.

(C) Each existing community water system must deliver its report to customers by July 1 annually. The report must contain data collected during, or prior to, the previous calendar year as prescribed in paragraph (2)(D)3. of this rule.

(D) A new community water system must deliver its first report to customers by July 1 of the year after its first full calendar year in operation and annually thereafter.

(E) A community water system that sells water to another community water system must deliver to the purchasing water system the information required in subsection (2)(B), and any information required in subsections (2)(D) through (2)(G) of this rule for monitoring conducted at the source or entrypoint to the distribution system. The required information from the seller must be provided no later than April 1 annually or on a date mutually agreed upon by the seller and the purchaser that is documented in writing and signed by both parties.

(2) Content of the Reports.

(A) Each community water system must provide to its customers an annual report that contains the information specified in section (2) and section (3) of this rule.

(B) Information on the source of the water delivered—

1. Each report must identify the source(s) of the water delivered by the community water system by providing information on—

A. The type of the water: e.g., surface water, ground water;

B. The commonly used name (if any) and location of the body (or bodies) of water; and

C. If a source water assessment has been completed, the report must notify consumers of the availability of this information and the means to obtain it, and also include a brief summary of the system's susceptibility to potential sources of contamination, using language provided in the source water assessment or written by the operator. If no source water assessment has been completed, systems are encouraged to highlight in the report significant sources of contamination in the source water area if they have readily available information.

2. *Reserved*

(C) Definitions.

1. Each report must include the following definitions:

A. Maximum contaminant level goal or MCLG—The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety; and

B. Maximum contaminant level or MCL—The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

2. A report for a community water system operating under a variance or an exemption issued under 10 CSR 60-6.010 or 10 CSR 60-6.020 must include the following definition: Variances and exemptions—State permission not to meet an MCL or a treatment technique under certain conditions.

3. A report which contains data on a contaminant for which the department has set a treatment technique or an action level must include one (1) or both of the following definitions as applicable:

A. Treatment technique—A required process intended to reduce the level of a contaminant in drinking water; and

B. Action level—The concentration of a contaminant which, if exceeded, triggers treatment or other requirements with which a water system must comply.

(D) Information on Detected Contaminants.

1. Subsection (2)(D) specifies the requirements for information to be included in each report for contaminants subject to mandatory monitoring (except Cryptosporidium). It applies to—

A. Contaminants subject to an MCL, action level, or treatment technique (regulated contaminants);

B. Contaminants for which monitoring is required by 10 CSR 60-4.110 (unregulated contaminants); and

C. Disinfection by-products or microbial contaminants for which monitoring is required by 40 CFR 141.142 and 141.143, except as provided under paragraph (2)(E)1. of this rule, and which are detected in the finished water.

2. The data relating to these contaminants must be displayed in one (1) table or in several adjacent tables. Any additional monitoring results which a community water system chooses to include in its report must be displayed separately.

3. The data must be derived from data collected to comply with the Environmental Protection Agency and department monitoring and analytical requirements during the previous calendar year except that—

A. Where a system is allowed to monitor for regulated contaminants less often than once a year, the table(s) must include the date and results of the most recent sampling and the report must include a brief statement indicating that the data presented in the report are from the most recent testing done in accordance with the regulations. The system may use the following language or similar language for their statement: "The state has reduced monitoring requirements for certain contaminants to less often than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of our data (e.g., for organic contaminants), though representative, is more than one year old." No data older than five (5) years need be included.

B. Results of monitoring in compliance with 40 CFR 141.142 and 141.143 need only be included for five (5) years from the date of last sample or until any of the detected contaminants becomes regulated and subject to routine monitoring requirements, whichever comes first.

4. For detected regulated contaminants (listed in Appendix A to this rule), the table(s) must contain—

A. The MCL for that contaminant expressed as a number equal to or greater than 1.0 (as provided in Appendix A to this rule);

B. The MCLG for that contaminant expressed in the same units as the MCL;

C. If there is no MCL for a detected contaminant, the table must indicate that there is a treatment technique, or specify the action level applicable to that contaminant, and the report must include the definitions for treatment technique and/or action level, as appropriate, specified in paragraph (2)(C)3. of this rule;

D. For contaminants subject to an MCL, except turbidity and total coliforms, the highest contaminant level used to determine compliance with 10 CSR 60-4.030; 10 CSR 60-4.040; 10 CSR 60-4.060; 10 CSR 60-4.090; 10 CSR 60-4.100 and the range of detected levels, as follows (when rounding of results to determine compliance with the MCL is allowed by the regulations, rounding should be done prior to multiplying the results by the factor listed in Appendix A of this rule):

(I) When compliance with the MCL is determined annually or less frequently—The highest detected level at any sampling point and the range of detected levels expressed in the same units as the MCL;

(II) When compliance with the MCL is determined by calculating a running annual average of all samples taken at a sampling point—the highest average of any of the sampling points and the range of all sampling points expressed in the same units as the MCL; and

(III) When compliance with the MCL is determined on a system-wide basis by calculating a running annual average of all samples at all sampling points—the average and range of detection expressed in the same units as the MCL;

E. For turbidity, the highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in 10 CSR 60-4.050.

(I) The report should include an explanation of the reasons for measuring turbidity, such as: "Turbidity is a measure of the cloudiness of water. We monitor turbidity because it is a good indicator of the effectiveness of our filtration system."

(II) If an explanation of the reasons for measuring turbidity is included, it does not have to be included in the table but may be added as a footnote or narrative associated with the table;

F. For lead and copper, the ninetieth percentile value of the most recent round of sampling, the number of sampling sites exceeding the action level in that round, and the most recent source water results;

G. For total coliform—

(I) The highest monthly number of positive compliance samples for systems collecting fewer than forty (40) samples per month; or

(II) The highest monthly percentage of positive compliance samples for systems collecting at least forty (40) samples per month;

H. For fecal coliform or *E. Coli*, the total number of positive compliance samples; and

I. The likely source(s) of detected regulated contaminants to the best of the operator's knowledge. Specific information regarding contaminants may be available in sanitary surveys and source water assessments, and should be used when available to the operator. If the operator lacks specific information on the likely source, the report must include one (1) or more of the typical sources for that contaminant which are most applicable to the system. The typical sources for a given contaminant are listed in Appendix B to this rule.

5. If a community water system distributes water to its customers from multiple hydraulically independent distribution systems that are fed by different raw water sources, the table should contain a separate column for each service area and the report should identify each separate distribution system. Alternatively, systems could produce separate reports tailored to include data for each service area.

6. The table(s) must clearly identify any data indicating violations of MCLs or treatment techniques and the report must contain a clear and readily understandable explanation of the violation including: the length of the violation, the potential adverse health effects, and actions taken by the system to address the violation. To describe the potential health effects, the system must use the relevant language of Appendix C to this rule.

7. For detected unregulated contaminants for which monitoring is required (except Cryptosporidium), the table(s) must contain the average and range at which the contaminant was detected. When detects of unregulated contaminants are reported, the report may include a brief explanation of the reasons for monitoring for unregulated contaminants using language such as: "Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted. Information on all the contaminants that were monitored for, whether regulated or unregulated, can be obtained from this water system or the Department of Natural Resources."

(E) Information on Cryptosporidium, radon, and other contaminants.

1. If the system has performed any monitoring for Cryptosporidium, including monitoring performed to satisfy the requirements of 40 CFR 141.143, which indicates that Cryptosporidium may be present in the source water or the finished water, the report must include:

A. A summary of the results of the monitoring; and

B. An explanation of the significance of the results. The system may use the following language or similar language for the explanation: "Cryptosporidium is a microbial parasite which is found in surface water throughout the U.S. Although Cryptosporidium can be removed by filtration, the most commonly used filtration methods can not guarantee one hundred percent (100%) removal. Monitoring of our source water and/or finished water indicates the presence of these organisms. Current test methods do not enable us to determine if these organisms are dead or if they are capable of causing disease. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immuno-compromised people have more difficulty and are at greater risk of developing severe, life threatening illness. Immuno-compromised individuals are encouraged to consult their doctor regarding appropriate precautions to take to prevent infection. Cryptosporidium must be ingested for it to cause disease, and may be passed through other means than drinking water."

2. If the system has performed any monitoring for radon which indicates that radon may be present in the finished water, the report must include:

A. The results of the monitoring; and

B. An explanation of the significance of the results. The system may use the following language or similar language for the explanation: "Radon is a naturally occurring gas present in some ground water. It poses a lung cancer risk when the radon gas is released from water into air (as occurs during showering, bathing, or washing dishes or clothes), and a stomach cancer risk when you drink water containing radon. Radon gas released from drinking water is a relatively small part of the total radon in air. Other sources of radon gas are soils which enter homes through foundations, and radon inhaled directly while smoking cigarettes. Experts are not sure exactly what the cancer risk is from a given level of radon in your drinking water. If you are concerned about radon in your home, test kits are available to determine the total exposure level."

3. If the system has performed additional monitoring which indicates the presence of other contaminants in the finished water, systems are encouraged to report any results which may indicate a health concern. To determine if results may indicate a health concern, the department recommends that systems find out if the Environmental Protection Agency has proposed a National Primary Drinking Water Regulation or issued a health advisory for that contaminant by calling the Safe Drinking Water Hotline (800-426-4791). Detects above a proposed MCL or health advisory level may indicate possible health concerns. For such contaminants, the department recommends that the report include:

A. The results of the monitoring; and

B. An explanation of the significance of the results noting the existence of a health advisory or a proposed regulation.

(F) Compliance with Department Regulations. In addition to the requirements of paragraph (2)(D)6., the report must note any violation that occurred during the year covered by the report of a requirement listed below, and include a clear and readily understandable explanation of the violation, any potential adverse health effects, and the steps the system has taken to correct the violation.

1. Monitoring and reporting of compliance data.

2. Filtration and disinfection prescribed by 10 CSR 60-4.055. For systems which have failed to install adequate filtration or disinfection equipment or processes, or have had a failure of such equipment or processes which constitutes a violation, the report must include the following language as part of the explanation of potential adverse health effects: "Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches."

3. Lead and copper control requirements prescribed by 10 CSR 60-15. For systems which fail to take one (1) or more actions

prescribed by 10 CSR 60-15.010(4), 10 CSR 60-15.020, 10 CSR 60-15.030, 10 CSR 60-15.040, or 10 CSR 60-15.050, the report must include the applicable language of Appendix C to this rule for lead, copper, or both.

4. Treatment techniques for Acrylamide and Epichlorohydrin prescribed by 10 CSR 60-4.040(9). For systems which violate the requirements of 10 CSR 60-4.040(9), the report must include the relevant language from Appendix C to this rule.

5. Record keeping of compliance data.

6. Special monitoring requirements prescribed by 10 CSR 60-4.110.

7. Violation of the terms of a variance, an exemption, or an administrative or judicial order.

(G) Variances and Exemptions. If a system is operating under the terms of a variance or an exemption issued under 10 CSR 60-6.010 or 10 CSR 60-6.020, the report must contain—

1. An explanation of the reasons for the variance or exemption;

2. The date on which the variance or exemption was issued;

3. A brief status report on the steps the system is taking to install treatment, find alternative sources of water, or otherwise comply with the terms and schedules of the variance or exemption; and

4. A notice of any opportunity for public input in the review, or renewal, of the variance or exemption.

(H) Additional Information.

1. The report must contain a brief explanation regarding contaminants which may reasonably be expected to be found in drinking water, including bottled water. The report must include the language of subparagraph (2)(H)1.A. of this rule. This explanation must also include the information contained in subparagraphs (2)(H)1.B.–D. of this rule using this language or comparable language.

A. "Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791)."

B. "The sources of drinking water, (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity."

C. "Contaminants that may be present in source water include:

(I) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

(II) Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

(III) Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.

(IV) Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

(V) Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities."

D. "In order to ensure that tap water is safe to drink, the Department of Natural Resources prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Department of Health regulations establish limits for contaminants in bottled water which must provide the same protection for public health."

2. The report must include the telephone number of the owner, operator, or designee of the community water system as a source of additional information concerning the report.

3. In communities with a large proportion of non-English speaking residents, as determined by the department, the report must contain information in the appropriate language(s) regarding the importance of the report. The report may use a notice based on the following wording: "This report contains very important information about your drinking water. Translate it or speak with someone who understands it." The report may also contain a telephone number or address where such residents may contact the system to obtain a translated copy of the report or assistance in the appropriate language.

4. The report must include information (e.g., time and place of regularly scheduled board meetings) about opportunities for public participation in decisions that may affect the quality of the water.

5. The systems may include such additional information as they deem necessary for public education consistent with, and not detracting from, the purpose of the report.

(3) Required Additional Health Information.

(A) All reports must prominently display the following language: "Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their healthcare providers. Environmental Protection Agency/Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791)."

(B) A system which detects arsenic at levels above twenty-five micrograms per liter (25 μg/l), but below the MCL:

1. Must include in its report a short informational statement about arsenic, using language such as: "Arsenic is a naturally-occurring mineral known to cause cancer in humans at high concentrations. The Environmental Protection Agency is reviewing the drinking water standard for arsenic because of special concerns that it may not be stringent enough."

2. May write its own educational statement, but only in consultation with the department.

(C) A system which detects nitrate at levels above five milligrams per liter (5 mg/l), but below the MCL:

1. Must include a short informational statement about the impacts of nitrate on children using language such as: "Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advice from your health care provider."

2. May write its own educational statement, but only in consultation with the department.

(D) Systems which detect lead above the action level in more than five percent (5%), and up to and including ten percent (10%), of homes sampled:

1. Must include a short informational statement about the special impact of lead on children using language such as: "Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your

home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800-426-4791)."

2. May write its own educational statement, but only in consultation with the department.

(E) Community water systems that detect total trihalomethanes (TTHM) above 0.080 mg/l, but below the MCL in 10 CSR 60-4.090, as an annual average, monitored and calculated under the provisions of 10 CSR 60-4.090, must include health effects language prescribed by paragraph (73) of Appendix C.

(4) Report Delivery and Record Keeping.

(A) Systems serving ten thousand (10,000) or more persons must mail or otherwise directly deliver one (1) copy of the report to each customer annually.

(B) Systems serving greater than five hundred (500) persons but fewer than ten thousand (10,000) persons must use one (1) of the following options:

1. Mail or otherwise directly deliver one (1) copy of the report to each customer annually; or

2. All of the following (Systems choosing this option must notify customers that the report will not be mailed. This notification must be published in the newspaper(s) in which the reports are published and provided with any other notification method that is used)—

A. Publish the report at least once annually in one (1) or more local newspaper(s) of general circulation, as defined in section 493.050, RSMo, serving the area in which the system is located;

B. Provide notice to their customers at least once per year by mail, or door-to-door delivery, or by continuous posting in appropriate locations that the report is available upon request; and

C. Post the report continuously at the local water system office, the city/county/regional public library, and other public buildings within the water system service area.

(C) Systems serving five hundred (500) or fewer persons must use one (1) of the options:

1. Use the method in paragraph (4)(B)1.;

2. Use the method in paragraph (4)(B)2.; or

3. Provide notice at least once per year to their customers by mail, or door-to-door delivery, or by continuous posting in appropriate locations that the report is available upon request; and post the report continuously at the local water system office and the city/county/regional public library.

(D) Each community water system must make its reports available to the public upon request.

(E) In addition to the delivery requirement in subsection (4)(A) of this rule, each community water system serving one hundred thousand (100,000) or more persons must post its current year's report to a publicly-accessible site on the Internet. Other water systems with access to a publicly-accessible Internet site are encouraged to use the Internet as an additional method of distribution.

(F) The system must make a good faith effort to reach consumers who do not get water bills, using means recommended by the department. The department expects that an adequate good faith effort will be tailored to the consumers who are served by the system but are not bill-paying customers, such as renters or workers. A good faith effort to reach consumers would include a mix of methods appropriate to the particular system such as: Posting the reports on the Internet; mailing to postal patrons in metropolitan areas; advertising the availability of the report in the news media; publication in a local newspaper; posting in libraries or other public places such as cafeterias or lunch rooms of public buildings; delivery of multiple copies for distribution by single-biller customers such as apartment buildings or large private employers; delivery to community organizations.

(G) No later than the date the system is required to distribute the report to its customers, each community water system must mail a copy of the report to the department, followed within three (3) months by a certification, on a form provided by the department, that the report has been distributed to customers, and that the information is correct and consistent with the compliance monitoring data previously submitted to the department.

(H) No later than the date the system is required to distribute the report to its customers, each community water system must deliver the report to any other agency or clearinghouse identified by the department.

(I) Any system subject to this rule must retain copies of its consumer confidence report for no less than five (5) years.

Appendix A to 10 CSR 60-8.030
Converting MCL Compliance Values for Consumer Confidence Reports

Key

AL = Action Level
MCL = Maximum Contaminant Level
MCLG = Maximum Contaminant Level Goal
MFL = million fibers per liter
mrem/year = millirems per year (a measure of radiation absorbed by the body)
NTU = Nephelometric Turbidity Units
pCi/l = picocuries per liter (a measure of radioactivity)
ppm = parts per million, or milligrams per liter (mg/l)
ppb = parts per billion, or micrograms per liter (μg/l)
ppt = parts per trillion, or nanograms per liter
ppq = parts per quadrillion, or picograms per liter
TT = Treatment Technique

Contaminant	MCL in compliance units (mg/l)	multiply by . . .	MCL in CCR units	MCLG in CCR units
Microbiological Contaminants				
1. Total Coliform Bacteria			(Systems that collect 40 or more samples per month) ≥5% of monthly samples are positive; (systems that collect fewer than 40 samples per month) 1 positive monthly sample.	0
2. Fecal coliform and *E. coli*			A routine sample and a repeat sample are total coliform positive, and one is also fecal coliform or *E. coli* positive.	0
3. Turbidity			TT (NTU)	n/a
Radioactive Contaminants				
4. Beta/photon emitters	4 mrem/yr		4 mrem/yr	0
5. Alpha emitters	15 pCi/l		15 pCi/l	0
6. Combined radium	5 pCi/l		5 pCi/l	0
Inorganic Contaminants				
7. Antimony	.006	1000	6 ppb	6
8. Arsenic	.05	1000	50 ppb	n/a
9. Asbestos	7 MFL		7 MFL	7
10. Barium	2		2 ppm	2
11. Beryllium	.004	1000	4 ppb	4
12. Cadmium	.005	1000	5 ppb	5
13. Chromium	.1	1000	100 ppb	100
14. Copper	AL=1.3		AL=1.3 ppm	1.3
15. Cyanide	.2	1000	200 ppb	200
16. Fluoride	4		4 ppm	4
17. Lead	AL=.015	1000	AL=15 ppb	0
18. Mercury (inorganic)	.002	1000	2 ppb	2
19. Nitrate (as Nitrogen)	10		10 ppm	10
20. Nitrite (as Nitrogen)	1		1 ppm	1
21. Selenium	.05	1000	50 ppb	50
22. Thallium	.002	1000	2 ppb	0.5

Synthetic Organic Contaminants including Pesticides and Herbicides				
23. 2,4-D	.07	1000	70 ppb	70
24. 2,4,5-TP [Silvex]	.05	1000	50 ppb	50
25. Acrylamide			TT	0
26. Alachlor	.002	1000	2 ppb	0
27. Atrazine	.003	1000	3 ppb	3
28. Benzo(a)pyrene [PAH]	.0002	1,000,000	200 ppt	0
29. Carbofuran	.04	1000	40 ppb	40
30. Chlordane	.002	1000	2 ppb	0
31. Dalapon	.2	1000	200 ppb	200
32. Di(2-ethylhexyl)adipate	.4	1000	400 ppb	400
33. Di(2-ethylhexyl)phthalate	.006	1000	6 ppb	0
34. Dibromochloropropane	.0002	1,000,000	200 ppt	0
35. Dinoseb	.007	1000	7 ppb	7
36. Diquat	.02	1000	20 ppb	20
37. Dioxin [2,3,7,8-TCDD]	.00000003	1,000,000,000	30 ppq	0
38. Endothall	.1	1000	100 ppb	100
39. Endrin	.002	1000	2 ppb	2
40. Epichlorohydrin			TT	0
41. Ethylene dibromide	.00005	1,000,000	50 ppt	0
42. Glyphosate	.7	1000	700 ppb	700
43. Heptachlor	.0004	1,000,000	400 ppt	0
44. Heptachlor epoxide	.0002	1,000,000	200 ppt	0
45. Hexachlorobenzene	.001	1000	1 ppb	0
46. Hexachloro-cyclopentadiene	.05	1000	50 ppb	50
47. Lindane	.0002	1,000,000	200 ppt	200
48. Methoxychlor	.04	1000	40 ppb	40
49. Oxamyl [Vydate]	.2	1000	200 ppb	200
50. PCBs [Polychlorinated biphenyls]	.0005	1,000,000	500 ppt	0
51. Pentachlorophenol	.001	1000	1 ppb	0
52. Picloram	.5	1000	500 ppb	500
53. Simazine	.004	1000	4 ppb	4
54. Toxaphene	.003	1000	3 ppb	0
Volatile Organic Contaminants				
55. Benzene	.005	1000	5 ppb	0
56. Carbon tetrachloride	.005	1000	5 ppb	0
57. Chlorobenzene	.1	1000	100 ppb	100
58. o-Dichlorobenzene	.6	1000	600 ppb	600
59. p-Dichlorobenzene	.075	1000	75 ppb	75
60. 1,2-Dichloroethane	.005	1000	5 ppb	0
61. 1,1-Dichloroethylene	.007	1000	7 ppb	7
62. cis-1,2-Dichloroethylene	.07	1000	70 ppb	70
63. trans-1,2-Dichloroethylene	.1	1000	100 ppb	100
64. Dichloromethane	.005	1000	5 ppb	0
65. 1,2-Dichloropropane	.005	1000	5 ppb	0
66. Ethylbenzene	.7	1000	700 ppb	700
67. Styrene	.1	1000	100 ppb	100
68. Tetrachloroethylene	.005	1000	5 ppb	0
69. 1,2,4-Trichlorobenzene	.07	1000	70 ppb	70
70. 1,1,1-Trichloroethane	.2	1000	200 ppb	200
71. 1,1,2-Trichloroethane	.005	1000	5 ppb	3
72. Trichloroethylene	.005	1000	5 ppb	0

73. TTHMs [Total trihalomethanes]	.10	1000	100 ppb	n/a
74. Toluene	1		1 ppm	1
75. Vinyl Chloride	.002	1000	2 ppb	0
76. Xylenes	10		10 ppm	10

Appendix B to 10 CSR 60-8.030—Regulated Contaminants

Key

AL = Action Level
MCL = Maximum Contaminant Level
MCLG = Maximum Contaminant Level Goal
MFL = million fibers per liter
mrem/year = millirems per year (a measure of radiation absorbed by the body)
NTU = Nephelometric Turbidity Units
pCi/l = picocuries per liter (a measure of radioactivity)
ppm = parts per million, or milligrams per liter (mg/l)
ppb = parts per billion, or micrograms per liter (μg/l)
ppt = parts per trillion, or nanograms per liter
ppq = parts per quadrillion, or picograms per liter
TT = Treatment Technique

Contaminant (units)	MCLG	MCL	Major sources in drinking water
Microbiological Contaminants			
1. Total Coliform Bacteria	0	(Systems that collect 40 or more samples per month) ≥5% of monthly samples are positive; (systems that collect fewer than 40 samples per month) 1 positive monthly sample.	Naturally present in the environment.
2. Fecal coliform and *E. coli*	0	A routine sample and a repeat sample are total coliform positive, and one is also fecal coliform or *E. coli* positive.	Human and animal fecal waste.
3. Turbidity	n/a	TT	Soil runoff.
Radioactive Contaminants			
4. Beta/photon emitters (mrem/yr)	0	4	Decay of natural and man-made deposits.
5. Alpha emitters (pCi/l)	0	15	Erosion of natural deposits.
6. Combined radium (pCi/l)	0	5	Erosion of natural deposits.
Inorganic Contaminants			
7. Antimony (ppb)	6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder.
8. Arsenic (ppb)	n/a	50	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes.
9. Asbestos (MFL)	7	7	Decay of asbestos cement water mains; Erosion of natural deposits.

10. Barium (ppm)	2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
11. Beryllium (ppb)	4	4	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries.
12. Cadmium (ppb)	5	5	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; runoff from waste batteries and paints.
13. Chromium (ppb)	100	100	Discharge from steel and pulp mills; Erosion of natural deposits.
14. Copper (ppm)	1.3	AL=1.3	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives.
15. Cyanide (ppb)	200	200	Discharge from steel/metal factories; Discharge from plastic and fertilizer factories.
16. Fluoride (ppm)	4	4	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
17. Lead (ppb)	0	AL=15	Corrosion of household plumbing systems; Erosion of natural deposits.
18. Mercury [inorganic] (ppb)	2	2	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland.
19. Nitrate [as Nitrogen] (ppm)	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
20. Nitrite [as Nitrogen] (ppm)	1	1	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
21. Selenium (ppb)	50	50	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines.
22. Thallium (ppb)	0.5	2	Leaching from ore-processing sites; Discharge from electronics, glass, and drug factories.
Synthetic Organic Contaminants including Pesticides and Herbicides			
23. 2,4-D (ppb)	70	70	Runoff from herbicide used on row crops.
24. 2,4,5-TP [Silvex] (ppb)	50	50	Residue of banned herbicide.
25. Acrylamide	0	TT	Added to water during sewage/wastewater treatment.
26. Alachlor (ppb)	0	2	Runoff from herbicide used on row crops.
27. Atrazine (ppb)	3	3	Runoff from herbicide used on row crops.
28. Benzo(a)pyrene [PAH] (nanograms/l)	0	200	Leaching from linings of water storage tanks and distribution lines.
29. Carbofuran (ppb)	40	40	Leaching of soil fumigant used on rice and alfalfa.
30. Chlordane (ppb)	0	2	Residue of banned termiticide.
31. Dalapon (ppb)	200	200	Runoff from herbicide used on rights of way.
32. Di(2-ethylhexyl)adipate (ppb)	400	400	Discharge from chemical factories.
33. Di(2-ethylhexyl)phthalate (ppb)	0	6	Discharge from rubber and chemical factories.
34. Dibromochloropropane (ppt)	0	200	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards.
35. Dinoseb (ppb)	7	7	Runoff from herbicide used on soybeans and vegetables.

36. Diquat (ppb)	20	20	Runoff from herbicide use.
37. Dioxin [2,3,7,8-TCDD] (ppq)	0	30	Emissions from waste incineration and other combustion; Discharge from chemical factories.
38. Endothall (ppb)	100	100	Runoff from herbicide use.
39. Endrin (ppb)	2	2	Residue of banned insecticide.
40. Epichlorohydrin	0	TT	Discharge from industrial chemical factories; An impurity of some water treatment chemicals.
41. Ethylene dibromide (ppt)	0	50	Discharge from petroleum refineries.
42. Glyphosate (ppb)	700	700	Runoff from herbicide use.
43. Heptachlor (ppt)	0	400	Residue of banned termiticide.
44. Heptachlor epoxide (ppt)	0	200	Breakdown of heptachlor.
45. Hexachlorobenzene (ppb)	0	1	Discharge from metal refineries and agricultural chemical factories.
46. Hexachlorocyclopentadiene (ppb)	50	50	Discharge from chemical factories.
47. Lindane (ppt)	200	200	Runoff/leaching from insecticide used on cattle, lumber, gardens.
48. Methoxychlor (ppb)	40	40	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, and livestock.
49. Oxamyl [Vydate](ppb)	200	200	Runoff/leaching from insecticide used on apples, potatoes and tomatoes.
50. PCBs [Polychlorinated biphenyls] (ppt)	0	500	Runoff from landfills; Discharge of waste chemicals.
51. Pentachlorophenol (ppb)	0	1	Discharge from wood preserving factories.
52. Picloram (ppb)	500	500	Herbicide runoff.
53. Simazine (ppb)	4	4	Herbicide runoff.
54. Toxaphene (ppb)	0	3	Runoff/leaching from insecticide used on cotton and cattle.
Volatile Organic Contaminants			
55. Benzene (ppb)	0	5	Discharge from factories; Leaching from gas storage tanks and landfills.
56. Carbon tetrachloride (ppb)	0	5	Discharge from chemical plants and other industrial activities.
57. Chlorobenzene (ppb)	100	100	Discharge from chemical and agricultural chemical factories.
58. o-Dichlorobenzene (ppb)	600	600	Discharge from industrial chemical factories.
59. p-Dichlorobenzene (ppb)	75	75	Discharge from industrial chemical factories.
60. 1,2-Dichloroethane (ppb)	0	5	Discharge from industrial chemical factories.
61. 1,1-Dichloroethylene (ppb)	7	7	Discharge from industrial chemical factories.
62. cis-1,2-Dichloroethylene (ppb)	70	70	Discharge from industrial chemical factories.
63. trans-1,2-Dichloroethylene (ppb)	100	100	Discharge from industrial chemical factories.
64. Dichloromethane (ppb)	0	5	Discharge from pharmaceutical and chemical factories.
65. 1,2-Dichloropropane (ppb)	0	5	Discharge from industrial chemical factories.
66. Ethylbenzene (ppb)	700	700	Discharge from petroleum refineries.
67. Styrene (ppb)	100	100	Discharge from rubber and plastic factories; Leaching from landfills.
68. Tetrachloroethylene (ppb)	0	5	Discharge from factories and dry cleaners.

69. 1,2,4-Trichlorobenzene (ppb)	70	70	Discharge from textile-finishing factories.
70. 1,1,1-Trichloroethane (ppb)	200	200	Discharge from metal degreasing sites and other factories.
71. 1,1,2-Trichloroethane (ppb)	3	5	Discharge from industrial chemical factories.
72. Trichloroethylene (ppb)	0	5	Discharge from metal degreasing sites and other factories.
73. TTHMs [Total trihalomethanes] (ppb)	n/a	100	By-product of drinking water chlorination.
74. Toluene (ppm)	1	1	Discharge from petroleum factories.
75. Vinyl Chloride (ppb)	0	2	Leaching from PVC piping; Discharge from plastics factories.
76. Xylenes (ppm)	10	10	Discharge from petroleum factories; Discharge from chemical factories.

Appendix C to 10 CSR 60-6.030
Health Effects Language

Microbiological Contaminants

(1) Total Coliform. "Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems."

(2) Fecal coliform/*E.Coli*. "Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems."

(3) Turbidity. "Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches."

Radioactive Contaminants

(4) Beta/photon emitters. "Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer."

(5) Alpha emitters. "Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer."

(6) Combined Radium 226/228. "Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer."

Inorganic Contaminants

(7) Antimony. "Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar."

(8) Arsenic. "Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer."

(9) Asbestos. "Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps."

(10) Barium. "Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure."

(11) Beryllium. "Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions."

(12) Cadmium. "Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage."

(13) Chromium. "Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis."

(14) Copper. "Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor."

(15) Cyanide. "Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid."

(16) Fluoride. "Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Children may get mottled teeth."

(17) Lead. "Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or

mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure."

(18) Mercury (inorganic). "Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage."

(19) Nitrate. "Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome."

(20) Nitrite. "Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome."

(21) Selenium. "Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation."

(22) Thallium. "Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver."

Synthetic Organic Contaminants Including Pesticides and Herbicides

(23) 2,4-D. "Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands."

(24) 2,4,5-TP (Silvex). "Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems."

(25) Acrylamide. "Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer."

(26) Alachlor. "Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer."

(27) Atrazine. "Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties."

(28) Benzo(a)pyrene (PAH). "Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer."

(29) Carbofuran. "Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems."

(30) Chlordane. "Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer."

(31) Dalapon. "Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes."

(32) Di(2-ethylhexyl)adipate. "Some people who drink water containing di(2-ethylhexyl)adipate well in excess of the MCL over many years could experience general toxic effects or reproductive difficulties."

(33) Di(2-ethylhexyl)phthalate. "Some people who drink water containing di(2-ethylhexyl)phthalate in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer."

(34) Dibromochloropropane (DBCP). "Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer."

(35) Dinoseb. "Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties."

(36) Dioxin (2,3,7,8-TCDD). "Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer."

(37) Diquat. "Some people who drink water containing diquat in excess of the MCL over many years could get cataracts."

(38) Endothall. "Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines."

(39) Endrin. "Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems."

(40) Epichlorohydrin. "Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer."

(41) Ethylene dibromide. "Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer."

(42) Glyphosate. "Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties."

(43) Heptachlor. "Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer."

(44) Heptachlor epoxide. "Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer."

(45) Hexachlorobenzene. "Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer."

(46) Hexachlorocyclopentadiene. "Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach."

(47) Lindane. "Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver."

(48) Methoxychlor. "Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties."

(49) Oxamyl (Vydate). "Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects."

(50) PCBs (Polychlorinated biphenyls). "Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer."

(51) Pentachlorophenol. "Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer."

(52) Picloram. "Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver."

(53) Simazine. "Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood."

(54) Toxaphene. "Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer."

Volatile Organic Contaminants

(55) Benzene. "Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer."

(56) Carbon Tetrachloride. "Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer."

(57) Chlorobenzene. "Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys."

(58) o-Dichlorobenzene. "Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems."

(59) p-Dichlorobenzene. "Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood."

(60) 1,2-Dichloroethane. "Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer."

(61) 1,1-Dichloroethylene. "Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver."

(62) cis-1,2-Dichloroethylene. "Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver."

(63) trans-1,2-Dicholoroethylene. "Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver."

(64) Dichloromethane. "Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer."

(65) 1,2-Dichloropropane. "Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer."

(66) Ethylbenzene. "Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys."

(67) Styrene. "Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system."

(68) Tetrachloroethylene. "Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer."

(69) 1,2,4-Trichlorobenzene. "Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands."

(70) 1,1,1-Trichloroethane. "Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system."

(71) 1,1,2-Trichloroethane. "Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems."

(72) Trichloroethylene. "Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer."

(73) TTHMs (Total Trihalomethanes). "Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer."

(74) Toluene. "Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver."

(75) Vinyl Chloride. "Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer."

(76) Xylenes. "Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system."

AUTHORITY: sections 640.100 and 640.125.1, RSMo Supp. 1998. Original rule filed July 1, 1999, effective March 30, 2000.*

**Original authority: 640.100, RSMo 1939, amended 1978, 1981, 1982, 1988, 1989, 1992, 1993, 1995, 1996, 1998, 1999; 640.125, RSMo 1978, amended 1998.*