

333-061-0097

Adverse Health Effects Language

When providing the information on potential adverse health effects required by these rules in notices of violations of maximum contaminant levels, maximum residual disinfectant levels, treatment technique requirements, or notices of the granting or the continued existence of variances or permits, or notices of failure to comply with a variance or permit schedule, the owner or operator of a public water system shall include the language specified below for each contaminant.

- (1) Adverse Health Effects for Organic Chemicals:
 - (a) Volatile Organic Chemicals (VOCs):
 - (A) **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.
 - (B) **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.
 - (C) **Chlorobenzene.** Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.
 - (D) ***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.
 - (E) ***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.
 - (F) **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.
 - (G) **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.
 - (H) ***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.
 - (I) ***trans*-1,2-Dichloroethylene.** 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.
 - (J) **Dichloromethane(methylene chloride).** 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.

- (K) **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.
- (L) **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.
- (M) **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.
- (N) **Tetrachloroethylene(PCE).** 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.
- (O) **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.
- (P) **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.
- (Q) **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.
- (R) **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.
- (S) **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.
- (T) **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.
- (U) **Xylenes.** Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.
- (b) Synthetic Organic Chemicals (SOCs):
 - (A) **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.
 - (B) **2,4,5-TP(Silvex).** Some people who drink water containing 2,4,5-TP in excess of the MCL over many years could experience liver problems.

- (C) **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.
- (D) **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.
- (E) **Benzo(a)pyrene.** 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.
- (F) **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.
- (G) **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.
- (H) **Dalapon.** Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
- (I) **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 toxic effects such as weight loss, liver enlargement or possible reproductive difficulties.
- (J) **Di(2-ethylhexyl)phthalate.** Some people who drink water containing di(2-ethylhexyl)phthalate well 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.
- (K) **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.
- (L) **Dinoseb.** Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
- (M) **Diquat.** Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
- (N) **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.

- (O) **Endothall.** Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.
- (P) **Endrin.** Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
- (Q) **Ethylene dibromide (EDB).** 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.
- (R) **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.
- (S) **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.
- (T) **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.
- (U) **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.
- (V) **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.
- (W) **Lindane.** Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.
- (X) **Methoxychlor.** Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
- (Y) **Oxamyl.** Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects.
- (Z) **Polychlorinated biphenyls (PCBs).** Some people who drink water containing polychlorinated biphenyls 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.
- (AA) **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.

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

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

(DD) **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.

(2) Special Notice for Lead and Copper.

(a) Mandatory health effects information. When providing the information in public notices on the potential adverse health effects of lead in drinking water, the owner or operator of the water system shall include the following specific language in the notice:

"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."

(b) Mandatory health effects information. When providing information on the potential adverse health effects of copper in drinking water, the owner or operator of the water system shall include the following specific language in the notice:

"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."

(3) Inorganics -- public notice language.

(a) **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.

(b) **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.

(c) **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.

- (d) **Barium.** Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
 - (e) **Beryllium.** Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
 - (f) **Cadmium.** Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
 - (g) **Chromium.** Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
 - (h) **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.
 - (i) **Fluoride.** Some people who drink water containing fluoride in excess of the MCL (4.0 mg/l) over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the MCL (2.0mg/l) or more may cause mottling of children's teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining or pitting of the teeth, and occurs only in developing teeth before they erupt from the gums.
 - (j) **Mercury.** Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
 - (k) **Nitrate (as nitrogen).** Infants below the age of 6 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.
 - (l) **Nitrite.** Infants below the age of 6 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.
 - (m) **Total Nitrate and Nitrite.** Infants below the age of 6 months who drink water containing nitrate and nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
 - (n) **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.
 - (o) **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.
- (4) Microbiological contaminants
- (a) When providing information in public notices required under OAR 333-061-0042(2)(b) for exceeding the MCL for total coliform bacteria as specified in 40 CFR 141.63, the water supplier must include the following specific language in the notice:

"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."

- (b) When providing information in public notices for an exceedance of the MCL for *E. coli* bacteria as prescribed by OAR 333-061-0030(4), the language within quotation marks must be included, exactly as written:

"*E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems."

- (c) When providing information in public notices for failing to complete a coliform investigation or corrective action as required by OAR 333-061-0078, the language specified in paragraphs (4)(c)(A) or (4)(c)(B) must be included, exactly as written except for the language within brackets. The language in paragraph (4)(c)(A) must be used when total coliform was detected at a water system and the language in (4)(c)(B) must be used when *E. coli* was detected regardless of whether the MCL for *E. coli* was exceeded.

- (A) **Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct investigations to identify problems and to correct any problems that are found.**

[THE WATER SUPPLIER MUST USE THE FOLLOWING APPLICABLE SENTENCES.]

We failed to conduct the required coliform investigation.

We failed to correct all identified sanitary defects that were found during the coliform investigation(s).

- (B) ***E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems. We violated the standard for *E. coli*, indicating the need to look for potential problems in water treatment or distribution. When**

this occurs, we are required to conduct a detailed investigation to identify problems and to correct any problems that are found. [THE WATER SUPPLIER MUST USE THE FOLLOWING APPLICABLE SENTENCES.]

We failed to conduct the required coliform investigation.

We failed to correct all identified sanitary defects that were found during the coliform investigation that we conducted.

- (d) When providing information in public notices for failing to complete an Authority approved start-up procedure at a seasonal water system, the water supplier must include specific information about the situation as prescribed by OAR 333-061-0042(4)(a). Additionally, if monitoring was required as part of the Authority approved start-up procedure the following language in quotation marks must be included, exactly as written except for the language in brackets where water system specific information must be included: “We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During [compliance period], we did not complete [any or all] required monitoring or testing for coliform bacteria, and therefore cannot be sure of the quality of your drinking water during that time.”
 - (e) **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.
- (5) Treatment Techniques -- Public Notice Language.
- (a) **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.
 - (b) **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.
 - (c) **Surface Water Treatment Rule (*Giardia*, viruses, heterotrophic plate count bacteria, *Legionella*), Interim Enhanced Surface Water Treatment Rule (*Giardia*, viruses, heterotrophic plate count bacteria, *Legionella* and *Cryptosporidium*), Long Term 1 Enhanced Surface Water Treatment Rule (*Giardia*, viruses, heterotrophic plate count bacteria, *Legionella* and *Cryptosporidium*) and Filter Backwash Recycling Rule (*Cryptosporidium*).** 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.

- (d) **Groundwater.** Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.
 - (e) Use of an emergency groundwater source that has been identified as potentially groundwater under direct influence of surface water, but has not been fully evaluated. This type of source may not be treated sufficiently to inactivate pathogens such as *Giardia lamblia* and *Cryptosporidium*.
- (6) Disinfectant and Disinfection Byproducts -- Special Adverse Health Effects Language.
- (a) **Total Trihalomethanes (TTHMs).** 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 system, and may have an increased risk of getting cancer.
 - (b) **Haloacetic Acids (HAA).** Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
 - (c) **Chlorine.** Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
 - (d) **Chloramines.** Some people who use water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
 - (e) **Chlorine dioxide.** (where any 2 consecutive daily samples taken at the entrance to the distribution system are above the MRDL). Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.

NOTE: In addition to the language in this introductory text of subsection (6)(e) of this rule, water systems must include either the language in paragraphs (6)(e)(A) or (6)(e)(B) of this rule. Water systems with a violation at the treatment plant, but not in the distribution system, are required to use the language in paragraph (6)(e)(A) of this rule and treat the violation as a non-acute violation. Water systems with a violation in the distribution system are required to use the language in paragraph (6)(e)(B) of this rule and treat the violation as an acute violation.

- (A) 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) 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 fetuses, infants, and young children, may be especially susceptible to nervous system 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.
 - (f) **Bromate.** Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
 - (g) **Chlorite.** Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
 - (h) **Total Organic Carbon (TOC).** Total Organic Carbon (TOC) has no health effects. However, TOC provides a medium for the formation of disinfection byproducts (DBPs). These byproducts include trihalomethanes and haloacetic acids. Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.
- (7) Adverse health effects for radionuclides:
- (a) **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.
 - (b) **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.
 - (c) **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.
 - (d) **Uranium.** Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer and kidney toxicity.

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References

All standards, listings and publications referred to in these rules are by those references made a part of these rules as though fully set forth. Copies are available from the Oregon Health Authority, Public Health Division.

- (1) **American Society for testing and materials (ASTM) specification B32-83 (solder)**
- (2) **American Water Works Association (AWWA) Standards**
- (3) **Clean Water Act (EPA)**
- (4) **Code of Federal Regulations (40 CFR: 141.21-.25, 141.30 - Inorganics, etc.)**
- (5) **Code of Federal Regulations (21 CFR: 103, 110 and 129 - Bottled water)**
- (6) **Federal Insecticide, Fungicide and Rodenticide ACT (FIFRA-EPA)**
- (7) **Manual of Cross Connection Control, USC 10th Edition, October 2009**
- (8) **National Bureau of Standards (NBS) Handbook 69, - Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and Water for Occupational Exposure**
- (9) **National Primary Drinking Water Regulations (40 CFR 141 and 142)**
- (10) **NSF Standard 53 - Drinking Water Treatment Units - Health Effects**
- (11) **NSF Standard 58 - Reverse Osmosis Drinking Water Treatment Systems**
- (12) **NSF Standard 60 - Drinking Water Treatment Chemicals -Health Effects**
- (13) **NSF Standard 61, Section 9 - Drinking Water System Components - Health Effects**
- (14) **National Secondary Drinking Water Regulations (40 CFR 143)**
- (15) **Oregon Administrative Rules Chapter 437 (Oregon OSHA)**
- (16) **Oregon Administrative Rules Chapter 660, Division 011(Public Facilities Planning)**
- (17) **Oregon Administrative Rules Chapter 660, Division 031(Land Conservation & Development)**
- (18) **Oregon Administrative Rules Chapter 690, Divisions 200 through 220 (General standards for the construction and maintenance of water wells in Oregon, Water Resources Department)**
- (19) **Oregon Revised Statutes 197 (Land Conservation & Development)**
- (20) **Oregon Revised Statutes 215 and 227 (Land Use Planning)**
- (21) **Oregon Revised Statutes 448 (Public Water Systems)**
- (22) **Oregon Revised Statutes 468.700 to 468.990 (DEQ)**
- (23) **Oregon Revised Statutes 527.610 to 527.990 (Dept. of Forestry)**
- (24) **Oregon Revised Statutes 536.220 to 536.360 (Water Resources)**
- (25) **Oregon Revised Statutes 634.992 (Dept. of Agriculture)**
- (26) **Oregon State Plumbing Code**

(27) **Standard Methods for the Examination of Water and Wastewater, 22nd Edition, 2012.**

(28) **Supplement to the 19th Edition of Standard Methods for the Examination of Water and Wastewater, 1996.**

Stat. Auth.: ORS 448.131

Stats. Implemented: ORS 431.110, 431.150, 448.131, 448.150, 448.273 & 448.279