

OAR CHAPTER 333
Division 061
Effective 2/1/2006

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 and/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) Special Notice for microbiological contaminants
- (a) When providing information in public notices required under OAR 333-061-0042(2)(b)(A) for a violation of total coliform bacteria (OAR 333-061-0030(4)(a)), the owner or operator of the water system shall 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 required under OAR 333-061-0042(2)(a)(A) for a violation of fecal coliform /E. coli bacteria (OAR 333-061-0030(4)(b)), the owner or operator of the

water system shall include the following specific language in the notice:

“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, some of the elderly, and people with severely compromised immune systems.”

- (c) When providing information under OAR 333-061-0042(2)(b)(A) and 333-061-0030(4)(a) for a violation of total coliform bacteria maximum contaminant level, where the violation has been shown to result from persistent coliform growth in the distribution system, the owner or operator may include the following specific language in the notice with approval from the Department. This language may be used in addition to, but not in place of, the mandatory language contained in OAR 333-061-0097(4)(a):

“In this case, coliforms are present on inside surfaces of water mains and piping even in the presence of a disinfectant and even though proper water treatment and water system operation has taken place. This presence of coliforms presents no hazard to the health of water users, but does interfere with the water system's sampling program. Correction of the problem is difficult and may involve temporary treatment changes that may cause noticeable changes in the water's taste, odor, or appearance. These corrective actions will be carried out after the water system submits a plan which is approved by the Department of Human Services.”

- (d) 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, heterothrophic 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) 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.