



MEMORANDUM

TO: Joint Committee on Drinking Water Additives – System Components

FROM: France Lemieux, Chairperson

DATE: October 15, 2018

SUBJECT: Proposed revision to NSF/ANSI 61 – *Drinking water system components – Health effects* (61i141r1)

Draft 1 of NSF 61 issue 141 is being forwarded to the Joint Committee for balloting. Please review the proposed standard and **submit your ballot by November 5, 2018** via the NSF Online Workspace.

Purpose

The proposed revision will remove Annexes A and D from NSF/ANSI 61.

Background

NSF 600 – *Health effects evaluation and criteria for chemicals in drinking water* was recently approved by both DWA Joint Committees and the Council of Public Health Consultants. This new standard creates a single reference source for the toxicological review and evaluation procedures of treatment chemicals added to drinking water and those substances imparted to drinking water through contact with drinking water system components (currently Annex A of NSF/ANSI 60 and 61), as well as the current drinking water criteria (NSF/ANSI 60 and 61, Annex C and D, respectively). This proposed revision will complete the process to remove Annexes A and D from NSF/ANSI 61 and reference NSF/ANSI 600 instead.

This issue paper was presented at the 2017 DWA JC meetings and both committees unanimously voted in favor of the proposed revision. Please see the 2017 DWA JC meeting summary excerpt and the original issue papers (DWA-60-61-2017-3 and DWA-61-2017-8) under the referenced items for additional information.

If you have any questions about the technical content of the ballot, you may contact me in care of:

A handwritten signature in blue ink, appearing to read "F. Lemieux".

France Lemieux
Chairperson, Joint Committee
c/o Monica Leslie
Joint Committee Secretariat
NSF International
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[Note – the recommended changes to the standard which include the current text of the relevant section(s) indicate deletions by use of ~~strikeout~~ and additions by **gray highlighting**. Rationale statements are in *italics* and only used to add clarity; these statements will NOT be in the finished publication.]

Drinking water system components — Health effects

1 Purpose, scope, and normative references

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1.3 Normative references

The following documents contain requirements that, by reference in this text, constitute requirements of this Standard. At the time this Standard was balloted, the editions listed below were valid. All documents are subject to revision, and parties are encouraged to investigate the possibility of applying the recent editions of the documents indicated below. The most recent published edition of the document shall be used for undated references.

21 CFR 58, *Good Laboratory Practice for Non-Clinical Laboratory Studies*¹

40 CFR Part 136, *Guidelines Establishing Test Procedures for the Analysis of Pollutants*²

40 CFR Part 141, *National Primary Drinking Water Regulations*²

40 CFR Part 160, *Good Laboratory Practice Standards*²

40 CFR Part 798, *Health Effects Testing Guidelines*²

APHA, AWWA, WEF, *Standard Methods for the Examination of Water and Wastewater*, twenty-second edition^{3,4,5}

ASTM A240/A240M-05. *Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications*⁶

ASTM A269-04. *Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service*⁶

¹ USFDA. 5600 Fishers Lane, Rockville, MD 20857 <www.fda.gov>.

² Superintendent of Documents. U.S. Government Printing Office, Washington, DC 20402 <www.gpo.gov>.

³ American Public Health Association (APHA). 800 I Street, NW, Washington, DC 20001 <www.apha.gov>.

⁴ American Water Works Association (AWWA). 6666 Quincy Avenue, Denver, CO 80235-9913 <www.awwa.org>.

⁵ Water Environment Federation (WEF). 601 Wythe Street, Alexandria, VA <www.wef.org>.

⁶ ASTM International. 100 Barr Harbor Drive, West Conshohocken, PA 19428-2859 <www.astm.org>.

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ASTM A312/A312M-05. *Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes*⁶

ASTM A789/A789M-05. *Standard Specification for Seamless and Welded Ferritic/Austenitic Stainless Steel Tubing for General Service*⁶

ASTM A790/A790M-05. *Standard Specification for Seamless and Welded Ferritic/Austenitic Stainless Steel Pipe*⁶

ASTM A815/A815M-04. *Standard Specification for Wrought Ferritic, Ferritic/Austenitic, and Martensitic Stainless Steel Piping Fittings*⁶

ASTM C31/C31M-00e1. *Standard Practice for Making and Curing Concrete Test Specimens in the Field*⁶

ASTM C109/C109M-99. *Standard Test Method for Compressive Strength of Hydraulic Cement Mortars*⁶

ASTM C 183-02. *Standard Practice for Sampling and the Amount of Testing of Hydraulic Cement*⁶

ASTM C192/C192M-00. *Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory*⁶

ASTM C511-98. *Standard Specification for Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes*⁶

ASTM C778-00. *Standard Specification for Standard Sand*⁶

ASTM D2855-96. *Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings*⁶

ASTM D3182-89 (1994). *Standard Practice for Rubber – Materials, Equipment, and Procedures for Mixing Standard Compounds and Preparing Standard Vulcanized Sheets*⁶

ASTM E29-02 *Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications*⁶

ASTM F493-97. *Standard Specification for Solvent Cements for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe and Fittings*⁶

ANSI/AWWA B100-96. *AWWA Standard for Filtering Material*⁴

ANSI/AWWA C652-92. *AWWA Standard for Disinfection of Water-Storage Facilities*⁴

NSF/ANSI 60 – *Drinking water treatment chemicals – Health effects*

NSF/ANSI 372 – *Drinking water system components – Lead content*

NSF/ANSI 600 - *Health Effects Evaluation and Criteria for Chemicals in Drinking Water*

OECD, *OECD Guidelines for the Testing of Chemicals*, May 1996⁷

⁷ Organization for Economic Cooperation and Development (OECD). 2 Rue Andre-Pascal, 75775 Paris Cedex 16, France <www.oecd.org>.

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SSPC-PA2– 2004 *Steel Structures Painting Manual Volume 2. Paint Application Specification*⁸

The Society for Protective Coatings, *Steel Structures Painting Manual*. Volume 2. Reference Paint Application Specification No. 2 (SSPC-PA2)⁸

USEPA-570-9-82-002. *Manual for the Certification of Laboratories Analyzing Drinking Water*, October 1982⁹

USEPA-600/4-79-020. *Methods for the Chemical Analysis of Water and Wastes*, March 1983⁹

USEPA-600/4-80-032. *Prescribed Procedures for Measurement of Radioactivity in Drinking Water*⁹

USEPA-600/4-84-053. *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater*, June 1984⁹

USEPA-600/R-05/054. *Determination of Nitrosamines in Drinking Water By Solid Phase Extraction and Capillary Column Gas Chromatography With Large Volume Injection and Chemical Ionization Tandem Mass Spectrometry (MS/MS)*, September 2004⁹

USFDA, *Toxicological Principles for the Safety Assessment of Direct Food Additives and Color Additives in Food*¹

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2 Definitions

Terms used in this Standard that have a specific technical meaning are defined here.

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2.20 short-term exposure level (STEL): A maximum concentration of a contaminant that is permitted in drinking water for an acute exposure calculated in accordance with ~~Annex A of this Standard~~ NSF/ANSI 600 (previously Annex A).

2.21 single product allowable concentration (SPAC): The maximum concentration of a contaminant in drinking water that a single product is allowed to contribute as defined by ~~Annex A of this Standard~~ NSF/ANSI 600 (previously Annex A) .

2.22 total allowable concentration (TAC): The maximum concentration of a nonregulated contaminant allowed in a public drinking water supply as defined by ~~Annex A of this Standard~~ NSF/ANSI 600 (previously Annex A).

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⁸ The Society for Protective Coatings (SSPC). 40 24th Street, 6th Floor, Pittsburgh, PA 15222-4656 <www.sspc.org>.

⁹ USEPA. Environmental Monitoring and Support Laboratory, Cincinnati, OH 45268 <www.epa.gov>.

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4 Pipes and related products

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4.5 Extraction procedures

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4.5.4.3 Multiple time point protocol

When the normalized concentration of a contaminant exceeds, or is expected to exceed, its acceptable level when evaluated as a single time point exposure, determination of the contaminant leaching rate using a multiple time point exposure shall be considered. For the purpose of contaminant concentration evaluation, Day 1 shall be defined as the time point at which extractant water is collected for analysis under the single time point exposure protocol. Day 90 shall be defined as 90 d after this time point. When over time data are used, the Day 1 concentration for the contaminant of concern shall meet the short term exposure level and Day 90 concentration shall meet the total allowable concentration (TAC) / single product allowable concentration (SPAC) respectively. When extrapolation is used, the relationship between contaminant concentration and time shall be determined and plotted using a minimum of five data points.

When a multiple time point protocol is employed in the evaluation of a contaminant, consideration shall be given to the availability of appropriate toxicity data to define an acute exposure limit for the contaminant, as required in NSF/ANSI 600, Section 3.3 (previously Annex A, Section A.5). Consideration shall also be given to the leaching characteristics of the contaminant. Multiple time point analysis shall not be used for lead or any other metal contaminant listed as a regulated contaminant by USEPA or Health Canada.

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4.8 Evaluation of contaminant concentrations

4.81 Contaminants measured in a single time point extraction

For pipe and fitting products, normalized static contaminant concentrations shall be no greater than their respective MCLs or TACs, and normalized flowing contaminant concentrations shall be no greater than their respective SPACs calculated in accordance with Annex A NSF/ANSI 600 (previously Annex A).

4.82 Contaminants measured in a multiple time point extraction

Normalized Day 1 contaminant concentrations shall not exceed the STEL as defined in Annex A, Section A.5 NSF/ANSI 600, section 3.3 (previously Annex A, Section A.5).

Normalized extrapolated or directly measured Day 90 contaminant concentrations shall not exceed the limits defined in 4.8.1.

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5 Barrier materials

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5.5 Extraction procedures

5.5.5.4 Single time point exposure protocol

When normalized contaminant concentrations from the product are expected to be less than their acceptable concentrations (see NSF/ANSI 600, Section 3 Annex A) when tested at a single time point (e.g., flexible membrane liners), the product shall be exposed according to the single time point exposure protocols in Table 5.2, (tanks), and Tables 5.3 and 5.4 (pipes). Coatings intended for multiple uses for tank, pipe or other applications shall be exposed per Table 5.2. Extraction water samples shall be collected at the conclusion of the final exposure period. For paint / coating systems intended for immediate return to service, the first four days of the exposure for tanks and the first two days of the exposure for pipes will be eliminated and the water samples shall be collected at the conclusion of the first 24 h period for tanks, and the first 16 h period for pipes.

5.5.5.5 Multiple time point exposure protocol

When the normalized concentration of a contaminant exceeds, or is expected to exceed, its acceptable concentration (see NSF/ANSI 600, Section 3 Annex A) when evaluated as a single time point (see 5.5.5.4), determination of the contaminant leaching rate as a function of time shall be considered. The relationship between contaminant concentration(s) and time shall be determined and plotted using a minimum of five data points. Table 5.5 summarizes the multiple time point exposure sequence. For contaminants of interest that do not require over time testing, extraction water shall be collected following the third exposure period (elapsed time 5 d). For paint / coating systems intended for immediate return to service, the first four days of the exposure will be eliminated and the water samples shall be collected at the conclusion of the first 24 hr period following conditioning.

At the discretion of the manufacturer, direct measurement of a Day 90 extraction shall be permitted. The products shall be exposed at the selected application temperature (e.g., $23 \pm 2^\circ\text{C}$; $60 \pm 2^\circ\text{C}$; $82 \pm 2^\circ\text{C}$) for the full duration of the exposure. Extraction water shall be collected for analysis at a minimum of two time points: after Day 1 and after the final exposure terminating on Day 90. The exposure water shall be changed at least weekly during the interval between the initial and final exposure and on at least 4 days during the final week of exposure.

NOTE — Day 1 is defined as the time point at which extractant water for all contaminants is collected for analysis (5 d of elapsed time). Day 90 is defined as 90 d following this time point (95 d of elapsed time).

5.8 Evaluation of contaminant concentrations

5.8.1 Contaminants measured at a single time point

Normalized contaminant concentrations for tanks shall be no greater than their respective SPACs determined in accordance with NSF/ANSI 600 (previously Annex A). For pipe and fitting products, normalized static contaminant concentrations shall be no greater than their respective MCLs, or TACs, and normalized flowing contaminant concentrations shall be no greater than their respective SPACs calculated in accordance with NSF/ANSI 600 (previously Annex A).

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5.8.2 Contaminants measured over time

Normalized Day 1 contaminant concentrations shall not exceed the STEL as defined in NSF/ANSI 600, Section 3.3 (previously Annex A, Section A.5). Extrapolated Day 90 contaminant concentrations shall not exceed their respective SPACs for tank products determined in accordance with NSF/ANSI 600 (previously Annex A). For pipe and fitting products extrapolated Day 90 normalized static contaminant concentrations shall not exceed their respective MCLs, or TACs, and normalized flowing contaminant concentrations shall not exceed their respective SPACs determined in accordance with NSF/ANSI 600 (previously Annex A).

6 Joining and sealing materials

6.3 Material and extraction testing requirements

Samples for testing shall be prepared as specified by the manufacturer's written instructions, and exposed as outlined in Annex B. Any contaminants extracted shall have normalized concentrations no greater than the limits specified in NSF/ANSI 600 (previously Annex A).

7 Process Media

7.8 Evaluation of contaminant concentrations

7.8.1 For process media, normalized contaminant concentrations shall be no greater than their respective SPACs, determined in accordance with NSF/ANSI 600 (previously Annex A).

7.8.2 For aeration packing media and point-of-entry media that require evaluation to the static condition, the normalized static contaminant concentrations shall be no greater than their respective MCLs or TACs, determined in accordance with NSF/ANSI 600 (previously Annex A).

8 Mechanical devices

8.6 Chemical feeders and generators

8.6.1 Solid chemical feeders

Solid chemical feeders shall be evaluated only with the specific types of chemical formulations and forms that are recommended by the feeder manufacturer. The specific chemical formulation shall also comply

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with the requirements of NSF/ANSI 60 – *Drinking Water Treatment Chemicals – Health Effects*. The manufacturer shall include information regarding the specific chemical and form for which the product is certified and shall also include a warning in their installation, maintenance and operating instructions or dataplate, regarding the dangers of misuse that could result from using the wrong chemical or form, and whether or not such use would render the warranty invalid.

8.6.2 Cu/Ag generator electrodes

In addition to the evaluation of the chemical generator under 8.6, the electrodes for Cu/Ag generator shall be evaluated for potential non-silver and non-copper contaminants in accordance with Annex B, Section B.4.4.3.3.

The normalized concentration of contaminants shall be calculated in accordance with Annex B, Section B.8.5.1 and shall be no greater than their respective SPACs, determined in accordance with NSF/ANSI 600 (previously Annex A).

8.6.3 Chemical feeders and generators for building water systems

In addition to evaluating the contribution of chemical contaminants to drinking water, chemical feeders for building water systems shall be evaluated for the control of the intentionally dosed chemical(s) to prevent exceeding the manufacturers stated maximum use level (MUL) which shall not exceed the total allowable concentration of the chemical in accordance with NSF/ANSI 600 (previously Annex A).

- the device label shall identify the MUL for the dosage of the treatment chemical.
- a direct means of controlling chemical feed or generation shall be provided.
- the product use instructions shall identify a recommended monitoring frequency for measuring the concentration of the dosed chemical(s) at each representative outlet, or designated sample point(s) as indicated by the authority having jurisdiction.
- product use instructions and literature referencing NSF 61 shall specify that: *NSF/ANSI 61 addresses health effects only and does not address the disinfection efficacy of the product.*

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9 Mechanical plumbing devices

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9.5 Evaluation of normalized contaminant concentrations

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9.5.2 Evaluation of non-lead contaminants

For endpoint devices other than commercial kitchen devices, the normalized concentration of a nonlead contaminant shall not exceed its SPAC (calculated in accordance with NSF/ANSI 600 (previously Annex A)) when normalized for the 1 L (0.26 gal) first draw sample. For commercial kitchen devices, the normalized

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concentration of a nonlead contaminant shall not exceed its SPAC when normalized for the 18.9 L (5 gal) first draw sample.

For kitchen faucets that have been exposed simultaneously with the side spray component, the normalized concentration of a non-lead metal contaminant for the entire assembly shall not exceed its SPAC. When the kitchen faucet and the side spray component have been exposed separately, the normalized concentration of a non-lead metal contaminant for the faucet and side spray shall be added and shall not exceed its SPAC.

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Annex A

~~(normative)~~ (informative)

Toxicology review and evaluation procedures

The information contained in this Annex is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. Therefore, this Annex may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to this Standard.

The toxicological review and evaluation procedures for substances imparted to drinking water through contact with drinking water system components were removed from NSF/ANSI 61 Annex A and reestablished in NSF/ANSI 600. Annex A was retired from NSF/ANSI 61 in December 2018.

A.1—General requirements

~~This Annex defines the toxicological review and evaluation procedures for the evaluation of substances imparted to drinking water through contact with drinking water system components. It is intended to establish the human health risk, if any, of the substances imparted to drinking water under the anticipated use conditions of the product. Annex C (normative) of this Standard contains evaluation criteria that have been determined according to the requirements of this annex.~~

~~The following general procedure shall be used to evaluate drinking water substances under this Standard:~~

~~a) A determination shall be made as to whether a published (publicly available in printed or electronic format) and peer reviewed quantitative risk assessment for the substance is available.~~

~~b) When a quantitative risk assessment is available, the reviewer shall determine whether the assessment is currently used in the promulgation of a drinking water regulation or published health advisory for the substance (see the requirements of Annex A, section A.3).~~

~~— If the assessment is used in the promulgation of a drinking water regulation, the Single Product Allowable Concentration (SPAC) shall be derived from the regulatory value(s); or~~

~~— If the assessment is not the basis of a drinking water regulation, the assessment and its corresponding reference dose shall be reviewed for its appropriateness in evaluating the human health risk of the drinking water substance.~~

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NOTE — When reviewing an assessment used in the promulgation of a drinking water regulation, it is recommended that the regulatory authority be contacted to verify the currency of the assessment under consideration.

~~c) If a published and peer reviewed quantitative risk assessment is not currently available for the substance, the Total Allowable Concentration (TAC) and SPAC shall be derived after review of the available toxicology data for the substance (see Annex A, section A.4).~~

~~— when the data requirements for qualitative risk assessment are satisfied (see Annex A, section A.4.2 and Table A1), a qualitative risk assessment shall be performed according to Annex A, section A.7; or~~

~~— when the data requirements for quantitative risk assessment are satisfied (see Annex A, section A.4.3 and Table A2), a quantitative risk assessment shall be performed according to Annex A, section A.7.~~

Annex A, figure 2 provides an overview of the toxicity data review requirements of this Annex.

A.2 Definitions

A.2.1 benchmark dose: The lower 95% confidence limit on the dose that would be expected to produce a specified response in X% of a test population. This dose may be expressed as BMD_x (adapted from Barnes et al., 1995).

NOTE — For the purposes of this Standard, the benchmark dose shall be calculated at the 10% response level.

A.2.2 continuous data: A measurement of effect that is expressed on a continuous scale, e.g., body weight or serum enzyme levels (USEPA, 1995).

A.2.3 critical effect: The first adverse effect, or its known precursor, that occurs as the dose rate increases (USEPA, 1994).

A.2.4 ED₁₀: Effective dose 10; a dose estimated to cause a 10% response in a test population (USEPA, 1996a).

A.2.5 genetic toxicity: Direct interaction with DNA that has the potential to cause heritable changes to the cell.

A.2.6 health hazards (types of) (USEPA, 1994 and 1999)

A.2.6.1 acute toxicity: Effects that occur immediately or develop rapidly after a single administration of a substance. Acute toxicity may also be referred to as immediate toxicity.

A.2.6.2 allergic reaction: Adverse reaction to a chemical resulting from previous sensitization to that chemical or to a structurally similar one.

A.2.6.3 chronic effect: An effect that occurs as a result of repeated or long term (chronic) exposures.

A.2.6.4 chronic exposure: Multiple exposures occurring over an extended period of time or a significant fraction of the animal's or the individual's lifetime.

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~~**A.2.6.5 chronic toxicity:** The capability of a substance to cause adverse human health effects as a result of chronic exposure.~~

~~**A.2.6.6 irreversible toxicity:** Toxic effects to a tissue that cannot be repaired.~~

~~**A.2.6.7 local toxicity:** Effects that occur at the site of first contact between the biological system and the toxicant.~~

~~**A.2.6.8 reversible toxicity:** Toxic effects which can be repaired, usually by a specific tissue's ability to regenerate or mend itself after chemical exposure.~~

~~**A.2.6.9 systemic toxicity:** Effects that are elicited after absorption and distribution of a toxicant from its entry point to its target tissue.~~

~~**A.2.7 LED₁₀:** Lowest effective dose 10; the lower 95% confidence limit on a dose estimated to cause a 10% response in a test population (USEPA, 1996a).~~

~~**A.2.8 lowest observed adverse effect level (LOAEL):** The lowest exposure concentration at which statistically or biologically significant increases in frequency or severity of effects are observed between the exposed population and its appropriate control group (USEPA, 1994).~~

~~**A.2.9 margin of exposure (MOE):** The LED₁₀ or other point of departure, such as a NOAEL, divided by the environmental dose of interest (USEPA, 1996a).~~

~~**A.2.10 model:** A mathematical function with parameters that can be adjusted so that the function closely describes a set of empirical data. A mathematical or mechanistic model is usually based on biological or physical mechanisms, and has model parameters that have real world interpretation. Statistical or empirical models are curve-fitted to data where the math function used is selected for its numerical properties and accuracy. Extrapolation from mechanistic models (e.g., pharmacokinetic equations) usually carries higher confidence than extrapolation using empirical models (e.g., logit) (USEPA, 1994).~~

~~**A.2.11 no observed adverse effect level (NOAEL):** An exposure concentration at which no statistically or biologically significant increases in the frequency or severity of adverse effects are observed between an exposed population and its appropriate control. Some physiological effects may be produced at this concentration, but they are not considered as toxicologically significant or adverse, or as precursors to adverse effects (USEPA, 1994).~~

~~**A.2.12 nonregulated substance:** A substance for which a statutory concentration limit does not exist.~~

~~**A.2.13 peer review:** A documented critical review of a scientific or technical work product conducted by qualified individuals or organizations who are independent of those who performed the work, but who are collectively equivalent or superior in technical expertise to those who performed the work. It includes an in-depth assessment of the assumptions, calculations, extrapolations, alternate interpretations, methodology, acceptance criteria, and conclusions pertaining to the work product and the documentation that supports the conclusions reached in the report. Peer review is intended to ensure that the work product is technically adequate, competently performed, properly documented, and satisfies established requirements (USEPA, 1998).~~

~~**A.2.14 point of departure:** A data point or an estimated point that can be considered to be in the range of observation. The standard point of departure is the LED₁₀, which is the lower 95% confidence limit on a dose associated with 10% extra risk (adapted from Barnes et al., 1995).~~

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~~A.2.15 qualitative risk assessment:~~ An estimation of the risk associated with the exposure to a substance using a non-quantitative methodology.

~~A.2.16 quantal data:~~ A dichotomous measure of effect; each animal is scored “normal” or “affected” and the measure of effect is the proportion of scored animals that are affected (USEPA, 1995).

~~A.2.17 quantitative risk assessment:~~ An estimation of the risk associated with the exposure to a substance using a methodology that employs evaluation of dose response relationships.

~~A.2.18 range of extrapolation:~~ Doses that are outside of the range of empirical observation in animal studies, human studies, or both (adapted from Barnes et al., 1995).

~~A.2.19 range of observation:~~ Doses that are within the range of empirical observation in animal studies, human studies, or both (adapted from Barnes et al., 1995).

~~A.2.20 reference dose (RfD):~~ An estimate (with uncertainty spanning approximately an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime (USEPA, 1994).

~~A.2.21 regulated substance:~~ A substance for which a quantitative human health risk assessment has been performed and utilized in promulgation of a statutory concentration limit for drinking water.

~~A.2.22 toxicodynamics:~~ Variations in the inherent sensitivity of a species or individual to chemical-induced toxicity, resulting from differences in host factors that influence the toxic response of a target organ to a specified dose (TERA, 1996).

~~A.2.23 toxicokinetics:~~ Variations in absorption, distribution, metabolism, and excretion of a compound that account for differences in the amount of parent compound or active metabolite(s) available to a target organ (TERA, 1996).

~~A.2.24 treatment technique:~~ A technology or one or more procedures used to control the concentration of a substance in a drinking water supply when it is neither technically nor economically feasible to ascertain the concentration of the substance (U.S. Safe Drinking Water Act, 1996).

~~A.2.25 weight of evidence:~~ The extent to which the available biomedical data support the hypothesis that a substance causes cancer or other toxic effects in humans (adapted from USEPA, 1994).

A.3 Data requirements for published risk assessments

A.3.1 General requirements

Evaluation of all published risk assessments shall include review of the written risk assessment document and a determination of whether additional toxicity data exist that were not considered in the assessment. If additional toxicity data are identified that were not considered in the risk assessment, the risk assessment shall be updated in accordance with Annex A, section A.4.

The following shall be documented when utilizing an existing risk assessment:

- the source of the risk assessment;
- identification and discussion of any data not addressed by the assessment; and

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~~— comparison and contrast of the existing risk assessment to the requirements of Annex A, section A.4 with respect to selection of uncertainty factors or other assumptions.~~

~~A.3.2 Substances regulated by USEPA or Health Canada~~

~~If a substance is regulated under the USEPA's National Primary Drinking Water Regulations and USEPA has finalized a Maximum Contaminant Level (MCL) or other means of regulation such as a treatment technique (see Annex A, section A.2.18), no additional collection of toxicological data shall be required prior to performance of the risk estimation (see Annex A, section A.6.1). Where Health Canada has finalized a Maximum Allowable Concentration (MAC), no additional toxicological evaluation shall be required prior to performance of the risk estimation (see Annex A, section A.6.1). Annex C contains a list of regulatory values (MCL or MAC) and their corresponding SPACs. This list includes consensus evaluation criteria for those substances that are regulated by both countries.~~

~~A.3.3 Substances regulated by other agencies~~

~~If a substance is regulated by agencies including the U.S. Food and Drug Administration (Code of Federal Regulations, Title 21 Food and Drug Regulations), or state, national, or international regulatory bodies other than those specified in Annex A, section A.3.2, the relevance of the regulation to drinking water shall be evaluated. This evaluation shall include a review of the quantitative risk assessment that supports the regulation, and a determination of whether additional toxicity data exist that have not been considered in the current assessment. No additional collection of toxicological data shall be required when the regulation provides sufficient information for performance of the risk estimation (see Annex A, section A.6.1). If additional toxicity data are identified which were not considered in the current risk assessment, a revised risk assessment incorporating those data shall be performed as indicated in Annex A, sections A.4 and A.7.~~

~~A.3.4 Evaluation of multiple published risk assessments~~

~~When multiple published assessments are available for a specific substance, the available assessments shall be reviewed and a rationale shall be provided for the selection of the assessment considered to be the most appropriate for the evaluation of human exposure through drinking water. Factors used to determine the appropriate assessment shall include, but not be limited, to the following:~~

- ~~— completeness and currency of the data review of each assessment;~~
- ~~— technical competence of the organization(s) which sponsored the assessment; and~~
- ~~— species and route(s) of exposure for which the assessment was performed.~~

~~When multiple published risk assessments are reviewed and are determined to be of equivalent quality, the following hierarchy shall be used to select the appropriate assessment, based on sponsoring organization:~~

- ~~— USEPA;~~
- ~~— Health Canada;~~
- ~~— international bodies such as the World Health Organization (WHO) or the International Programme on Chemical Safety (IPCS);~~
- ~~— European bodies such as the Drinking Water Inspectorate (DWI) and KIWA; and~~

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~~— entities such as other federal or state regulatory agencies, private corporations, industry associations, or individuals.~~

A.4 — Data requirements for new or updated risk assessments

A.4.1 — General requirements

~~For each substance requiring a new or updated risk assessment, toxicity data to be considered shall include, but not be limited to, assays of genetic toxicity, acute toxicity (1 to 14 d exposure), short-term toxicity (14 to 28 d exposure), subchronic toxicity (90 d exposure), reproductive toxicity, developmental toxicity, immunotoxicity, neurotoxicity, chronic toxicity (including carcinogenicity), and human data (clinical, epidemiological, or occupational) when available. To more fully understand the toxic potential of the substance, supplemental studies shall be reviewed, including, but not limited to, mode or mechanism of action, pharmacokinetics, pharmacodynamics, sensitization, endocrine disruption, and other endpoints, as well as studies using routes of exposure other than ingestion. Structure activity relationships, physical and chemical properties, and any other chemical specific information relevant to the risk assessment shall also be reviewed.~~

~~Toxicity testing shall be performed in accordance with the most recent adopted toxicity testing protocols such as those described by the Organization For Economic Cooperation and Development (OECD), U.S. Environmental Protection Agency, and U.S. Food and Drug Administration (FDA). All studies shall be reviewed for compliance with Good Laboratory Practice (21 CFR, Pt 58/40 CFR, Pt 792).~~

~~NOTE — Review of the study according to the approach suggested in Klimisch, et al., 1997 may also be used to determine the quality of reported data.~~

~~A weight-of-evidence approach shall be employed in evaluating the results of the available toxicity data. This approach shall include considering the likelihood of hazard to human health and the conditions under which such hazard may be expressed. A characterization of the expression of such effects shall also be included, as well as the consideration of the substance's apparent mode of action. The quality and quantity of toxicity data available for the substance shall determine whether the evaluation is performed using a qualitative risk assessment approach (see Annex A, section A.4.2) or a quantitative risk assessment approach (see Annex A, section A.4.3).~~

A.4.2 — Data requirements for qualitative risk assessment

~~Toxicity testing requirements for the qualitative risk assessment procedure are defined in Annex A, Table A1. A minimum data set consisting of a gene mutation assay and a chromosomal aberration assay shall be required for the performance of a qualitative risk assessment. Modifications in the specified toxicity testing requirements (inclusions or exclusions) shall be permitted when well supported by peer reviewed scientific judgment and rationale.~~

~~NOTE — Modifications may include, but are not limited to, the following types of considerations: alternate assays of genetic toxicity, and supplemental toxicity studies other than those specified.~~

~~Required studies and available supplemental studies shall be reviewed in order to perform a qualitative risk estimation in accordance with Annex A, section A.7.2.~~

A.4.3 — Data requirements for quantitative risk assessment

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Toxicity testing requirements for the quantitative risk assessment procedure are defined in Annex A, Table A2. A minimum data set consisting of a gene mutation assay, a chromosomal aberration assay, and a subchronic toxicity study shall be required for the performance of a quantitative risk assessment. The required studies and preferred criteria are defined in Annex A, Table A2. Modifications to the minimum data set shall be permitted when well-supported by peer reviewed scientific judgment and rationale.

~~NOTE — Modifications may include, but are not limited, to acceptance of studies using alternate routes of exposure, alternate assays of genetic toxicity, and supplemental toxicity studies other than those specified.~~

~~Required studies, additional studies, and available supplemental studies shall be reviewed in order to perform a quantitative risk estimation in accordance with Annex A, section A.7.3.~~

~~Additional studies for the evaluation of reproductive and developmental toxicity (as specified in Annex A, Table A2) shall be required to be reviewed when:~~

- ~~— results of the required minimum data set studies and any supplemental studies indicate toxicity to the reproductive or endocrine tissues of one or both sexes of experimental animals; or~~
- ~~— the compound under evaluation is closely related to a known reproductive or developmental toxicant.~~

A.5 — Data requirements for evaluating short-term exposures

~~Extractants from products used in contact with drinking water may be elevated initially, but rapidly decline with continued product contact with water. Examples include, but are not limited to, solvent-containing coatings and solvent cements. Short-term exposure paradigms, appropriate for potentially high initial substance concentrations, shall be used to evaluate potential acute risk to human health of short-term exposures. The short-term exposure period shall be defined as the first 14 d of in-service life of the product.~~

~~Sound scientific judgment shall be used to determine whether calculation of a Short-term Exposure Level (STEL) is appropriate for a given contaminant. The NOAEL or LOAEL for the critical short-term hazard of the substance shall be identified. The following types of studies shall be considered for identification of short-term hazard:~~

- ~~— short-term (less than 90 d duration) toxicity study in rodents or other appropriate species with a minimum 14 d post-treatment observation period, clinical observations, hematology and clinical chemistry, and gross pathology (preferably an oral study in rodents);~~
- ~~— reproduction or developmental assays (for substances having these endpoints as the critical effects); or~~
- ~~— subchronic 90-d study in rodents or other species (preferably an oral study in rats).~~

~~The critical study shall be used to calculate a Short-term Exposure Level (STEL) in accordance with Annex A, section A.8.~~

~~Selection of uncertainty factors for calculation of a STEL shall consider the quality and completeness of the database for assessing potential short-term effects. Selection of uncertainty factors shall also consider data that quantify interspecies and intraspecies variations. Other parameters that shall be considered in the determination of a STEL include identification of any sensitive subpopulations, the potential for adverse taste and odor, and solubility limitations at the calculated STEL. The STEL shall be calculated using~~

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~~assumptions to protect for a child's exposure to the contaminant in the absence of data that demonstrate adults are more sensitive than children. In the absence of appropriate data to calculate a STEL, see Annex A, section A.7.1.2.~~

A.6 — Risk estimation for published assessments

~~Calculation of the SPAC is intended to account for the potential contribution of a single substance by multiple products or materials in the drinking water treatment and distribution system. In any given drinking water treatment and distribution system, a variety of products and materials may be added to or contact the treated water prior to ingestion. The SPAC calculation is intended to ensure that the total contribution of a single substance from all potential sources in the drinking water treatment and distribution system does not exceed its acceptable concentration.~~

A.6.1 — SPAC calculation for regulated substances

~~To calculate the SPAC, an estimate of the number of potential sources of the substance from all products in the drinking water treatment and distribution system shall be determined. The SPAC shall be calculated as follows:~~

$$\text{SPAC (mg/L)} = \frac{\text{promulgated regulatory value (mg/L)}}{\text{estimated number of drinking water sources}}$$

~~If available the unrounded estimated risk estimation that the promulgated regulatory value is based on shall be used in the calculation of the SPAC. In the absence of specific data regarding the number of potential sources of the substance in the drinking water treatment and distribution system, the SPAC shall be calculated as 10% of the promulgated regulatory value. The calculated SPAC shall be rounded to one significant figure, unless it is based on a regulatory value with more than one significant figure. In that case the SPAC shall be rounded to the same number of significant figures as the regulatory value.~~

A.6.2 — SPAC calculation for other published risk assessments

~~Review of the risk assessment shall include evaluation of the risk estimation, if one is provided. If the existing risk estimation has been performed in a manner consistent with the procedures in Annex A, section A.7.3 for non-carcinogenic or carcinogenic endpoints, the SPAC shall be calculated as follows:~~

$$\text{SPAC (mg/L)} = \frac{\text{existing risk estimation (mg/L)}}{\text{estimated number of drinking water sources}}$$

~~The unrounded value of the estimated risk estimation shall be used in the calculation of the SPAC. In the absence of specific data regarding the number of potential sources of the substance in the drinking water treatment and distribution system, the SPAC shall be calculated as 10% of the existing risk estimation. The calculated SPAC shall be rounded to one significant figure.~~

~~If the existing risk estimation is not consistent with Annex A, section A.7.3, or a risk estimation is not provided, a TAC and SPAC shall be calculated for the substance according to the procedures in Annex A, section A.7.3.~~

A.7 — Risk estimation using new and updated risk assessments

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~~The method of risk estimation used for new and updated risk assessments shall be determined by the quantity and quality of toxicity data identified for the contaminant of concern (see Annex A, section A.4). When available toxicity data are insufficient to perform the qualitative or quantitative risk assessments, or when toxicity data are available, but the normalized contaminant concentration does not exceed the applicable threshold of evaluation value, a threshold of evaluation shall be determined for the substance according to Annex A, section A.7.1 if applicable. For all other data sets, the risk estimation shall be performed according to Annex A, sections A.7.2 or A.7.3.~~

A.7.1 Threshold of evaluation

~~The following thresholds of evaluation shall be considered when available toxicity data do not meet the minimum requirements to perform a risk estimation using either the qualitative or quantitative approaches. Application of the threshold of evaluation shall also be considered for the evaluation of normalized contaminant concentrations which do not have existing risk assessments, and which do not exceed the defined threshold of evaluation concentrations. In this case, a qualitative review of the available data shall be performed to determine whether adverse health effects can result at the threshold of evaluation exposure concentrations defined in Annex A, section A.7.1.1.~~

A.7.1.1 Threshold of evaluation for chronic exposure

~~Performance of a risk assessment shall not be required for an individual substance having a normalized concentration less than or equal to the following threshold of evaluation values:~~

~~— static normalization conditions:~~

~~— toxicity testing shall not be required for an individual substance having a normalized concentration less than or equal to the threshold of evaluation value of 3 µg/L.~~

~~— flowing normalization conditions:~~

~~— toxicity testing shall not be required for an individual substance having a normalized concentration less than or equal to the threshold of evaluation value of 0.3 µg/L.~~

~~These threshold of evaluation values shall not apply to any substance for which available toxicity data and sound scientific judgment such as structure activity relationships indicate that an adverse health effect results at these exposure concentrations.~~

A.7.1.2 Threshold of evaluation for short-term exposure

~~If an appropriate short-term toxic effect is not identified by the available data, the initial (D-1) laboratory concentration shall not exceed 10 µg/L. This threshold of evaluation value shall not apply to any chemical for which available toxicity data and sound scientific judgment, such as structure activity relationships, indicate that an adverse health effect can result at the 10 µg/L concentration upon short-term exposure to the chemical.~~

A.7.2 TAC determination for qualitative risk assessment

~~TACs for qualitative risk assessments shall be determined as indicated in Annex A, Table A3.~~

A.7.3 TAC calculation for quantitative risk assessment

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The procedure used to calculate the TAC for a new risk assessment (including qualitative assessments that are updated upon generation of new data) shall be determined by the toxicologic endpoint identified as the critical effect (see Annex A, section A.2.3). For a substance having a non-carcinogenic endpoint, a TAC shall be calculated according to Annex A, section A.7.3.1. For a substance having carcinogenic potential, a TAC shall be calculated according to Annex A, section A.7.3.2.

The minimum data set for the quantitative risk assessment (as defined in Annex A, section A.4.3 and Table A2) shall first be evaluated for genotoxic potential according to the requirements of Annex A, Table A3. Based on the review of genotoxic potential, the need for supplemental studies or chronic toxicity and carcinogenesis data shall be determined.

A.7.3.1 Assessment of non-carcinogenic endpoints

For non-carcinogenic endpoints, the TAC shall be calculated using either the NOAEL/LOAEL procedure outlined in Annex A, section A.7.3.1.1, or the benchmark dose (BMD) procedure outlined in Annex A, section A.7.3.1.2, as appropriate. The rationale for the selection of the procedure shall be provided in the assessment.

NOTE — Selection of the appropriate TAC calculation procedure will depend on the characteristics of the data set identified for the substance. Simple data sets consisting of a small number of studies may be best evaluated using the procedure in Annex A, section A.7.3.1.1. Complex data sets consisting of several studies, or which involve reproduction or developmental endpoints may be best evaluated using the benchmark dose procedure in Annex A, section A.7.3.1.2. The appropriateness of the fit of the data to the BMD shall also be considered.

A.7.3.1.1 NOAEL or LOAEL approach

The substance data set shall be reviewed in its entirety, and the highest NOAEL for the most appropriate test species, relevant route of exposure, study duration, mechanism, tissue response, and toxicological endpoint shall be identified. If a NOAEL cannot be clearly defined from the data, the lowest LOAEL for the most appropriate test species, relevant route of exposure, and toxicological endpoint shall be utilized.

The general procedure for calculating the TAC using this approach is as follows:

a) determine the critical study and effect from which the NOAEL or LOAEL will be identified according to the following hierarchy (USEPA, 1993 and Dourson et al., 1994):

—— adequate studies in humans;

—— adequate studies in animal models most biologically relevant to humans (e.g., primates), or that demonstrate similar pharmacokinetics to humans;

—— adequate studies in the most sensitive animal species (the species showing an adverse effect at the lowest administered dose using an appropriate vehicle, an adequate study duration, and a relevant route of exposure); and

—— effects that are biologically relevant to humans.

b) calculate the reference dose (RfD) according to the following equation (based on USEPA, 1993):

$$\text{RfD (mg/kg/d)} = \frac{\text{NOAEL or LOAEL (mg/kg/d)}}{\text{UF}} \times \frac{\text{number of d dosed per week}}{7 \text{ d}}$$

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NOTE — When other than daily dosing was used in the critical study, the RfD calculation shall be adjusted to reflect a daily dosing schedule.

c) ~~calculate the TAC based on the RfD with adjustment for significant contribution(s) of the substance from sources other than drinking water according to the following equation:~~

$$\text{TAC (mg/L)} = \frac{[\text{RfD (mg/kg/d)} \times \text{BW (kg)}] - [\text{total contribution of other sources (mg/d)}]}{\text{DWI (L/d)}}$$

The calculated TAC shall be rounded to one significant figure.

where:

NOAEL = Highest NOAEL for the critical effect in the most appropriate species identified after review of data set; if a NOAEL is not defined, the LOAEL shall be used with a corresponding adjustment in the uncertainty factor (see Annex A, Table A4).

BW = Assumed body weight of individual to be protected in kg (generally 10 kg [22 lbs] for a child, and 70 kg [154 lbs] for an adult).

UF = Uncertainty factor (total) based upon the applicability of the test data in extrapolating to actual conditions of human exposure (see Annex A, Table A4). These are often referred to as safety factors.

DWI = Drinking Water Intake is the assumed average daily drinking water consumption per d (generally 1 L [0.26 gal] for a child and 2 L [0.53 gal] for an adult).

NOTE 1 — In the absence of data to determine the drinking water contribution of a substance, a default drinking water contribution of 20% shall be applied (USEPA, 1991).

NOTE 2 — If calculation of the non-drinking water contribution of a substance exceeds the value of the (RfD x BW), verify that all potential exposures to the substance in the critical study have been accounted, e.g., is the substance present as a contaminant in the feed as well as dosed into the drinking water, etc.

A.7.3.1.2 — Benchmark dose approach

The benchmark dose level (BMDL) for the substance shall be calculated by modeling the substance's dose response curve for the critical effect in the region of observed responses. The benchmark response (BMR) concentration shall be determined by whether the critical response is a continuous endpoint measurement or a quantal endpoint measurement. The BMR shall be calculated at the 10% response level.

The general procedure for calculating the TAC using the BMDL is as follows:

a) ~~calculate the reference dose (RfD) according to the following equation:~~

$$\text{RfD (mg/kg/d)} = \frac{\text{BMDL (mg/kg/d)}}{\text{UF}} \times \frac{\text{number of d dosed per week}}{7 \text{ d}}$$

NOTE — When other than daily dosing was used in the critical study, the RfD calculation shall be adjusted to reflect a daily dosing schedule.

b) ~~calculate the TAC based on the RfD with adjustment for significant contribution(s) of the substance from sources other than water according to the following equation:~~

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$$\text{TAC (mg/L)} = \frac{[\text{RfD (mg/kg/d)} \times \text{BW (kg)}] - [\text{total contribution of other sources (mg/d)}]}{\text{DWI (L/d)}}$$

The calculated TAC shall be rounded to one significant figure.

where:

~~BMDL = The lower confidence limit on the dose that produces a specified magnitude of change (10%) in a specified adverse response (BMD₁₀).~~

~~BW = Assumed body weight of individual to be protected in kg (generally 10 kg [22 lbs] for a child, and 70 kg [154 lbs] for an adult).~~

~~UF = Uncertainty factor (total) based upon the applicability of the test data in extrapolating to actual conditions of human exposure (see Annex A, Table A4). These are often referred to as safety factors.~~

~~DWI = Drinking Water Intake is the assumed average daily drinking water consumption per day (generally 1 L [0.26 gal] for a child and 2 L [0.53 gal] for an adult).~~

~~NOTE 1 — In the absence of data to determine the drinking water contribution of a substance, a default drinking water contribution of 20% shall be applied (USEPA, 1991).~~

~~NOTE 2 — If calculation of the non-drinking water contribution of a substance exceeds the value of the (RfD x BW), verify that all potential exposures to the substance in the critical study have been accounted, e.g., is the substance present as a contaminant in the feed as well as dosed into the drinking water, etc.~~

A.7.3.1.3—Selection of uncertainty factors (UF)

Uncertainty factors used for the risk estimation shall include consideration of the areas of uncertainty listed in Annex A, Table A4. A default value of 10 shall be used for individual areas of uncertainty when adequate data are not available to support a data-derived uncertainty factor. Selection of the values of each uncertainty factor shall consider the following criteria (adapted from Dourson et al., 1996).¹⁰

A.7.3.1.3.1 Human variability

Selection of the human variability factor shall be based on the availability of data that identify sensitive subpopulations of humans. If sufficient data are available to quantitate the toxicokinetic and toxicodynamic variability of humans (see Annex A, sections A.2.22 and A.2.23), factor values of 3, 1, or a value determined from the data shall be considered. In the absence of these data, the default value of 10 shall be used.

A.7.3.1.3.2 Interspecies variability

¹⁰ The Food Quality Protection Act (FQPA) of 1996 reemphasized the review and evaluation of toxicity data for the protection of children's health. U.S. EPA has been very responsive to this initiative and published a draft document outlining the use of an uncertainty factor for children's protection and other database deficiencies (USEPA, 1999). Currently this factor is applied to pesticide evaluations only. In addition, publications by Renwick (1993) and the International Programme for Chemical Safety (IPCS) (1994) suggest the use of specific data in lieu of default values for uncertainty factors. This suggestion has been actively discussed at subsequent IPCS meetings and several individual chemical examples have been published (IPCS, 1999). The use of data-derived uncertainty factors, or judgment, as replacements to default values of 10-fold for each area of uncertainty is encouraged by several federal and international agencies and organizations (Meek, 1994; Dourson, 1994).

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~~Selection of the interspecies variability factor shall be based on the availability of data that allow for a quantitative extrapolation of animal dose to the equivalent human dose for effects of similar magnitude or for a NOAEL. This includes scientifically documented differences or similarities in physiology, metabolism and toxic response(s) between experimental animals and humans. If sufficient data are available to quantitate the toxicokinetic and toxicodynamic variabilities between experimental animals and humans (see Annex A, sections A.2.22 and A.2.23), factor values of 3, 1, or a value determined from the data shall be considered. In the absence of these data, the default value of 10 shall be used.~~

~~A.7.3.1.3.3 Subchronic to chronic extrapolation~~

~~Selection of the factor for subchronic to chronic extrapolation shall be based on the availability of data that allow for quantitative extrapolation of the critical effect after subchronic exposure to that after chronic exposure. Selection shall also consider whether NOAELs differ quantitatively when different critical effects are observed after subchronic and chronic exposure to the compound. When the critical effect is identified from a study of chronic exposure, the factor value shall be 1. When sufficient data are available to quantitate the difference in the critical effect after subchronic and chronic exposure, or when the principal studies do not suggest that duration of exposure is a determinant of the critical effects, a factor value of 3 or a value determined from the data shall be considered. In the absence of these data, the default value of 10 shall be used.~~

~~A.7.3.1.3.4 Database sufficiency~~

~~Selection of the factor for database sufficiency shall be based on the ability of the existing data to support a scientific judgment of the likely critical effect of exposure to the compound. When data exist from a minimum of five core studies (two chronic bioassays in different species, one two-generation reproductive study, and two developmental toxicity studies in different species), a factor value of 1 shall be considered. When several, but not all, of the core studies are available, a factor value of 3 shall be considered. When several of the core studies are unavailable, the default value of 10 shall be used.~~

~~A.7.3.1.3.5 LOAEL to NOAEL extrapolation~~

~~Selection of the factor for LOAEL to NOAEL extrapolation shall be based on the ability of the existing data to allow the use of a LOAEL rather than a NOAEL for non-cancer risk estimation. If a well-defined NOAEL is identified, the factor value shall be 1. When the identified LOAEL is for a minimally adverse or reversible toxic effect, a factor value of 3 shall be considered. When the identified LOAEL is for a severe or irreversible toxic effect, a factor value of 10 shall be used.~~

~~A.7.3.2 Assessment of carcinogenic endpoints~~

~~Risk assessment for carcinogenic endpoints shall be performed using the linear approach, the non-linear approach, or both, consistent with the proposed USEPA Cancer Risk Assessment Guidelines (USEPA, 1996a). For substances that have been identified as known or likely human carcinogens (as defined by these Guidelines), a dose response assessment shall be performed. This dose response assessment shall include analysis of dose both in the range of observation (animal and human studies) and in the range of extrapolation to lower doses.~~

~~A.7.3.2.1 Analysis in the range of observation~~

~~Curve-fitting models shall be selected based on the characteristics of the response data in the observed range. The model shall be selected, to the extent possible, based on the biological mode of action of the substance taken together in a weight of evidence evaluation of the available toxicological and biological data. The selected model shall be used to determine the LED₁₀, which will either be the point of departure~~

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(see Annex A, section A.2.14) for linear low dose extrapolation or the basis of the margin of exposure (MOE) analysis (see Annex A, section A.2.9) for a non-linear assessment.

NOTE — See Annex A, figure 2 for a graphical representation of this analysis.

The following types of models shall be considered, as appropriate to the mode of action of the substance under evaluation, the availability of adequate data, and the current state of risk assessment approaches:

— statistical or distribution models:

- log-probit;
- logit; or
- Weibull.

— mechanistic models:

- one-hit;
- multihit;
- multistage; or
- cell kinetic multistage.

— model enhancement and dose scaling:

- time to tumor response;
- physiologically based toxicokinetic models;
- biologically based dose-response models; or
- surface area conversion.

If none of the available models provide a reasonable fit to the dataset, the following shall be considered to see if lack of fit can be resolved (USEPA, 1995):

— interference at higher dose concentrations from competing mechanisms of toxicity that are a progressive form of the response of interest;

— saturation of metabolic or delivery systems for the ultimate toxicant at higher dose concentrations; and

— interference at higher dose concentrations due to toxic effects unrelated to the response of interest.

NOTE — When adjusting for these possibilities does not provide a reasonable fit, one suggested approach is to delete the high dose data and refit the models based on the lower dose concentrations since these doses are the most informative of the exposure concentrations anticipated to be encountered by humans.

A.7.3.2.2 Analysis in the range of extrapolation

The choice of procedure for low dose extrapolation shall be based on the biological mode of action of the substance. Depending upon the quantity and quality of the data, and upon the conclusion of the weight of evidence evaluation, the following procedures shall be used: linear, non-linear, or linear and non-linear.

A.7.3.2.2.1 Linear analysis

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The linear default assumption shall be used when the toxicological data support a mode of action due to DNA reactivity or another mode of action which is anticipated to be linear in nature. It shall also be used when no data are available to justify an alternate approach. For linear extrapolation, a straight line is constructed from the point of departure on the dose response curve to the zero dose/zero response point.

A.7.3.2.2.2 Non-linear analysis

The non-linear default assumption shall be used when the toxicological data are sufficient to support the assumption of a non-linear mechanism of action, and no evidence for linearity is available. A margin of exposure (MOE) analysis shall be used for non-linear assessment. The margin of exposure shall be calculated by dividing the point of departure by the human exposure concentration of interest.

A.7.3.2.2.3 Linear and non-linear analysis

Linear and non-linear assessments shall be provided when the weight of evidence or the mode of action analysis indicates differing modes of action for different target tissues, or to evaluate the implications of complex dose response relationships. Where the results of linear and non-linear evaluations differ, the range of estimates shall be discussed, along with a justification for the estimate used in evaluation of the substance.

A.7.3.3 Determination of the TAC for carcinogenic endpoints

The selected model shall be used to determine the dose equivalent to the LED₁₀. For linear analyses, the TAC shall be determined by linear extrapolation of the LED₁₀ to the origin of the dose response curve for the selected level of risk. For non-linear analyses, the TAC shall be equal to the human exposure concentration of interest that represents the selected MOE (LED₁₀/exposure of interest). For both types of analyses, the level of risk or margin of exposure shall be selected in accordance with the USEPA Cancer Risk Assessment Guidelines (USEPA, 1996a).

A.7.4 SPAC calculation for new or updated risk assessments

Calculation of the SPAC is intended to account for potential contribution of a single substance by multiple products or materials in the drinking water treatment and distribution system. In any given drinking water treatment and distribution system, a variety of products and materials may be added to or contact the treated water prior to ingestion. The SPAC calculation is intended to ensure that the total contribution of a single substance from all potential sources in the drinking water treatment and distribution system does not exceed its acceptable concentration.

A.7.4.1 SPAC determination for qualitative risk assessment

The SPAC for qualitative risk assessments shall be equal to the value of the TAC.

A.7.4.2 SPAC determination for quantitative risk assessment

To calculate the SPAC, an estimate of the number of potential sources of the substance from all products in the drinking water treatment and distribution system shall be determined. The SPAC shall be calculated as follows:

$$\text{SPAC (mg/L)} = \frac{\text{TAC (mg/L)}}{\text{estimated number of drinking water sources}}$$

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The unrounded value of the TAC shall be used in the calculation of the SPAC. In the absence of specific data regarding the number of potential sources of the substance in the drinking water treatment and distribution system, the SPAC shall be calculated as 10% of the TAC. The calculated SPAC shall be rounded to one significant figure.

A.8 — Risk estimation for short-term exposure (STEL calculation)

The STEL shall be calculated using the following equation:

$$\text{STEL (mg/L)} = \frac{\text{NOAEL or LOAEL (mg/kg/d)}}{\text{UF}} \times \frac{\text{BW (kg)}}{\text{DWI (L/d)}} = \frac{\text{number of d dosed per week}}{7 \text{ d}}$$

NOTE — When other than daily dosing was used in the critical study, the STEL calculation shall be adjusted to reflect the dosing schedule.

The calculated STEL shall be rounded to one significant figure.

where:

NOAEL = Highest NOAEL for the critical effect in a study of less than or equal to 90 d duration (see Annex A, section A.5); if a NOAEL is not defined, the LOAEL shall be used with a corresponding adjustment to the uncertainty factor (see Annex A, Table A4).

BW = Assumed body weight of the individual to be protected (in kg), generally 10 kg [22 lbs] for a child and 70 kg [154 lbs] for an adult. The default body weight shall reflect that of a child, in the absence of data which demonstrate that adults are more sensitive than children.

UF = Uncertainty factor based upon the applicability of the test data in extrapolating to actual conditions of human exposure (see Annex A, Table A4); also referred to as safety factors.

DWI = Drinking Water Intake is the assumed average daily drinking water consumption in L/d, generally 1 L [0.26 gal] for a child and 2 L [0.53 gal] for an adult. The default water consumption shall reflect that of a child, in the absence of data that demonstrate that adults are more sensitive than children.

A.9 — Development of chemical class-based evaluation criteria

A.9.1 — Identification of the need for chemical class-based evaluation criteria

Annex A provides a threshold of evaluation to be utilized when the required toxicity data to perform qualitative or quantitative risk assessment (see Annex A, section A.4) are unavailable, or when the required data are available, but the normalized contaminant concentrations do not exceed the threshold of evaluation concentrations (see Annex A, section A.7.1). However, normalized contaminant concentrations for chemicals that do not meet minimum data requirements may exceed the threshold of evaluation concentrations. In this case it may be possible to determine chemical class-based evaluation criteria for the substance on the basis of the known toxicities of other chemicals of similar structure and functionality. Those criteria can then be used as surrogates to the TAC and SPAC established on the basis of chemical-specific information.

Class-based evaluation criteria shall not be used for any substance for which adequate data exist to perform a chemical-specific risk assessment.

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A.9.2 Procedure for defining class-based evaluation criteria

A.9.2.1 Establishment of the chemical class

The chemical class for which the class-based evaluation criteria are to be established shall consist of a clearly defined and closely related group of substances, and shall be defined according to chemical structure (e.g., aliphatic, aromatic, etc.), primary chemical functional group(s) (e.g., alcohol, aldehyde, ketone, etc.), and molecular weight or weight range.

A.9.2.2 Review of chemical class toxicity information

Once the chemical class has been defined according to Annex A, section A.9.2.1, information on chemicals of known toxicity, which are included in the defined chemical class shall be reviewed. An appropriate number of chemicals of known toxicity shall be reviewed to establish class-based evaluation criteria. Sources of data for chemicals of known toxicity shall include, but not be limited to, the following:

- USEPA regulatory values and other risk assessments, including Maximum Contaminant Levels (MCL), Health Advisories, and Integrated Risk Information System (IRIS) entries;
- Health Canada risk assessments;
- risk assessments previously performed to the requirements of NSF/ANSI 61, Annex A;
- state or provincial drinking water standards and guidelines; and
- World Health Organization (WHO) or other international drinking water standards and guidelines.

An MCL and SPAC (regulated contaminants) or a TAC and SPAC (nonregulated contaminants) shall be identified for each chemical of known toxicity that is being used to determine the class-based evaluation criteria. Carcinogenic potential shall be evaluated using a quantitative structure-activity relationship program (e.g., Oncologic^{®11} or equivalent) to verify the carcinogenic potential of the chemical of unknown toxicity is no greater than that of the chemicals being used to define the class-based evaluation criteria.

A.9.2.3 Determination of the class-based evaluation criteria

After review of the available toxicity information specified in Annex A, section A.9.2.2, the class-based evaluation criteria shall not exceed the lowest MCL or TAC and SPAC identified for the chemicals of known toxicity in the defined chemical class. These evaluation criteria shall be used as surrogates for the TAC and SPAC for each chemical of unknown toxicity that meets the specifications of the defined chemical class (see Annex A, section A.9.2.1), until such time as sufficient toxicity data are available to determine chemical-specific evaluation criteria.

The class-based evaluation criteria shall not be applied to any substance for which available data and sound scientific judgment, such as structure-activity relationship considerations, indicate that adverse health effects may result at the established class-based evaluation criteria concentrations. If, after a chemical class is defined and its evaluation criteria established, a substance of greater toxicological significance is identified within the class, the class-based evaluation criteria shall be reevaluated and revised to the acceptable concentrations of the new substance.

¹¹ LogiChem, Inc., PO Box 357, Boyertown, PA 19512 <www.logichem.com>.

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NOTE — It is recommended that documentation supporting class-based evaluation criteria be subject to the external peer review requirements of Annex A, section A.10.15.

A.10 — Key elements of a risk assessment for drinking water additive chemicals

This section establishes the minimum criteria for the documentation of the data review performed on each drinking water additive chemical that requires a new or updated assessment. The assessment shall include, but not be limited to, evaluation of the elements detailed in this section.

A.10.1 Abstract

A summary shall be provided of the following:

- overview of the key toxicology studies;
- rationale for the selection of the critical effect and the corresponding NOAEL or other endpoint for calculation;
- major assumptions used in the assessment and areas of uncertainty; and
- presentation of the RfD, TAC, SPAC and STEL values.

A.10.2 Physical and chemical properties

The assessment shall define the following parameters for the substance, as applicable:

- chemical formula, structure, CAS number, and molecular weight;
- physical state and appearance;
- melting point or boiling point;
- vapor pressure;
- solubility in water;
- density;
- organoleptic properties (taste and odor thresholds);
- dissociation constant (pKa); and
- partition coefficients (octanol/water, air/water).

A.10.3 Production and use

The assessment shall review the method(s) of production of the substance, whether it is a synthetic or a naturally occurring substance, and the principal uses of the chemical. This includes any use as a water treatment chemical or a food additive (direct or indirect) and its presence in such products as medicines, personal care products or cosmetics.

A.10.4 Analytical methods

For each identified analytical method for the substance, the following shall be summarized:

- analytical matrix;
- sample preparation, if applicable;
- method of analysis;
- type of detector or the wavelength for spectroscopic methods; and

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—detection limit.

A.10.5 Sources of human and environmental exposure

The assessment shall describe the substance's natural occurrence, if any, and its presence in food or other media. Human exposure from drinking water, food, and air shall be described, including occupational exposures. The major source(s) and route(s) of human exposure shall be identified.

A.10.6 Comparative kinetics and metabolism

All references describing the absorption, distribution, metabolism, and excretion of the substance shall be reviewed. Both human data (when available) and animal data shall be included.

A.10.7 Effects on humans

A summary of each relevant reference documenting human exposure to the substance that is used in the hazard assessment shall be provided. These exposures can include both case reports of incidental human exposure to the substance, and epidemiological studies, which explore the association between human exposure and specific toxic endpoints. Primary literature references shall be reviewed whenever possible.

Supporting data or other studies not utilized in the hazard assessment can be summarized in tabular form.

A.10.8 Effects on laboratory animals and *in vitro* test systems

A summary of each key study of the substance in experimental animals or *in vitro* test systems that is used in the hazard assessment shall be provided. The references used shall meet established toxicity study guidelines, as defined in Annex A, section A.4.1, or any deficiencies shall be clearly identified. Studies shall include, but are not limited to the following: single exposure, short-term exposure (repeated dose study of < 28 d), long-term and chronic exposure (repeated dose study of ≥ 28 d), genotoxicity, reproduction and developmental toxicity, immunotoxicity, and neurotoxicity. Primary literature references shall be reviewed whenever possible.

Supporting data or other studies not utilized in the hazard assessment can be summarized in tabular form.

A.10.9 Effects evaluation

The effects evaluation is intended to provide an overall summary of the data reviewed for the substance and describe its mode/mechanism of action, if possible. This evaluation also serves to define the level of hazard represented by exposure to the substance at relevant human concentrations. This evaluation shall contain three major elements: hazard identification (assessment), dose-response assessment, and exposure characterization.

A.10.9.1 Hazard identification

The hazard identification (assessment) shall identify and discuss the following issues:

- the key data that define the basis of the concern to human health;
- the characterization of the substance as carcinogenic or non-carcinogenic, the basis for this characterization, and the critical effect(s);

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- ~~— the extent to which this characterization is a function of study design (e.g., adequate number of doses used, effects noted only at highest dose, study performed at the maximum tolerated dose);~~
- ~~— the conclusions of the key study(ies) and whether they are supported or conflicted by other data;~~
- ~~— the significant data gaps for the substance and any relevant non-positive data;~~
- ~~— the available human data (case reports or epidemiological studies), and how they support or do not support the conclusions from the key study(ies);~~
- ~~— the mechanism by which the substance produces the adverse effect(s) noted in the key study, and whether this mechanism is relevant to humans; and~~
- ~~— the summary of the hazard assessment including confidence in the conclusions, alternate conclusions which may also be supported by the data, significant data gaps, and the major assumptions used in the assessment.~~

A.10.9.2 — Dose-response assessment

~~The dose-response assessment shall identify and discuss the following issues:~~

- ~~— the data used to define the dose-response curve, and in which species the data were generated;~~
- ~~— if animal data were used, whether the most sensitive species was evaluated;~~
- ~~— if human data were used, whether positive and negative data were reported;~~
- ~~— whether the critical data were from the same route of exposure as the expected human exposure (drinking water), and if not, discuss whether pharmacokinetic data are available to extrapolate between routes of exposure;~~
- ~~— for non-carcinogens, the methodology employed to calculate the RfD and the selection of the uncertainty factors which were used;~~
- ~~— for carcinogens, the dose-response model selected to calculate the LED10 and the rationale supporting its selection; and~~
- ~~— document the RfD calculation (see Annex A, section A.7.3).~~

A.10.9.3 — Exposure characterization

~~The exposure characterization shall identify and discuss the following issues:~~

- ~~— the most significant source(s) of environmental exposure to the substance, and the relative source contribution of each;~~
- ~~— the population(s) most at risk of exposure, and identify highly exposed or sensitive subpopulations; and~~
- ~~— any issues related to cumulative or multiple exposures to the substance.~~

A.10.10 — Risk characterization

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A.10.10.1 TAC derivation

The TAC derivation shall contain an explanation of all factors contributing to the TAC calculation, including adjustment for sources of the substance other than water. The TAC calculation shall be based on the oral RfD calculated during the dose response assessment in Annex A, section A.10.9.2. The TAC calculation shall include adjustment for significant contributions of the substance from sources other than water, e.g., food and air. In the absence of data to determine the drinking water contribution of a substance, a default drinking water contribution of 20% shall be applied.

A.10.10.2 STEL derivation

When a short-term exposure level is calculated for a substance, the calculation shall be based on the NOAEL or LOAEL of the selected study (as defined in Annex A, section A.5) with adjustment for body weight and daily water consumption of the protected individual, including any sensitive subpopulations. The default body weight and water consumption shall reflect that of a child, in the absence of data which demonstrate that adults are more sensitive to the substance than children. A rationale for the selection of uncertainty factors used in the calculation shall also be provided.

A.10.11 Risk management (SPAC derivation)

The TAC calculation shall form the basis of the SPAC calculation. The SPAC is equal to the TAC for qualitative risk assessments. For quantitative risk assessments, the SPAC shall be calculated as a percentage of the TAC value, based on the estimated total number of sources of the substance in the drinking water treatment and distribution system. In the absence of these data, the SPAC shall be calculated as 10% of the TAC value (default multiple source factor of 10 to account for other sources of the substance in drinking water).

A.10.12 Risk comparisons and conclusions

A review of other evaluations of the substance performed by other organizations (international, national, state or provincial agencies, or other entities) shall be provided. Consistencies and differences between evaluations shall be noted. Any uncertainties in these evaluations shall be discussed. A summary of the overall risk of the substance shall be made, including a discussion about compounds of comparable risk (e.g., similar structure, chemical class) when possible.

A.10.13 References

An alphabetized list of all reviewed citations (both cited and not cited in the assessment) shall be provided in an established format such as that described in *The Chicago Manual of Style*.

A.10.14 Appendices

Supporting documents, complex calculations, data summary tables, unique definitions, and other pertinent information shall be included in appendices to the document.

A.10.15 Peer review

Risk assessments performed to the requirements of this annex shall undergo external peer review (USEPA, 1998) by an independent group of individuals representing toxicological expertise in the regulatory, academic, and industrial sectors, with the exception of the following:

— substances evaluated using the threshold of evaluation (see A.7.1);

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- ~~— substances evaluated to a TAC of 10 µg/L using the qualitative approach and concluded to be nongenotoxic (see Annex A, sections A.4.2 and A.7.2); and~~
- ~~— nonregulatory criteria that have already undergone peer review, such as USEPA IRIS assessments.~~

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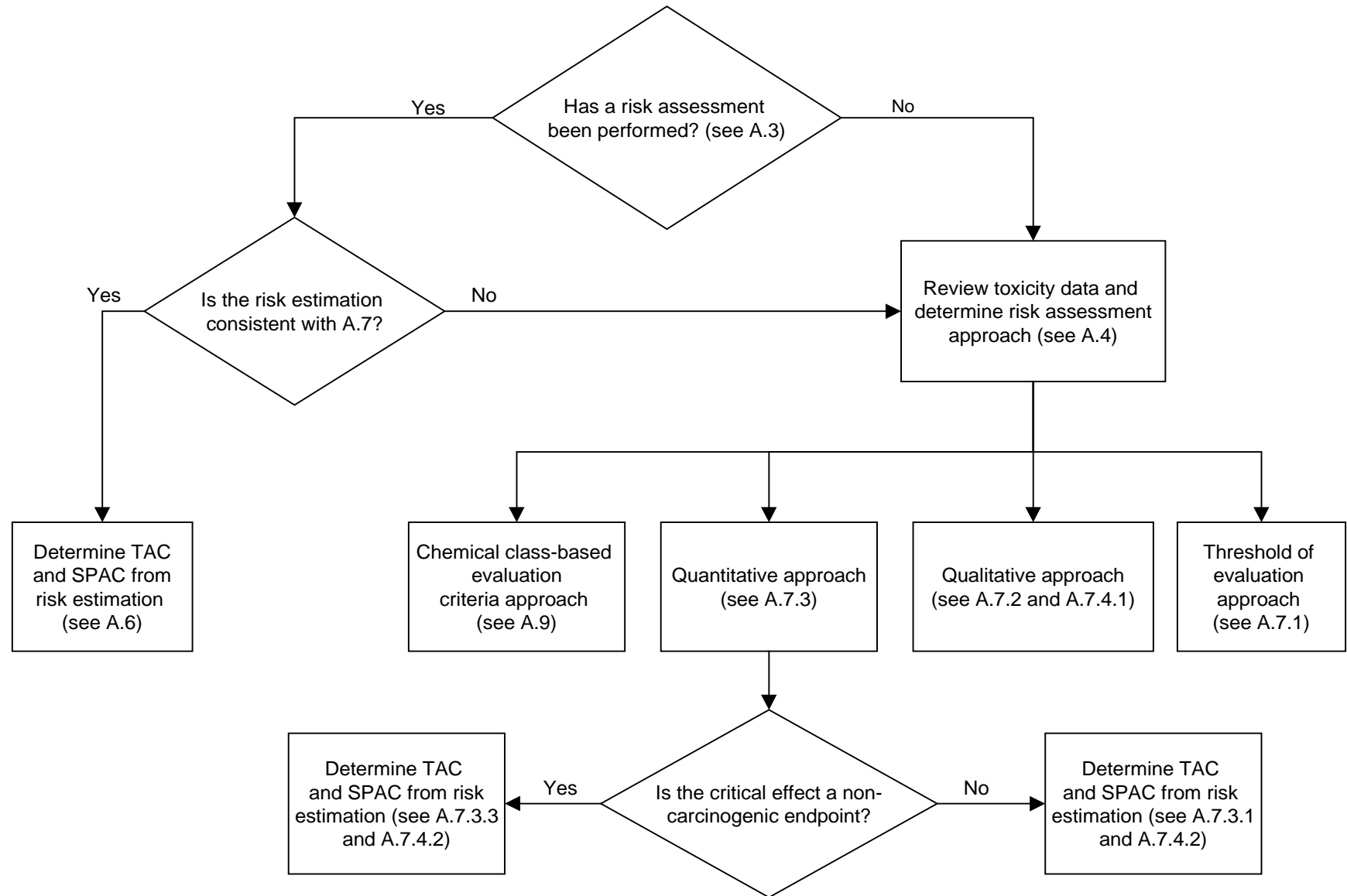


Figure 2 — Annex A Toxicity data review process

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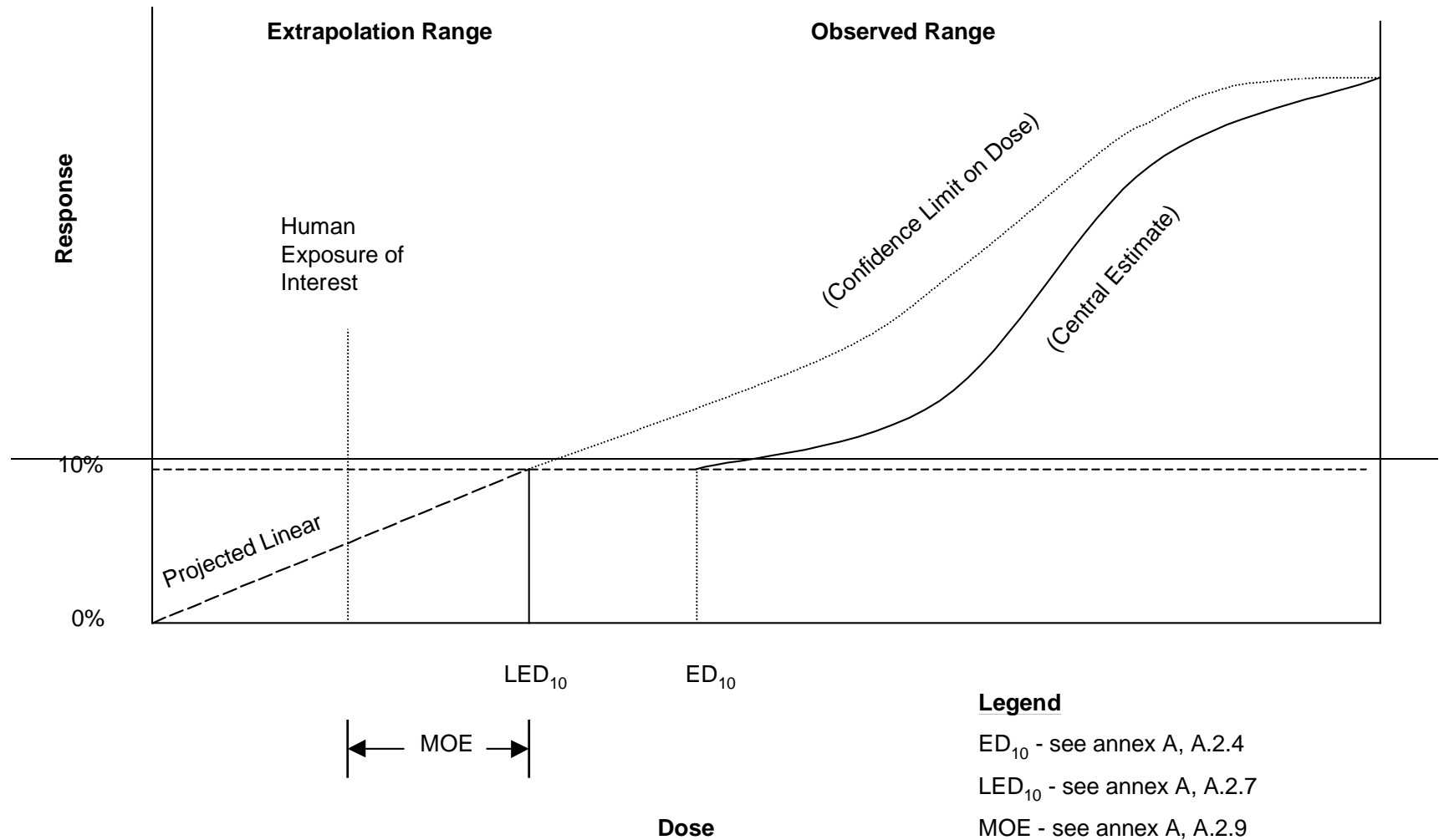


Figure 3 — Graphical presentation of data and extrapolations (U.S. EPA, 1996a)

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Table A.1 – Qualitative risk assessment data requirements

Study type	Preferred criteria
Required studies	
gene mutation assay ⁴	bacterial reverse mutation assay performed with and without exogenous metabolic activation using <i>Salmonella typhimurium</i> (preferred strains are TA97, TA98, TA100, TA102, TA1535, and TA1537) or <i>Escherichia coli</i> (preferred strains are WP2 <i>uvrA</i> or WP2 <i>uvrA</i> [pKM101])
chromosomal aberration assay ⁴ (<i>in vitro</i> preferred)	metaphase analysis in mammalian cells and without exogenous metabolic activation
<i>in vivo</i>	metaphase analysis or micronucleus assay in mammalian species
Supplemental studies	
supplemental genotoxicity studies	mouse lymphoma assay, SCE ² , UDS ³ , HGPRT ⁴ , DNA binding (post labeling assay)
bioaccumulation potential	octanol/water partition coefficient
pharmacokinetics	absorption, distribution, metabolism, and excretion data in humans, other mammalian species, or both
structural/functional assessment	structure/activity relationship analysis
acute or short-term toxicity ⁵	1 to 14 d study or 14 to 28 d study using oral exposure route
cell proliferation/cell cycle assays	proliferating cell nuclear antigen (PCNA)
sensitization	guinea pig intradermal injection
<i>in vivo</i> gene mutation assay	transgenic gene mutation assays
endocrine disruption assays	receptor binding/transcriptional activation assays, frog metamorphosis assay, steroidogenesis assay
human data	epidemiological, occupational, or clinical studies
¹ The gene mutation assay and the chromosomal aberration assay (<i>in vitro</i> or <i>in vivo</i>) shall constitute the minimum data set required to perform a qualitative risk assessment. When one or both <i>in vitro</i> genotoxicity studies are positive, the <i>in vivo</i> assay shall be required to be reviewed. ² Sister chromatid exchange assay; SCEs are not considered to be mutagenic effects because the exchange is assumed to be reciprocal with no gain, loss, or change of genetic material. However, they do indicate that the test material has interacted with the DNA in a way that may lead to chromosome damage. In <i>in vitro</i> studies, SCEs do not provide adequate evidence of mutagenicity, but do identify the need for definitive chromosomal aberration studies. When evidence of <i>in vitro</i> clastogenicity exists, the induction of SCEs is often used as evidence of likely <i>in vivo</i> clastogenic activity because the <i>in vitro</i> aberration data demonstrate the clastogenic activity of the compound and the <i>in vivo</i> SCE data demonstrate that the compound interacted with the DNA in the target tissue. ³ Unscheduled DNA synthesis assay. ⁴ Hypoxanthine guanine phosphoribosyl transferase assay. ⁵ Minimum reported parameters shall include clinical observations, hematology and clinical chemistry, and gross pathology.	

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Table A.2 – Quantitative risk assessment data requirements

Study type	Preferred criteria
Required studies	
gene mutation assay ⁴	bacterial reverse mutation assay performed with and without exogenous metabolic activation using <i>Salmonella typhimurium</i> (preferred strains are TA97, TA98, TA100, TA102, TA1535, and TA1537) or <i>Escherichia coli</i> (preferred strains are WP2 <i>uvrA</i> or WP2 <i>uvrA</i> (pKM101)
chromosomal aberration assay ⁴ (<i>in vitro</i> preferred)	metaphase analysis in mammalian cells and without exogenous metabolic activation
<i>in vivo</i>	metaphase analysis or micronucleus assay in mammalian species
subchronic toxicity ⁴	90-d assay in rodent species by oral route of exposure
Additional studies (required as indicated)	
reproduction assay ²	two-generation reproductive assay in a rodent species
developmental assay ²	teratology study (two species, one rodent and one non-rodent, are preferred)
chronic study ³	two-year bioassay in rodent species by oral route of exposure
Supplemental studies	
supplemental genotoxicity studies	mouse lymphoma, SCE ⁴ , UDS ⁵ , HGPRT ⁶ , DNA binding (post labeling assay)
bioaccumulation potential	octanol/water partition coefficient
pharmacokinetics	absorption, distribution, metabolism, and excretion data in humans, other mammalian species, or both
structural/functional assessment	structure/activity relationship analysis
acute or short-term toxicity ⁷	1 to 14 d or 14 to 28 d study using oral exposure
cell proliferation/cell cycle assays	proliferating cell nuclear antigen (PCNA)
sensitization	guinea pig intradermal injection
<i>in vivo</i> gene mutation assay	transgenic gene mutation assays
endocrine disruption assays	receptor binding/transcriptional activation assays, frog metamorphosis assay, steroidogenesis assay
human data	epidemiological, occupational, or clinical studies
⁴ The gene mutation assay, the chromosomal aberration assay (<i>in vitro</i> or <i>in vivo</i>), and the subchronic toxicity study shall constitute the minimum data set required to perform a quantitative risk assessment. When one or both <i>in vitro</i> genotoxicity studies are positive, the <i>in vivo</i> assay shall be required to be reviewed. ² It is recommended that results of a screening assay, such as OECD No. 422, <i>Combined repeated dose toxicity study with reproduction/developmental toxicity screening test</i> , or data from other repeated dose assays which include histopathological examination of the reproductive tissues of each sex be reviewed prior to a determination that these assays are required for evaluation. ³ A chronic study with evaluation of carcinogenic endpoints is required when review of the minimum data set concludes that the substance is likely to be a human health hazard at exposures of 10 µg/L or less. ⁴ Sister chromatid exchange assay; SCEs are not considered to be mutagenic effects because the exchange is assumed to be reciprocal with no gain, loss, or change of genetic material. However, they do indicate that the test material has interacted with the DNA in a way that may lead to chromosome damage. In <i>in vitro</i> studies, SCEs do	

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Table A.2 – Quantitative risk assessment data requirements

Study type	Preferred criteria
not provide adequate evidence of mutagenicity, but do identify the need for definitive chromosomal aberration studies. When evidence of <i>in vitro</i> clastogenicity exists, the induction of SCEs is often used as evidence of likely <i>in vivo</i> clastogenic activity because the <i>in vitro</i> aberration data demonstrate the clastogenic activity of the compound and the <i>in vivo</i> SCE data demonstrate that the compound interacted with the DNA in the target tissue.	
⁵ Unscheduled DNA synthesis assay.	
⁶ Hypoxanthine guanine phosphoribosyl transferase assay.	
⁷ Minimum reported parameters include clinical observations, hematology and clinical chemistry, and gross pathology.	

Table A.3 – TACs for qualitative risk assessment

Conclusion of data review	TAC
The weight of evidence review of the required genotoxicity studies and all other relevant data concludes that the substance is not a hazard at exposures of 10 µg/L or less.	10 µg/L
The weight of evidence review of the required genotoxicity studies, a repeated dose study of less than 90 d duration ¹ , and all other relevant data concludes that the substance is not a human health hazard at exposures of 50 µg/L or less.	≤ 50 µg/L
The weight of evidence review of the required genotoxicity studies and all other relevant data concludes that the data are insufficient to determine the potential human health hazard of the substance at exposures of 10 µg/L or less.	supplemental studies of chronic toxicity and carcinogenesis bioassay required for review
The weight of evidence review of the required genotoxicity studies and all other relevant data concludes that the substance is likely to be a human health hazard at exposures of 10 µg/L or less.	chronic toxicity and carcinogenesis bioassay required for review
¹ Required study parameters include organ and body weights, clinical chemistry and hematology, gross pathology, and histopathology.	

Table A.4 – Uncertainty factors

Areas of uncertainty	Factor
Intraspecies extrapolation (species variation): This factor accounts for variations in chemical sensitivity among individuals in a species including toxicokinetic and toxicodynamic parameters.	1, 3, or 10
Interspecies extrapolation (animal to human): This factor accounts for variations in chemical sensitivity between experimental animals and humans including toxicokinetic and toxicodynamic parameters.	1, 3, or 10
Less than lifetime duration of exposure: This factor is intended to extrapolate experimental results from subchronic to chronic exposure.	1, 3, or 10
Use of LOAEL rather than NOAEL ¹ : This factor addresses the uncertainty in developing a reference dose from a LOAEL rather than a NOAEL.	1, 3, or 10

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Table A.4—Uncertainty factors

Areas of uncertainty	Factor
Lack of database completeness: This factor accounts for the absence of data for specific toxic endpoints.	1, 3, or 10
[†] This adjustment is not required for BMD calculations. NOTE—When uncertainties exist in four areas, a 3000-fold composite uncertainty factor is appropriate. When uncertainties exist in five areas, a 10,000-fold composite uncertainty factor is appropriate. This consolidation of individual factors recognizes that each individual factor is conservative, and multiplication of four or five uncertainty factors is likely to result in an overly conservative RfD. Datasets that would result in a composite uncertainty factor of greater than 10,000-fold are considered too weak for quantitative risk assessment (see A.4.2 for qualitative risk assessment requirements) (Dourson, 1994).	

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~~U.S. Food and Drug Administration. Code of Federal Regulations, Title 21 Good Laboratory Practices.~~

~~U.S. Food Quality Protection Act. 1996. 7 USC 136.~~

~~U.S. Safe Drinking Water Act. 1996. Section 1412(b)(7)(A).~~

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Annex B (normative)

Product / material evaluation

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B.2 General evaluation requirements

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B.2.7.1 Exposure of a material sample

A materials manufacturer shall have the option to request that a material be tested as a material sample (e.g., plaque, sheet) if, and only if, there is no chemical or physical difference in the material characteristics between the material sample and the material as it is used in covered applications. If the material is intended to be used only for the manufacture of products falling under the scope of a single section of this standard, the material shall be exposed under the conditions set forth in the corresponding section of Annex B. The normalized contaminant concentrations shall meet the requirements of NSF/ANSI 600 (previously Annex A).

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B.3 Joining and sealing materials

B.3.7 Multiple time point protocol

When the normalized concentration of a contaminant exceeds, or is expected to exceed, its acceptable level when evaluated as a single time point exposure, determination of the contaminant leaching rate using a multiple time point exposure shall be considered. For the purpose of contaminant concentration evaluation, Day 1 shall be defined as the time point at which extractant water is collected for analysis under the single time point exposure protocol. Day 90 shall be defined as 90 d after this time point. When over time data are used, the Day 1 concentration for the contaminant of concern shall meet the short term exposure level and Day 90 concentration shall meet the total allowable concentration (TAC) / single product allowable concentration (SPAC) respectively. When extrapolation is used, the relationship between contaminant concentration and time shall be determined and plotted using a minimum of five data points.

When a multiple time point protocol is employed in the evaluation of a contaminant, consideration shall be given to the availability of appropriate toxicity data to define an acute exposure limit for the contaminant, as required in NSF/ANSI 600, Section 3.3 (previously Annex A, Section A.5). Consideration shall also be given to the leaching characteristics of the contaminant. Multiple time point analysis shall not be used for lead or any other metal contaminant listed as a regulated contaminant by USEPA or Health Canada.

At the discretion of the manufacturer, direct measurement of a Day 90 extraction shall be permitted. The products shall be exposed at the selected application temperature (e.g., 23 ± 2 °C; 60 ± 2 °C; 82 ± 2 °C) for the full duration of the exposure. Extraction water shall be collected for analysis at a minimum of two time points: after Day 1 and after the final exposure terminating on Day 90. The exposure water shall be changed at least weekly during the interval between the initial and final exposure and on at least four days during the final week of exposure.

B.4 Mechanical devices

B.4.5 Multiple time point protocol

When the normalized concentration of a contaminant exceeds, or is expected to exceed, its acceptable level when evaluated as a single time point exposure, determination of the contaminant leaching rate using a multiple time point exposure shall be considered. For the purpose of contaminant concentration evaluation, Day 1 shall be defined as the time point at which extractant water is collected for analysis under the single time point exposure protocol. Day 90 shall be defined as 90 d after this time point. When over time data are used, the Day 1 concentration for the contaminant of concern shall meet the short term exposure level and Day 90 concentration shall meet the TAC/SPAC respectively. When extrapolation is used, the relationship between contaminant concentration and time shall be determined and plotted using a minimum of five data points.

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When a multiple time point protocol is employed in the evaluation of a contaminant, consideration shall be given to the availability of appropriate toxicity data to define an acute exposure limit for the contaminant, as required in NSF/ANSI 600, Section 3.3 (previously Annex A, Section A.5). Consideration shall also be given to the leaching characteristics of the contaminant. Multiple time point analysis shall not be used for lead or any other metal contaminant listed as a regulated contaminant by USEPA or Health Canada.

At the discretion of the manufacturer, direct measurement of a Day 90 extraction shall be permitted. The products shall be exposed at the selected application temperature (e.g., 23 ± 2 °C; 60 ± 2 °C; 82 ± 2 °C) for the full duration of the exposure. Extraction water shall be collected for analysis at a minimum of two time points: after Day 1 and after the final exposure terminating on Day 90. The exposure water shall be changed at least weekly during the interval between the initial and final exposure and on at least 4 d during the final week of exposure

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B.5 Mechanical plumbing devices

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B.5.6 Multiple time point protocol

When the normalized concentration of a contaminant exceeds, or is expected to exceed, its acceptable level when evaluated as a single time point exposure, determination of the contaminant leaching rate using a multiple time point exposure shall be considered. For the purpose of contaminant concentration evaluation, Day 1 shall be defined as the time point at which extractant water is collected for analysis under the single time point exposure protocol. Day 90 shall be defined as 90 d after this time point. When over time data are used, the Day 1 concentration for the contaminant of concern shall meet the short term exposure level and Day 90 concentration shall meet the TAC/SPAC respectively. When extrapolation is used, the relationship between contaminant concentration and time shall be determined and plotted using a minimum of five data points.

When a multiple time point protocol is employed in the evaluation of a contaminant, consideration shall be given to the availability of appropriate toxicity data to define an acute exposure limit for the contaminant, as required in NSF/ANSI 600, Section 3.3 (previously Annex A, Section A.5). Consideration shall also be given to the leaching characteristics of the contaminant. Multiple time point analysis shall not be used for lead or any other metal contaminant listed as a regulated contaminant by USEPA or Health Canada.

At the discretion of the manufacturer, direct measurement of a Day 90 extraction shall be permitted. The products shall be exposed at 23 ± 2 °C with the except for instant hot water dispensers, in which case the manufacturer's specified thermostat setting shall be used. Extraction water shall be collected for analysis at a minimum of two time points: after Day 1 and after the final exposure terminating on Day 90. The exposure water shall be changed at least weekly during the interval between the initial and final exposure and on at least 4 d during the final week of exposure.

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B.7 Analysis methods

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B.7.4.2.2 Requirements for identified compounds with standards via GC/MS analysis

Contaminants that have been identified and quantified by comparison to authentic standards shall be normalized in accordance with the requirements of this Standard (see Annex B, Section B.8). The normalized contaminant concentration shall be compared to the acceptable exposure concentration as determined in accordance with NSF/ANSI 600 (previously Annex A) ~~Annex A of this Standard~~.

B.7.4.2.3 Requirements for identified compounds without standards via GC/MS analysis

Contaminants that have been identified and quantified by comparison to a known mass spectrum, or by spectral interpretation by a qualified chemist, or both, shall be normalized in accordance with the requirements of this Standard (see Annex B, Section B.8). The normalized contaminant concentration shall be compared to the acceptable exposure concentration as determined in accordance with NSF/ANSI 600 (previously Annex A) ~~Annex A of this Standard~~. In addition, the product manufacturer shall assist the testing laboratory in the identification of an authentic standard for the compound and an appropriate analytical method, if applicable, so that confirmatory identification and quantification can be performed.

B.7.4.2.4 Requirements for unknowns via GC/MS analysis

Contaminants that are detected by GC/MS analysis, but are not identified and quantified against a known mass spectrum or authentic standard, shall be evaluated as follows:

- a) The product material formulation(s) shall be reviewed for potential identification of the unknown contaminant(s) as an ingredient or byproduct;
- b) The manufacturer shall be notified and requested to provide supporting information that enables identification of the unknown contaminant(s);
- c) Structure activity relationships (SAR) shall be utilized when sufficient structural identification of the unknown contaminant(s) can be made; and
- d) Alternative methods of analysis that may identify the unknown contaminant(s) shall be considered.

Contaminants that can be identified after performing one or more of the above steps shall be normalized in accordance with the requirements of this Standard (see Annex B, Section B.8). The normalized contaminant concentration shall be compared to the acceptable exposure concentration as determined in accordance with NSF/ANSI 600 (previously Annex A) ~~Annex A of this Standard~~. In addition, the product manufacturer shall assist the testing laboratory in the identification of an authentic standard for the compound and an appropriate analytical method, if applicable, so that confirmatory identification and quantification can be performed.

Contaminants detected by GC/MS analysis for which no identification can be made after performing the above steps shall not be considered in the determination of product compliance to this Standard. When unknown contaminants are detected in the extractant water, the testing laboratory shall report the analytical results to the product manufacturer.

NOTE — The product manufacturer should assist the testing laboratory in a continuing effort to identify the unknown contaminant(s) until specific identification is achieved.

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B.8 Normalization

B.8.1 General

This section provides the calculations used to determine the level of contaminants projected "at the tap" based on the level of contaminants identified during laboratory analysis. The normalized contaminant concentration shall be compared to the requirements established in NSF/ANSI 600 (previously Annex A).

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B.8.7 Normalized concentration

The concentration of a contaminant in the finished drinking water shall be estimated using the following calculation:

$$\text{normalized concentration} = (\text{laboratory concentration}) \times (\text{normalization factor})$$

B.8.7.1 Static condition

The normalized contaminant concentration under static conditions shall be compared to the EPA MCL or the calculated TAC (as specified in NSF/ANSI 600 (previously Annex A)), and shall be less than or equal to the MCL or TAC.

B.8.7.2 Flowing condition

The normalized contaminant concentration under flowing conditions shall be compared to the SPAC (as specified in NSF/ANSI 600 (previously Annex A)), and shall be less than or equal to the SPAC.

B.8.7.3 Barrier materials containing solvents

Products / materials containing solvents shall be exposed so that the solvent leaching rates over time are determined. The relationship between normalized contaminant concentrations and time shall be determined and plotted with a minimum of five points. The normalized contaminant concentrations shall be compared to the STEL as specified in NSF/ANSI 600, Section 3.3 (previously Annex A, Section A.5).

B.8.7.4 Joining and sealing materials containing solvents

The manufacturer shall have the option of initiating additional exposure testing to determine contaminant concentrations over time for solvent-containing materials. The relationship between contaminant concentrations and time shall be determined, and plotted with a minimum of five points. The normalized contaminant concentrations shall be calculated and then compared to the STEL as specified in NSF/ANSI 600, Section 3.3 (previously Annex A, Section A.5).

Annex D

~~(normative)~~ (informative)

Normative drinking water criteria

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The information contained in this Annex is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. Therefore, this Annex may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to this Standard.

The drinking water evaluation criteria for the determination of product compliance with the health effects requirements of NSF/ANSI 61 was removed from NSF/ANSI 61 Annex D and reestablished in NSF/ANSI 600. Annex D was retired from NSF/ANSI 61 in December 2018.

D.1—General

The drinking water criteria in this Annex shall be used as evaluation criteria for the determination of product compliance with the health effects requirements of NSF/ANSI 60 and NSF/ANSI 61.

The values in Table D.1 include the consensus USEPA and Health Canada drinking water criteria for contaminants evaluated by these two agencies. They also include criteria for non-regulated contaminants that have been developed according to the toxicity data requirements of Annex A. Non-regulatory USEPA guidance values are also included, as well as chemicals that have been evaluated using the threshold of evaluation approach.

The drinking water criteria in this Annex have not been evaluated for taste and odor considerations at the concentration limits indicated.

The substances listed in Annex D are not intended to encompass all the potential analytes of interest that need to be considered in evaluating products to the requirements of this Standard. The user is cautioned that each product may have formulation-dependent analytes of interest for which acceptable concentration limits have not been determined. In these cases, the user is required to develop acceptable concentration limits based on the requirements of Annex A in order to determine full compliance with the Standard.

D.2—USEPA and Health Canada drinking water criteria

Where indicated, Table D1 contains drinking water criteria for contaminants regulated by the USEPA and established by Health Canada. Values for each contaminant have been agreed upon by representatives of both agencies for the purpose of evaluating products against the health effects requirements of this Standard. For each substance, the values in the table represent a consensus decision regarding the selection of the most appropriate assessment upon which to base NSF/ANSI 61 evaluation.

At the time of publication, the indicated values were valid. These values are subject to change, however, and the user is encouraged to contact USEPA or Health Canada for the most current values. Some of these values have been developed using a linear multistage model to predict theoretical excess carcinogenic risk at low exposure concentrations. Where the database is sufficient and the compound mode of action can be determined, the USEPA is replacing the default linear multistage model with either a biologically based cell kinetic multistage model or a margin of exposure (MOE) analysis. Cancer potency (q1*) values developed using the linear multistage model may be re-evaluated in the future.

D.3—Joint Peer Review Steering Committee (JPRSC) reconciled criteria

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Effective April 17, 2013, CSA Group, NSF International, IAPMO R&T, UL, and the Water Quality Association use harmonized procedures outlined in Annex A of NSF/ANSI 60 and NSF/ANSI 61 to develop action levels for unregulated drinking water contaminants. The Joint Peer Review Steering Committee (JPRSC) was established by the aforementioned certifying agencies to reconcile/consolidate current pass/fail criteria and to harmonize the external peer review process for future risk assessments.

As part of the reconciliation/consolidation process, pass/fail criteria may be adopted following consensus approval of the members of the JPRSC. Sources of the pass/fail criteria approved by the JPRSC may include risk assessments submitted by each certifying agency as well as assessments based upon authoritative agencies (i.e., US EPA, Health Canada). All JPRSC reconciled drinking water criteria are determined in compliance with the requirements of Annex A.

At the time of publication, the indicated values were valid. These values are subject to change, however, and the user is encouraged to contact NSF International for the most current values.

D.4 — Externally peer-reviewed drinking water criteria

Where indicated, Table D1 contains drinking water criteria for unregulated substances for which a certifying agency has determined total allowable concentrations (TAC) and single product allowable concentrations (SPAC) in accordance with Annex A of this Standard. These criteria have been externally peer-reviewed by the NSF International Health Advisory Board (HAB). The NSF International HAB provides consensus peer review of documents supporting derivation of drinking water criteria. The NSF International HAB is composed of expert toxicologists and risk assessors from government, academia and industry.

At the time of publication, the indicated values were valid. These values are subject to change, however, and the user is encouraged to contact NSF International for the most current values.

D.5 — NSF International drinking water criteria (not externally peer-reviewed)

Where indicated, Table D1 contains drinking water criteria for unregulated contaminants that have been identified as extractants from products covered by this Standard. For criteria set by NSF International, the TAC and SPAC criteria have been determined in accordance with Annex A; however, such criteria are either in the process of undergoing external peer review or have not been submitted for external peer review. If not submitted for external peer review, these drinking water criteria will be reviewed and updated as part of the JPRSC reconciliation process.

At the time of publication, the indicated values were valid. These values are subject to change, however, and the user is encouraged to contact NSF International for the most current values.

D.6 — Drinking water criteria based on USEPA guidance concentrations

Where indicated, Table D1 contains drinking water criteria for unregulated contaminants for which the acceptable drinking water concentrations are based on USEPA guidance values, including those in the USEPA Health Advisory and Integrated Risk Information System (IRIS) databases. A relative source contribution factor has been applied to calculation of the drinking water criteria when such a factor was not applied as part of the USEPA risk assessment. In the absence of sufficient information to determine a data-derived relative source contribution factor, a default 20% drinking water contribution is assumed.

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~~At the time of publication, the indicated values were valid. These values are subject to change, however, and the user is encouraged to contact USEPA for the most current values. Some of these values have been developed using a linear multistage model to predict risk at low exposure concentrations and may be re-evaluated in the future.~~

~~D.7 Threshold of evaluation (TOE) chemical list~~

~~Where indicated, Table D1 contain the list of chemicals that have been evaluated under the threshold of evaluation because either they lack of the minimum data to determine chemical specific concentrations in accordance with the requirements of Annex A (see Annex A, section A.7.1) or they may have sufficient toxicity data available that would enable chemical specific risk assessments to be performed but have not been detected at concentrations exceeding the threshold of evaluation criteria.~~

~~In the event that these chemicals are detected at concentrations exceeding the threshold of evaluation criteria, a toxicity data review should be conducted according to Annex A prior to using the threshold of evaluation to determine product compliance to this Standard. Qualification to the threshold of evaluation category includes a comprehensive literature search for the particular substance and consideration of structure activity relationships.~~

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
formaldehyde	50-00-0	4	0.1	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. verification date: 06/20/1990	—
p,p'-dichlorodiphenyl trichloroethane (DDT)	50-29-3	0.004	0.0004	—	USEPA IRIS $10^{-5}/10^{-6}$ cancer risk levels. Verification date: 06/24/1987	—
benzo(a)pyrene	50-32-8	0.0002	0.00002	—	40 CFR §141.60, 40 CFR §141.61	—
benzoic acid, 2,5-dichloro-	50-79-3	0.01	0.01	—	WQA action level JPRSC consensus date: 10/15/2014	—
benzoic acid, 2,4-dichloro-	50-84-0	0.1	0.01	0.5	NSF action level External peer review date: 04/21/2004	—
benzoic acid, 3,5-dichloro-	51-36-5	0.01	0.01	—	WQA action level JPRSC consensus date: 10/15/2014	—
benzoic acid, 3,4-dichloro-	51-44-5	0.003	0.0003	0.01	TOE	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
N-nitrosodiethylamine	55-18-5	0.000002	0.0000002	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk level. Verification date: 10/29/86	—
benzamide	55-21-0	0.003	0.0003	0.01	TOE	—
dipropylamine, 3,3'-diamino-	56-18-8	0.003	0.0003	0.01	TOE	—
carbon tetrachloride	56-23-5	0.005	0.0005	—	40 CFR §141.60, 40 CFR §141.61	—
tributyltin oxide	56-35-9	0.002	0.0002	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Agency Consensus date: 07/02/1997	—
benzyltriethylammonium chloride	56-37-1	0.003	0.0003	0.01	TOE	—
parathion	56-38-2	0.05	0.005	—	Health Canada MAC Issue date: 02/86	—
benzo(a)anthracene	56-55-3	0.0002	0.00002	—	WQA action level JPRSC consensus date: 03/09/2016	—
glycerol	56-81-5	2	0.2	—	WQA action level JPRSC consensus date: 08/13/2014	—
hexadecanoic acid	57-10-3	0.5	0.5	—	NSF action level JPRSC consensus date: 08/13/2014	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
octadecanoic acid	57-11-4	0.5	0.5	—	NSF action level JPRSC consensus date: 08/13/2014	—
cyanide (as free cyanide)	57-12-5	0.2	0.02	—	40 CFR §141.60, 40 CFR §141.62	—
propylene glycol	57-55-6	200	20	—	WQA action level JPRSC consensus date: 10/12/2016	—
chlordan	57-74-9	0.002	0.0002	—	40 CFR §141.60, 40 CFR §141.61	—
cholesterol	57-88-5	0.01	0.01	—	WQA action level JPRSC consensus date: 08/13/2014	—
lindane	58-89-9	0.0002	0.00002	—	40 CFR §141.60, 40 CFR §141.61	—
2,3,4,6-tetrachlorophenol	58-90-2	0.1	0.01	—	Health Canada MAC Issue date: 02/87	—
alpha-tocopheryl acetate	58-95-7	0.02	0.02	—	WQA action level JPRSC consensus date: 09/10/2014	—
1,2-propanediol, 3-(2-methylphenoxy)-	59-47-2	0.01	0.01	—	UL action level JPRSC consensus date: 01/27/2015	—
p-chloro-m-cresol	59-50-7	0.7	0.07	4	NSF action level External peer review date: 04/25/2002	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
N-nitrosomorpholine	59-89-2	0.00004	0.000004	0.00004	NSF action level External peer review date: 04/18/2013	—
phenylethanol, 2-	60-12-8	0.003	0.0003	0.01	TOE	—
dimethoate	60-51-5	0.02	0.002	—	Health Canada MAC Issue date: 02/86	—
dieldrin	60-57-1	0.0007 (total)	0.00007 (total)	—	Health Canada MAC Issue date: 10/94	Detections shall be summed with the following chemicals: CAS# 309-00-2
indole, 3-(2-(diethylamino)ethyl)-	61-51-8	0.003	0.0003	0.01	TOE	—
aniline	62-53-3	0.06	0.006	—	USEPA IRIS $10^{-5}/10^{-6}$ cancer risk levels. Verification date: 06/03/1987	—
N-nitrosodimethylamine	62-75-9	0.000007	0.0000007	—	USEPA IRIS $10^{-5}/10^{-6}$ cancer risk levels. verification date: 10/29/86	—
carbaryl	63-25-2	0.09	0.009	—	Health Canada MAC Issue date: 02/86	—
phenylurea	64-10-8	0.003	0.0003	0.01	TOE	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
formic acid	64-18-6	0.01	0.01	—	UL action level JPRSC consensus date: 11/19/2014	—
benzoic acid	65-85-0	30	3	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 09/17/1987	—
hexanal	66-25-1	0.01	0.01	—	WQA action level JPRSC consensus date: 09/10/2014	—
5-hydroxymethylfurfural	67-47-0	0.003	0.0003	0.01	TOE	—
methanol	67-56-1	40	4	40	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 09/30/2013	—
isopropyl alcohol	67-63-0	0.05	0.05	40	NSF action level JPRSC consensus date: 08/13/2014	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
acetone	67-64-1	6	0.6	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Agency consensus date: 05/29/2003	—
chloroform	67-66-3	0.080 (total)	0.008 (total)	—	40 CFR §141.64	Detections shall be summed with the following chemicals: CAS# 75-25-2, CAS# 75-25-4, and CAS# 124-48-1
ethane, hexachloro-	67-72-1	0.009	0.0009	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. verification date: 09/23/2011	—
N,N-dimethylformamide	68-12-2	0.09	0.009	0.4	NSF action level External peer review date: 04/18/2013	—
benzenesulfonamide, 4-methyl-	70-55-3	0.01	0.01	—	WQA action level JPRSC consensus date: 08/13/2014	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
n-butanol	71-36-3	0.7	0.07	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 05/14/1986	—
benzene	71-43-2	0.005	0.0005	—	40 CFR §141.60, 40 CFR §141.61	—
trichloroethane (1,1,1-)	71-55-6	0.2	0.02	—	40 CFR §141.60, 40 CFR §141.61	—
endrin	72-20-8	0.002	0.0002	—	40 CFR §141.60, 40 CFR §141.61	—
methoxychlor	72-43-5	0.04	0.004	—	40 CFR §141.60, 40 CFR §141.61	—
p,p'-dichlorodiphenyl dichloroethane (DDD)	72-54-8	0.001	0.0001	—	USEPA IRIS $10^{-5}/10^{-6}$ cancer risk levels. Verification date: 06/24/1987	—
p,p'-dichlorodiphenyl dichloroethylene (DDE)	72-55-9	0.001	0.0001	—	USEPA IRIS $10^{-5}/10^{-6}$ cancer risk levels. Verification date: 06/24/1987	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
diphenyl-p-phenylenediamine, n,n'-	74-31-7	0.01	0.01	—	UL action level JPRSC consensus date: 01/27/2015	—
bromomethane	74-83-9	0.01	0.001	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 05/26/1988	—
chloromethane	74-87-3	0.03	0.003	—	Based on the USEPA Lifetime Health Advisory. Issue date: 1989	—
iodomethane	74-88-4	0.003	0.0003	0.01	TOE	—
bromochloromethane	74-97-5	0.09	0.009	—	USEPA Lifetime Drinking Water Health Advisory Issue date: 1989	—
propane	74-98-6	0.01	0.01	—	WQA action level JPRSC consensus date: 08/13/2014	—
chloroethane	75-00-3	0.0004	0.00004	—	NSF action level Issue date: 01/10/92	—
vinyl chloride	75-01-4	0.002	0.0002	—	40 CFR §141.60, 40 CFR §141.61	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
acetaldehyde	75-07-0	0.01	0.01	—	NSF action level Issue date: 04/24/96	—
dichloromethane	75-09-2	0.005	0.0005	—	40 CFR §141.60, 40 CFR §141.61	—
diiodomethane	75-11-6	0.003	0.0003	—	TOE	—
carbon disulfide	75-15-0	0.7	0.07	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 08/05/1985	—
bromoform	75-25-2	0.080 (total)	0.008 (total)	—	40 CFR §141.64	Detections shall be summed with the following chemicals: CAS# 75-25-4, CAS# 124-48-1, and CAS# 67-66-3
bromodichloromethane	75-27-4	0.080 (total)	0.008 (total)	—	40 CFR §141.64	Detections shall be summed with the following chemicals: CAS# 75-25-2, CAS# 124-48-1, and CAS# 67-66-3
propane, 2-methyl	75-28-5	0.02	0.02	—	WQA action level JPRSC consensus date: 09/10/2014	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
ethane, 1,1-dichloro-	75-34-3	0.003	0.0003	0.01	TOE	—
dichloroethylene (1,1-)	75-35-4	0.007	0.0007	—	40 CFR §141.60, 40 CFR §141.61	—
ethane, 1,1-difluoro-	75-37-6	0.003	0.0003	0.01	TOE	—
vinylidene fluoride	75-38-7	0.003	0.0003	0.01	TOE	—
methane, chlorodifluoro-	75-45-6	0.003	0.0003	0.01	TOE	—
trimethylamine	75-50-3	0.01	0.001	—	NSF action level Issue date: 11/11/96	—
propylene oxide	75-56-9	0.001	0.0001	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. verification date: 04/05/1990	—
tert-butylamine	75-64-9	0.003	0.0003	0.01	TOE	—
t-butanol	75-65-0	9	0.9	40	NSF action level External peer review date: 10/03/2002	—
trichlorofluoromethane	75-69-4	2	0.2	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 05/31/1985	—
dichlorodifluoromethane	75-71-8	0.003	0.0003	0.01	TOE	—
propanoic acid, 2,2-dimethyl-	75-98-9	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
dalapon	75-99-0	0.2	0.02	—	40 CFR §141.60, 40 CFR §141.61	—
trichloroacetic acid	76-03-9	0.060 (total)	0.0060 (total)	0.060 (total)	40 CFR §141.64	Detections shall be summed with the following chemicals: CAS# 79-08-3, CAS# 79-11-8, CAS# 631-64- 1, and CAS# 79-43-6. Dichloroacetic acid (CAS# 79-43-6) must also be evaluated under its separate pass/fail criteria (TAC = 0.007 mg/L, SPAC = 0.0007 mg/L)
heptachlor	76-44-8	0.0004	0.00004	—	40 CFR §141.60, 40 CFR §141.61	—
hexachlorocyclopentadiene	77-47-4	0.05	0.005	—	40 CFR §141.60, 40 CFR §141.61	—
1,3-dibromo-5,5-dimethylhydantoin	77-48-5	60	10	—	NSF action level External peer review date: 05/05/2010	—
propanoic acid, 2-methyl-, 3- hydroxy-2,2,4-trimethylpentyl ester	77-68-9	0.4 (total)	0.04 (total)	5 (total)	NSF action level External peer review date: 05/10/2011	Detections shall be summed with the following chemicals: CAS# 144-19-4, CAS# 6846-50-0, CAS# 25265-77-4, CAS#

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
						74367-33-2 and CAS# 74367-34-3
acetyl tributyl citrate	77-90-7	5	0.5	8	NSF action level External peer review date: 10/30/2013	—
triethyl citrate	77-93-0	4	0.4	20	NSF action level External peer review date: 11/05/2004	—
tributyl citrate	77-94-1	0.01	0.01	—	IAPMO action level JPRSC consensus date: 10/15/2014	—
1,3-Propanediol, 2-ethyl-2- (hydroxymethyl)-	77-99-6	0.01	0.01	—	IAPMO action level JPRSC consensus date: 08/13/2014	—
phosphonic acid, ethyl-, diethyl ester	78-38-6	0.01	0.01	—	IAPMO action level JPRSC consensus date: 08/21/2015	—
triethyl phosphate	78-40-0	0.2 (total)	0.02 (total)	0.3 (total)	NSF action level External peer review date: 10/10/2006	Detections shall be summed with the following chemicals: CAS# 126-73-8 and CAS# 513-08-6
tris(2-ethylhexyl) phosphate	78-42-2	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
N-isopropyl-2-methyl-2-propyl-1,3-propanediol dicarbamate	78-44-4	0.003	0.0003	0.01	TOE	—
tris-(2-butoxyethyl) phosphate	78-51-3	0.4	0.04	2	NSF action level External peer review date: 05/10/2011	—
isophorone	78-59-1	0.4	0.04	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 08/05/1992	—
2,2'-azobisisobutyronitrile	78-67-1	0.01	0.01	—	NSF action level Issue date: 07/01/96	—
octadien-3-ol, 3,7-dimethyl-1,6-	78-70-6	0.003	0.0003	0.01	TOE	—
isoprene	78-79-5	0.05	0.005	0.05	NSF action level External peer review date: 04/18/2017	—
isobutyronitrile	78-82-0	0.003	0.0003	0.01	TOE	—
dichloropropane (1,2-)	78-87-5	0.005	0.0005	—	40 CFR §141.60, 40 CFR §141.61	—
methyl ethyl ketone (MEK)	78-93-3	4	0.4	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Agency Consensus Date: 09/10/2003	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
propanol, 1-amino-2-	78-96-6	0.003	0.0003	0.01	TOE	—
trichloroethane (1,1,2-)	79-00-5	0.005	0.0005	—	40 CFR §141.60, 40 CFR §141.61	—
trichloroethylene	79-01-6	0.005	0.0005	—	40 CFR §141.60, 40 CFR §141.61	—
acrylamide	79-06-1	0.0004	0.00004	—	Derived from the USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels in the IRIS Toxicological Review document. Dated: March 2010	—
acrylamide (as a monomer in drinking water treatment polymers)	79-06-1	TT (0.05% dosed at 1 ppm, or equivalent)	TT (0.05% dosed at 1 ppm, or equivalent)	—	40 CFR §141.111, 40 CFR §141.110	TT = treatment technique.
bromoacetic acid	79-08-3	0.060 (total)	0.0060 (total)	0.060 (total)	40 CFR §141.64	Detections shall be summed with the following chemicals: CAS# 76-03-9, CAS# 79-11-8, CAS# 631-64- 1, and CAS# 79-43-6. Dichloroacetic acid (CAS# 79-43-6) must also be evaluated under its separate pass/fail criteria (TAC =

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
						0.007 mg/L, SPAC = 0.0007 mg/L)
acrylic acid	79-10-7	4	0.4	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. verification date: 02/17/1994	—
chloroacetic acid	79-11-8	0.060 (total)	0.0060 (total)	0.060 (total)	40 CFR §141.64	Detections shall be summed with the following chemicals: CAS# 79-08-3, CAS# 76-03-9, CAS# 631-64- 1, and CAS# 79-43-6. Dichloroacetic acid (CAS# 79-43-6) must also be evaluated under its separate pass/fail criteria (TAC = 0.007 mg/L, SPAC = 0.0007 mg/L)

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
methyl acetate	79-20-9	0.003	0.0003	0.01	TOE	—
peroxyacetic acid	79-21-0	7	7	10	NSF action level External peer review date: 05/10/2016	—
isobutyric acid	79-31-2	0.003	0.0003	0.01	TOE	—
1,1,2,2-tetrachloroethane	79-34-5	0.002	0.0002	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 06/26/1986	—
methacrylic acid	79-41-4	0.05	0.02	—	NSF action level Issue date 05/25/1993	—
dichloroacetic acid	79-43-6	0.007	0.0007	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ upper bound risk levels. Agency Consensus Date: 08/20/2003	Detections shall be summed with the following chemicals: CAS# 79-08-3, CAS# 76-03-9, CAS# 631-64- 1, and CAS# 79-11-8. Dichloroacetic acid (CAS# 79-43-6) must also be evaluated under its separate pass/fail criteria (TAC = 0.007 mg/L, SPAC = 0.0007 mg/L)
pempidine	79-55-0	0.003	0.0003	0.01	TOE	—
bisphenol A	80-05-7	0.1	0.01	0.2	NSF action level External peer review date: 03/19/2007	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
toluenesulfonamide, N-ethyl-4-	80-39-7	0.003	0.0003	0.01	TOE	—
peroxide, bis(1-methyl-1-phenylethyl)-	80-43-3	0.05	0.01	—	UL action level JPRSC consensus date: 01/27/2015	—
phenol, 4-(1,1-dimethylpropyl)-	80-46-6	0.01	0.01	—	UL action level JPRSC consensus date: 11/19/2014	—
propanoic acid, 2-hydroxy-2-methyl-ethyl ester	80-55-7	0.003	0.0003	0.01	TOE	—
methyl methacrylate	80-62-6	10	4	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Agency Consensus Date: 11/25/1997	—
saccharin	81-07-2	0.003	0.0003	0.01	TOE	—
acetophenone, 4'-tert-butyl-2',6'-dimethyl-3',5'-dinitro-	81-14-1	0.01	0.01	—	UL action level JPRSC consensus date: 01/27/2015	—
naphthalene-1,8-dicarboxylic anhydride	81-84-5	0.01	0.01	—	CSA action level JPRSC consensus date: 03/09/2016	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
pentachloronitrobenzene	82-68-8	0.02	0.002	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 04/15/1987	
acenaphthene	83-32-9	0.003	0.0003	0.01	TOE	—
1H-inden-1-one, 2,3-dihydro-	83-33-0	0.01	0.01	—	UL action level JPRSC consensus date: 01/27/2015	—
1,2-benzenedicarboxylic acid, 1-butyl 2-cyclohexyl ester	84-64-0	0.01	0.01	—	WQA action level JPRSC consensus date: 08/21/2015	—
anthraquinone	84-65-1	0.008	0.0008	—	WQA action level JPRSC consensus date: 05/20/2015	—
diethyl phthalate	84-66-2	6	0.6	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 07/16/1987	—
diisobutyl phthalate	84-69-5	0.8	0.08	—	NSF action level JPRSC consensus date: 10/29/2013	—

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di-n-butyl phthalate	84-74-2	0.7	0.07	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 01/22/1986	—
phenanthrene	85-01-8	0.003	0.0003	0.01	TOE	—
isoindole-1,3-dione	85-41-6	0.01	0.01	—	CSA action level JPRSC consensus date: 03/09/2016	—
hexahydrophthalic anhydride	85-42-7	0.05 (total)	0.05 (total)	0.05 (total)	NSF action level External peer review date: 10/17/2012	Detections shall be summed with the following chemicals: CAS# 85-43-8, CAS# 11070-44-3, CAS# 25134-21-8 and CAS# 25550-51-0
tetrahydrophthalic anhydride	85-43-8	0.05 (total)	0.05 (total)	0.05 (total)	NSF action level External peer review date: 10/17/2012	Detections shall be summed with the following chemicals: CAS# 85-42-7, CAS# 11070-44-3, CAS# 25134-21-8 and CAS# 25550-51-0

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phthalic anhydride	85-44-9	10	4	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 02/24/1988	—
butylbenzyl-phthalate	85-68-7	4	0.1	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 06/15/1989	—
1,2-benzenedicarboxylic acid, butyl 2-ethylhexyl ester	85-69-8	0.01	0.01	—	WQA action level JPRSC consensus date: 11/18/2015	—
N-nitrosodiphenylamine	86-30-6	0.07	0.007	—	USEPA IRIS $10^{-5}/10^{-6}$ cancer risk levels. Verification date: 02/11/1987	—
azinphos-methyl	86-50-0	0.02	0.002	—	Issue date: 02/86	—
fluorene	86-73-7	0.3	0.03	—	WQA action level JPRSC consensus date: 05/20/2015	—
carbazole	86-74-8	0.003	0.0003	0.01	TOE	—

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1(3H)-isobenzofuranone	87-41-2	0.01	0.01	0.01	NSF action level External peer review date: 04/06/2006	—
benzene, 1,2,3-trichloro-	87-61-6	0.003	0.0003	0.01	TOE	—
phenol, 2,6-dichloro-	87-65-0	0.003	0.0003	0.01	TOE	—
1,3-butanediene, hexachloro-	87-68-3	0.004	0.0004	—	WQA action level JPRSC consensus date: 05/20/2015	—
hexabromobenzene	87-82-1	0.01	0.001	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. verification date: 11/06/1985	—
pentachlorophenol	87-86-5	0.001	0.0001	—	40 CFR §141.60, 40 CFR §141.61	—
2,4,6-trichlorophenol	88-06-2	0.005	0.0005	—	Health Canada MAC Issue date: 02/87	—
benzene, 1-chloro-2- (trifluoromethyl)-	88-16-4	0.003	0.0003	0.01	TOE	—
o-toluenesulfonamide	88-19-7	0.003	0.0003	0.01	TOE	—
phenol, 2,2'-methylenebis (6-tert- butyl)-4-ethyl-	88-24-4	0.003	0.0003	0.01	TOE	—
benzyl alcohol, 3,5-di-tert-butyl-4- hydroxy-	88-26-6	0.003	0.0003	0.01	TOE	—

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2,6-di-tert-butyl-4-(dimethylaminomethyl)phenol	88-27-7	0.003	0.0003	0.01	TOE	—
dinoseb	88-85-7	0.007	0.0007	—	40 CFR §141.60, 40 CFR §141.61	—
phthalic acid, o-	88-99-3	10	4	—	NSF action level JPRSC consensus date: 11/19/2014	—
benzeneacetic acid, 2-carboxy-	89-51-0	0.01	0.01	—	WQA action level JPRSC consensus date: 06/28/2016	—
2-methylbenzyl alcohol	89-95-2	0.003	0.0003	0.01	TOE	—
benzaldehyde, 2-hydroxy-	90-02-8	0.003	0.0003	0.01	TOE	—
2-methoxy-phenol	90-05-1	0.003	0.0003	0.01	TOE	—
1-methylnaphthalene	90-12-0	0.05	0.05	—	NSF action level Issue date 09/16/96	—
2-phenylphenol	90-43-7	7	0.7	20	NSF action level External peer review date: 10/17/2012	—
phenol, 2,4,6- tris(dimethylaminomethyl)-	90-72-2	0.003	0.0003	0.01	TOE	—
benzhydrol	91-01-0	0.05	0.05	0.05	NSF action level External peer review date: 04/23/2014	—
1,2-benzenedicarbonitrile	91-15-6	0.003	0.0003	0.01	TOE	—

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naphthalene	91-20-3	0.1	0.01	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Agency Consensus Date: 07/01/1998	—
quinoline	91-22-5	0.0001	0.00001	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Agency Consensus Date: 09/21/2001	—
methylecoumarin, 7-diethylamino-4-	91-44-1	0.003	0.0003	0.01	TOE	—
quinoline, 6-ethoxy-1,2-dihydro-2,2,4-trimethyl-	91-53-2	0.01	0.01	—	WQA action level JPRSC consensus date: 06/28/2016	—
2-methyl-naphthalene	91-57-6	0.03	0.003	=	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Agency Consensus Date: 12/11/2003	—
2-chloronaphthalene	91-58-7	0.6	0.06	—	WQA action level JPRSC consensus date: 05/20/2015	—
diethylaniline	91-66-7	0.003	0.0003	0.01	TOE	—

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benzoguanamine	91-76-9	0.01	0.001	0.2	NSF action level External peer review date: 09/21/2011	—
3,3'-dichlorobenzidine	91-94-1	0.0008	0.00008	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 11/30/1988	—
biphenyl	92-52-4	0.01	0.01	—	WQA action level JPRSC consensus date: 01/11/2017	—
morpholine, 4-phenyl-	92-53-5	0.003	0.0003	0.01	TOE	—
phenothiazine	92-84-2	0.003	0.0003	0.01	TOE	—
benzidine	92-87-5	0.000002	0.0000002	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 12/17/1986	—
propanol, phenyl	93-54-9	0.003	0.0003	0.01	TOE	—
propanone, 1-phenyl-1-	93-55-0	0.003	0.0003	0.01	TOE	—
styrene glycol	93-56-1	0.01	0.01	—	CSA action level JPRSC consensus date: 03/08/2017	—
methyl benzoate	93-58-3	0.01	0.01	—	WQA action level JPRSC consensus date: 05/20/2015	—
formamide, N-methyl-N-phenyl-	93-61-8	0.003	0.0003	0.01	TOE	—

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fenoprop	93-72-1	0.05	0.005	—	40 CFR §141.60, 40 CFR §141.61	—
benzanilide	93-98-1	0.003	0.0003	0.01	TOE	—
propylparaben	94-13-3	0.003	0.0003	0.01	TOE	—
butylparaben	94-26-8	0.003	0.0003	0.01	TOE	—
triethyleneglycol di(2- ethylhexanoate)	94-28-0	0.003	0.0003	0.01	TOE	—
phenetidine, o-	94-70-2	0.003	0.0003	0.01	TOE	—
2,4-D	94-75-7	0.07	0.007	—	40 CFR §141.60, 40 CFR §141.61	—
1,3-hexanediol, 2-ethyl-	94-96-2	0.2	0.02	—	WQA action level JPRSC consensus date: 05/20/2015	—
S,S- di(diethylaminothioxomethyl)sulfide	95-05-6	0.003	0.0003	0.01	TOE	—
indene	95-13-6	0.003	0.0003	0.01	TOE	—
benzotriazole, 1,2,3-	95-14-7	0.003	0.0003	0.01	TOE	—
2-benzothiazolesulfenamide, N- cyclohexyl-	95-33-0	0.01	0.01	—	UL action level JPRSC consensus date: 05/20/2015	—
1-bromo-2-methylbenzene	95-46-5	0.003	0.0003	0.01	TOE	—
o-xylene	95-47-6	10 (total)	1 (total)	—	40 CFR §141.60, 40 CFR §141.61	Detections shall be summed with the following chemicals: CAS# 106-42-3 and CAS# 108-38-3

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
2-methylphenol	95-48-7	0.4	0.04	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification Date: 09/01/1990	—
2-chlorotoluene	95-49-8	0.1	0.01	—	Based on the oral RfD and lifetime drinking water health advisory in the USEPA 2011 Edition of the Drinking Water Standards and Health Advisories	—
dichlorobenzene o-	95-50-1	0.6	0.06	—	40 CFR §141.60, 40 CFR §141.61	—
o-toluidine	95-53-4	0.02	0.002	0.02	NSF action level External peer review date: 05/05/2010	—
bromophenol, 2-	95-56-7	0.003	0.0003	0.01	TOE	—
trimethylbenzene, 1,2,4-	95-63-6	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742-95-6) Class-Based Evaluation Level

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
benzenamine, 3,4-dimethyl-	95-64-7	0.05	0.005	—	WQA action level JPRSC consensus date: 05/20/2015	—
3,4-dimethylphenol	95-65-8	0.007	0.0007	—	Derived from the oral RfD on the USEPA IRIS database with an default 20% relative source contribution for drinking water. verification date: 01/22/1986	—
2-chloro-1,4-dimethylbenzene	95-72-7	0.003	0.0003	0.01	TOE	—
4-chloro-1,2-benzenediamine	95-83-0	0.2	0.02	0.2	NSF action level External peer review date: 04/20/2004	—
tetramethylbenzene, 1,2,4,5-	95-93-2	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
phenol, 2,4,5-trichloro-	95-95-4	0.7	0.07	—	CSA action level JPRSC consensus date: 05/20/2015	—
menthane, 1,2:8,9-diepoxy-	96-08-2	0.003	0.0003	0.01	TOE	—
dibromo-3-chloropropane (1,2-)	96-12-8	0.0002	0.00002	—	40 CFR §141.60, 40 CFR §141.61	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
pentane, 3-methyl	96-14-0	0.003	0.0003	0.01	TOE	—
1,2,3-trichloropropane	96-18-4	0.04	0.004	—	USEPA Lifetime Drinking Water Health Advisory Issue date: 1989	—
1,3, dichloro-2-propanol	96-23-1	0.01 (total)	0.004 (total)	0.01 (total)	NSF action level External peer review date: 10/21/2014	Detections shall be summed with the following chemicals: CAS# 616-23-9
methyl acrylate	96-33-3	0.003	0.0003	0.01	TOE	—
ethylene thiourea	96-45-7	0.0006	0.00006	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 02/20/1991	—
γ-butyrolactone	96-48-0	4	0.4	4	NSF action level External peer review date: 10/04/2002	—
4,4'-thiobis-(6-tert-butyl-o-cresol)	96-66-2	0.003	0.0003	0.01	TOE	—
phenol, 2,4-di-tert-butyl	96-76-4	0.1	0.01	2	NSF action level External peer review date: 10/17/2012	—
di-o-tolylguanidine, 1,3-	97-39-2	0.003	0.0003	0.01	TOE	—
5-chloro-2,4-dimethoxybenzamine	97-50-7	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
2-propenoic acid, 2-methyl-, ethyl ester	97-63-2	0.01	0.01	—	IAPMO action level JPRSC consensus date: 02/10/2016	—
bis(dimethylthiocarbamoyl) sulfide	97-74-5	0.003	0.0003	0.01	TOE	—
isobutyl isobutyrate	97-85-8	0.003	0.0003	0.01	TOE	—
isobutyl methacrylate	97-86-9	0.003	0.0003	0.01	TOE	—
2-methyl-propanoic acid, butyl ester	97-87-0	0.003	0.0003	0.01	TOE	—
ethylene glycol dimethacrylate	97-90-5	0.003	0.0003	0.01	TOE	—
tetrahydrofurfuryl alcohol	97-99-4	0.003	0.0003	0.01	TOE	—
furanmethanol, 2-	98-00-0	0.003	0.0003	0.01	TOE	—
furfural	98-01-1	0.2	0.02	3	NSF action level External peer review date: 09/03/2003	—
t-butylbenzene	98-06-6	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
benzotrichloride	98-07-7	0.00003	0.000003	—	USEPA IRIS $10^{-5}/10^{-6}$ cancer risk levels. Verification date: 08/02/1989	—
benzene, 1-chloro-3-(trifluoromethyl)-	98-15-7	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
4-t-butyl-2-chlorophenol	98-28-2	0.003	0.0003	0.01	TOE	—
cyclohexanol, 4-tert-butyl-	98-52-2	0.003	0.0003	0.01	TOE	—
p-tert-butylphenol	98-54-4	0.5	0.05	7	NSF action level External peer review date: 10/05/2010	—
terpineol, alpha-	98-55-5	0.003	0.0003	0.01	TOE	—
4-chlorobenzo-trifluoride	98-56-6	0.3	0.03	2	NSF action level External peer review date: 04/07/2006	—
benzoic acid, 4-tert-butyl-	98-73-7	0.003	0.0003	0.01	TOE	—
isopropylbenzene (cumene)	98-82-8	0.7	0.07	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Agency Consensus Date: 06/06/1997	—
styrene, alpha-methyl-	98-83-9	0.006	0.0006	0.006	NSF action level External peer review date: 04/23/2014	—
benzyl alcohol, alpha methyl	98-85-1	0.7	0.07	—	UL action level JPRSC consensus date: 10/29/2013	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
acetophenone	98-86-2	0.2	0.02	4	NSF action level External peer review date: 09/03/2003	—
cyclohexanamine, N,N-dimethyl-	98-94-2	0.003	0.0003	0.01	TOE	—
nitrobenzene	98-95-3	0.01	0.001	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification Date: 02/06/2009	—
benzoic acid, m-methyl-	99-04-7	0.003	0.0003	0.01	TOE	—
1,3,5-trinitrobenzene	99-35-4	0.2	0.02	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 08/27/1997	—
methylparaben	99-76-3	0.003	0.0003	0.01	TOE	—
cyclohexane, 1-isopropyl-4-methyl-	99-82-1	0.003	0.0003	0.01	TOE	—
isopropyltoluene	99-87-6	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
acetophenone, 4'-hydroxy-	99-93-4	0.003	0.0003	0.01	TOE	—
benzoic acid, p-methyl-	99-94-5	0.003	0.0003	0.01	TOE	—
aniline, 4-nitro-	100-01-6	0.04	0.004	—	UL action level JPRSC consensus date: 06/11/2014	—
4-nitrophenol	100-02-7	0.06	0.006	0.06	Based on the oral RfD and lifetime drinking water health advisory in the USEPA 2012 Edition of the Drinking Water Standards and Health Advisories	—
terephthalic acid	100-21-0	3	0.3	3	NSF action level External peer review date: 10/16/2008	—
diethylaminoethanol	100-37-8	0.003	0.0003	0.01	TOE	—
ethylbenzene	100-41-4	0.7	0.07	—	40 CFR §141.60, 40 CFR §141.61	—
styrene	100-42-5	0.1	0.01	—	40 CFR §141.60, 40 CFR §141.61	—
benzyl chloride	100-44-7	0.002	0.0002	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. verification date: 03/01/1989	—
cyclohexene, 4-cyano- also (1- cyano-3-cyclohexene)	100-45-8	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
benzylamine	100-46-9	0.003	0.0003	0.01	TOE	—
benzonitrile	100-47-0	0.003	0.0003	0.01	TOE	—
3-cyclohexene-1-carboxaldehyde	100-50-5	0.003	0.0003	0.01	TOE	—
benzyl alcohol	100-51-6	30	3	=	UL action level JPRSC consensus date: 04/17/2013	—
benzaldehyde	100-52-7	40	4	50	NSF action level External peer review date: 09/20/2011	—
cyclohexanamine, N-methyl-	100-60-7	0.003	0.0003	0.01	TOE	—
Methoxybenzene	100-66-3	0.003	0.0003	0.01	TOE	—
pyridine, 2-ethyl-	100-71-0	0.003	0.0003	0.01	TOE	—
N-nitrosopiperidine	100-75-4	0.00005	0.000005	0.00005	NSF action level External peer review date: 10/17/2012	—
2,2-dimethyl-1,3-dioxolane-4-methanol	100-79-8	0.003	0.0003	0.01	TOE	—
benzene, 1-ethenyl-3-methyl-	100-80-1	0.003	0.0003	0.01	TOE	—
hexamethylenetetramine	100-97-0	0.003	0.0003	0.01	TOE	—
guanidine, 1,2,3-triphenyl-	101-01-9	0.003	0.0003	0.01	TOE	—
3-chlorodiphenylamine	101-17-7	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
hydroxydiphenylamine, 3-	101-18-8	0.01	0.01	—	UL action level JPRSC consensus date: 09/10/2014	—
triallyl cyanurate	101-37-1	0.05	0.05	—	UL action level JPRSC consensus date: 08/13/2014	—
urea, 1,1-dimethyl-3-phenyl-	101-42-8	0.003	0.0003	0.01	TOE	—
phenylenediamine, n-phenyl-p-	101-54-2	0.003	0.0003	0.01	TOE	—
4,4'-methylene bis (N,N'-dimethyl) aniline	101-61-1	0.008	0.0008	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 04/05/1989	—
diphenylamine, 4,4'-diethyl-	101-67-7	0.003	0.0003	0.01	TOE	—
methylene diphenyl diisocyanate	101-68-8	0.003	0.0003	0.01	TOE	—
(isopropylamino)diphenylamine, 4-	101-72-4	0.01	0.01	—	UL action level JPRSC consensus date: 11/18/2015	—
4,4'-methylene dianiline	101-77-9	0.0008	0.00008	0.0008	NSF action level External peer review date: 04/22/2009	—
1,1'-methylene bis-benzene	101-81-5	0.003	0.0003	0.01	TOE	—
cyclohexanamine, N-cyclohexyl-	101-83-7	0.003	0.0003	0.01	TOE	—
benzene, 1,1-oxybis-	101-84-8	0.003	0.0003	0.01	TOE	—
ethylbenzene acetate	101-97-3	0.003	0.0003	0.01	TOE	—

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benzenemethanamine, n-methyl-n-(phenylmethyl)-	102-05-6	0.003	0.0003	0.01	TOE	—
diphenyl guanidine, 1,3- (or n,n-)	102-06-7	0.003	0.0003	0.01	TOE	—
urea, 1,3-diphenyl-	102-07-8	0.003	0.0003	0.01	TOE	—
3,4-dichlorophenyl isocyanate	102-36-3	0.003	0.0003	0.01	TOE	—
triallylamine	102-70-5	0.003	0.0003	0.01	TOE	—
triethanolamine	102-71-6	3	0.3	20	NSF action level External peer review date: 10/10/2006	—
triacetin	102-76-1	0.003	0.0003	0.01	TOE	—
benzothiazole, 2-(morpholiniothio)-	102-77-2	0.01	0.01	—	UL action level JPRSC consensus date: 03/09/2016	—
1-butanamine,N,N-dibutyl-	102-82-9	0.01	0.01	—	WQA action level JPRSC consensus date: 08/13/2014	—
ethylhexyl acetate, 2-	103-09-3	0.003	0.0003	0.01	TOE	—
di(2-ethylhexyl)adipate	103-23-1	0.4	0.04	—	40 CFR §141.60, 40 CFR §141.61	—
azobenzene	103-33-3	0.003	0.0003	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 02/03/1988	—
dibenzylamine	103-49-1	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
dibenzyl ether	103-50-4	0.4	0.04	5	NSF action level External peer review date: 10/16/2012	—
n-propylbenzene	103-65-1	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
aniline, N-ethyl-	103-69-5	0.003	0.0003	0.01	TOE	—
formamide, n-phenyl-	103-70-8	0.003	0.0003	0.01	TOE	—
phenyl isothiocyanate	103-72-0	0.003	0.0003	0.01	TOE	—
benzylamine, N,N-dimethyl-	103-83-3	0.003	0.0003	0.01	TOE	—
2,2'-p-phenylenedioxydiethanol	104-38-1	0.003	0.0003	0.01	TOE	—
n-butylbenzene	104-51-8	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
propanal, 3-phenyl	104-53-0	0.003	0.0003	0.01	TOE	—
cinnamaldehyde	104-55-2	0.003	0.0003	0.01	TOE	—
dihydro-5-pentyl-2(3H)-furanone	104-61-0	0.003	0.0003	0.01	TOE	—
ethane, 1,2-diphenoxy-	104-66-5	0.003	0.0003	0.01	TOE	—
diethyleneglycol monophenyl ether	104-68-7	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
2-ethylhexanol	104-76-7	0.8	0.08	3	NSF action level External peer review date: 04/17/2008	—
benzaldehyde, 4-methyl-	104-87-0	0.003	0.0003	0.01	TOE	—
propanoic acid, ethyl ester	105-37-3	0.003	0.0003	0.01	TOE	—
acetal	105-57-7	0.01	0.01	0.01	NSF action level Issue date:	—
methyldiethanolamine, n-	105-59-9	0.003	0.0003	0.01	TOE	—
caprolactam	105-60-2	4	0.4	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 03/24/1988	—
2,4-dimethylphenol	105-67-9	0.1	0.01	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 02/21/1990	—
dibutylmaleate	105-76-0	0.05	0.05	0.05	UL action level JPRSC consensus date: 04/17/2013	—

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octadecanoic acid, 2-(2-hydroxyethoxy)ethyl ester	106-11-6	0.003	0.0003	0.01	TOE	—
geraniol	106-24-1	0.003	0.0003	0.01	TOE	—
1,4-dibromobenzene	106-37-6	0.07	0.007	=	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Agency Consensus Date: 05/15/1986	—
benzene, 1-bromo-4-methyl	106-38-7	0.003	0.0003	0.01	TOE	—
bromophenol, 4-	106-41-2	0.003	0.0003	0.01	TOE	—
p-xylene	106-42-3	10 (total)	1 (total)	—	40 CFR §141.60, 40 CFR §141.61	Detections shall be summed with the following chemicals: CAS# 95-47-6 and CAS# 108-38-3
4-chlorotoluene	106-43-4	0.1	0.01	—	Based on the oral RfD and lifetime drinking water health advisory in the USEPA 2011 Edition of the Drinking Water Standards and Health Advisories	—
p-cresol	106-44-5	0.4	0.04	6	WQA action level External peer review date: 05/05/2015	Detections shall be summed with the following chemicals: CAS# 108-39-4

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dichlorobenzene p-	106-46-7	0.075	0.0075	—	40 CFR §141.60, 40 CFR §141.61	—
para-toluidine-	106-49-0	0.003	0.0003	0.01	TOE	—
benzenediamine, 1,4-	106-50-3	0.003	0.0003	0.01	TOE	—
1-propanol, 2-(2-hydroxypropoxy)- isomer	106-62-7	0.003	0.0003	0.01	TOE	—
dimethyl succinate	106-65-0	0.01	0.01	0.01	NSF action level External peer review date: 04/22/2009	—
hexanoic acid, methyl ester	106-70-7	0.003	0.0003	0.01	TOE	—
decanedioic acid, dimethyl ester	106-79-6	0.003	0.0003	0.01	TOE	—
1,2-epoxybutane	106-88-7	0.06	0.006	0.06	NSF action level External peer review date: 04/22/2009	—
epichlorohydrin	106-89-8	0.04	0.004	—	USEPA Drinking Water Health Advisory 10 ⁻⁵ /10 ⁻⁶ cancer risk levels Issue date: 1987	—
epichlorohydrin (as a monomer in drinking water treatment polymers)	106-89-8	TT (0.01% dosed at 10 ppm, or equivalent)	TT (0.01% dosed at 10 ppm, or equivalent)	—	40 CFR §141.111, 40 CFR §141.110	TT = treatment technique
ethylene dibromide (EDB)	106-93-4	0.000005	0.000005	—	40 CFR §141.60, 40 CFR §141.61	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
1,3-butadiene	106-99-0	0.1	0.01	—	UL action level JPRSC consensus date: 04/17/2013	—
acrolein	107-02-8	0.004	0.0004	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Agency consensus date: 05/16/2003	—
allyl chloride	107-05-1	0.3	0.03	—	WQA action level JPRSC consensus date: 01/13/2016	—
dichloroethane (1,2-)	107-06-2	0.005	0.0005	—	40 CFR §141.60, 40 CFR §141.61	—
acrylonitrile	107-13-1	0.0006	0.00006	—	USEPA IRIS $10^{-5}/10^{-6}$ cancer risk levels. verification date: 02/11/1987	—
ethylenediamine	107-15-3	10	2	40	NSF action level External peer review date: 04/06/2005	—

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ethylene glycol	107-21-4	40	4	=	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. verification date: 03/19/1987	—
2,4,4-trimethyl-2-pentylamine	107-45-9	0.003	0.0003	0.01	TOE	—
tetradecamethylcyclheptasiloxane	107-50-6	0.003	0.0003	0.01	TOE	—
butylacrylamine, tert-	107-58-4	0.01	0.01	—	NSF action level Issue date:	—
pentane, 2-methyl	107-83-5	0.003	0.0003	0.01	TOE	—
butanoic acid	107-92-6	0.2	0.02	—	WQA action level JPRSC consensus date: 11/18/2015	—
butenoic acid, trans-2-	107-93-7	0.003	0.0003	0.01	TOE	—
butanoic acid	107-96-2	0.003	0.0003	0.01	TOE	—
propylene glycol monomethyl ether	107-98-2	0.05	0.05	—	NSF action level Issue date: 02/04/94	—
ethanol, 2-(dimethylamino)-	108-01-0	0.003	0.0003	0.01	TOE	—
vinyl acetate	108-05-4	0.02	0.002	—	NSF action level Issue date: 05/03/94	—
1,3-dimethyl-n-butylamine	108-09-8	0.003	0.0003	0.01	TOE	—

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meth yl isobutyl ketone (MIBK)	108-10-1	7	0.7	100	NSF action level External peer review date: 10/06/2005	—
diisopropylamine	108-18-9	0.01	0.01	—	GSA action level JPRSC consensus date: 03/18/2017	—
acetic acid, 1-methylethyl ester	108-21-4	0.003	0.0003	0.01	TOE	—
maleic anhydride	108-31-6	0.7	0.07	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 03/24/1988	—
m-xylene	108-38-3	10 (total)	1 (total)	—	40 CFR §141.60, 40 CFR §141.61	Detections shall be summed with the following chemicals: CAS# 95-47-6 and CAS# 106-42-3
m-cresol	108-39-4	0.4	0.04	6	WQA action level External peer review date: 05/05/2015	Detections shall be summed with the following chemicals: CAS# 106-44-5
2-toluidine	108-44-1	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
m-phenylenediamine	108-45-2	0.04	0.004	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 02/26/1986	—
pyridine, 2,4-dimethyl-	108-47-4	0.003	0.0003	0.01	TOE	—
pyridine, 2,6-dimethyl-	108-48-5	0.003	0.0003	0.01	TOE	—
trimethylbenzene, 1,3,5-	108-67-8	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742-95-6) Class-Based Evaluation Level
pyridine, 2,4,6-trimethyl-	108-75-8	0.003	0.0003	0.01	TOE	—
melamine	108-78-1	3	0.3	3	NSF action level External peer review date: 04/14/1999	—
Bromobenzene	108-86-1	0.003	0.0003	0.01	TOE	—
cyclohexane, methyl-	108-87-2	0.003	0.0003	0.01	TOE	—
toluene	108-88-3	1	0.1	—	40 CFR §141.60, 40 CFR §141.61	—
pyridine, 4-methyl-	108-89-4	0.003	0.0003	0.01	TOE	—
monochlorobenzene	108-90-7	0.1	0.01	—	40 CFR §141.60, 40 CFR §141.61	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
cyclohexylamine	108-91-8	4	0.1	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 09/17/1987	—
cyclohexanol	108-93-0	0.003	0.0003	0.01	TOE	—
cyclohexanone	108-94-1	30	3	40	NSF action level External peer review date: 04/26/2002	—
phenol	108-95-2	2	0.2	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Agency Consensus Date: 08/28/2002	—
pyridine, 3-methyl-	108-99-6	0.003	0.0003	0.01	TOE	—
morpholine, methyl-	109-02-4	0.003	0.0003	0.01	TOE	—
pyridine, 2-methyl-	109-06-8	0.003	0.0003	0.01	TOE	—
pyrazine, 2-methyl-	109-08-0	0.003	0.0003	0.01	TOE	—
triethyleneglycol dimethacrylate	109-16-0	0.003	0.0003	0.01	TOE	—
tetraethyleneglycol dimethacrylate	109-17-1	0.003	0.0003	0.01	TOE	—
n-butyl n-butyrate	109-21-7	0.003	0.0003	0.01	TOE	—
n-pentanoic acid	109-52-4	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
acetic acid, propyl ester	109-60-4	0.003	0.0003	0.01	TOE	—
butanenitrile	109-74-0	0.003	0.0003	0.01	TOE	—
3-hydroxypropane nitrile	109-78-4	0.01	0.01	—	NSF action level Issue date: 09/03/97	—
tetrahydrofuran	109-99-9	1	0.37	—	NSF action level Issue date: 01/26/96	—
dimethylhexane-2,5-diol, 2,5-	110-03-2	0.003	0.0003	0.01	TOE	—
di-t-butyl peroxide	110-05-4	0.05	0.05	0.09	NSF action level External peer review date: 10/27/2016	—
methyl isoamyl ketone (MIAK)	110-12-3	0.06	0.006	0.8	NSF action level External peer review date: 04/25/2002	—
hexane-2,5-dione	110-13-4	0.003	0.0003	0.01	TOE	—
butanedioic acid	110-15-6	0.003	0.0003	0.01	TOE	—
maleic acid	110-16-7	0.7	0.07	4	NSF action level Issue date:	—
decanoic acid, methyl ester	110-42-9	0.003	0.0003	0.01	TOE	—
hexane	110-54-3	0.003	0.0003	0.01	TOE	—
pentane, 1-amino	110-58-7	0.003	0.0003	0.01	TOE	—
pentanenitrile	110-59-8	0.003	0.0003	0.01	TOE	—
1,4-diaminobutane	110-60-1	2	0.2	9	NSF action level External peer review date: 10/21/2015	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
1,4-butanediol	110-63-4	0.6	0.06	4	NSF action level External peer review date: 04/18/2017	—
cyclohexene	110-83-8	0.003	0.0003	0.01	TOE	—
pyridine	110-86-1	0.007	0.0007	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 08/13/1987	—
1,3,5-trioxane	110-88-3	0.7	0.07	3	NSF action level External peer review date: 04/20/04	—
piperidine	110-89-4	0.003	0.0003	0.01	TOE	—
squalene	111-02-4	0.003	0.0003	0.01	TOE	—
palmitic acid, n-butyl ester	111-06-8	0.003	0.0003	0.01	TOE	—
octanoate, methyl-	111-11-5	0.003	0.0003	0.01	TOE	—
heptanoic acid, n-	111-14-8	0.003	0.0003	0.01	TOE	—
ethylene glycol monoethyl ether acetate	111-15-9	0.003	0.0003	0.01	TOE	—
tetramethyl hexanediamine	111-18-2	0.003	0.0003	0.01	TOE	—
sebacic acid	111-20-6	200	20	200	NSF action level External peer review date:10/21/2015	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
1-hexanol	111-27-3	2	0.2	30	NSF action level External peer review date: 05/05/2015	—
gutaraldehyde	111-30-8	0.003	0.0003	0.01	TOE	—
butyl isocyanate, n-	111-36-4	0.003	0.0003	0.01	TOE	—
diethylenetriamine	111-40-0	0.3	0.03	4	NSF action level External peer review date: 09/20/2011	—
diethanolamine	111-42-2	0.1	0.01	0.5	NSF action level External peer review date: 04/17/2007	—
bis(chloroethyl)ether	111-44-4	0.0003	0.00003	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 07/23/1986	—
ethyl octadecanoate	111-61-5	0.003	0.0003	0.01	TOE	—
heptyl aldehyde, n-	111-71-7	0.003	0.0003	0.01	TOE	—
ethylene glycol monobutyl ether	111-76-2	4	0.4	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Agency Consensus Date: 11/16/1999	—
methyl laurate	111-82-0	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
ethanol, 2-(2-ethoxyethoxy)-	111-90-0	4	0.1	—	WQA action level JPRSC consensus date: 11/18/2015	—
dibutylamine	111-92-2	0.01	0.01	—	NSF action level Issue date: 08/19/95	—
propanenitrile, 3,3'-thiobis-	111-97-7	0.003	0.0003	0.01	TOE	—
nonanoic acid, n-	112-05-0	0.003	0.0003	0.01	TOE	—
butylglycol acetate	112-07-2	0.003	0.0003	0.01	TOE	—
2-undecanone	112-12-9	0.003	0.0003	0.01	TOE	—
2-(2-ethoxyethoxy) ethyl acetate	112-15-2	0.4	0.04	8	WQA action level External peer review date: 04/23/2014	—
dodecylamine, N,N-dimethyl-	112-18-5	0.003	0.0003	0.01	TOE	—
2-(hexyloxy)ethanol	112-25-4	0.003	0.0003	0.01	TOE	—
formic acid, octyl ester	112-32-4	0.003	0.0003	0.01	TOE	—
diethylene glycol mono-n-butyl ether	112-34-5	0.6	0.06	8	NSF action level External peer review date: 10/05/2010	—
undecanoic acid	112-37-8	0.003	0.0003	0.01	TOE	—
methyl palmitate	112-39-0	0.003	0.0003	0.01	TOE	—
dodecanol	112-53-8	0.05	0.05	0.9	WQA action level External peer review date: 05/10/2016	—
dodecanal	112-54-9	0.003	0.0003	0.01	TOE	—
1-dodecanethiol	112-55-0	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
methyl stearate	112-61-8	0.003	0.0003	0.01	TOE	—
octadecenoic acid, 9(Z)-, methyl ester	112-62-9	0.003	0.0003	0.01	TOE	—
1-tridecanol	112-70-9	0.003	0.0003	0.01	TOE	—
docosenamide (erucamide)	112-84-5	0.2	0.02	—	IAPMO action level JPRSC consensus date: 10/06/2016	—
octadecene, 1-	112-88-9	0.003	0.0003	0.01	TOE	—
oleanitrile	112-91-4	0.003	0.0003	0.01	TOE	—
icosane	112-95-8	0.003	0.0003	0.01	TOE	—
dothiepin	113-53-1	0.003	0.0003	0.01	TOE	—
propene	115-07-1	0.003	0.0003	0.01	TOE	—
isobutylene	115-11-7	0.4	0.04	0.6	NSF action level External peer review date: 10/30/2013	—
2-methyl-3-buten-2-ol	115-18-4	0.05 (total)	0.05 (total)	0.05 (total)	NSF action level External peer review date: 05/10/2011	Detections shall be summed with the following chemicals: CAS# 763-32-6
3-hydroxy-3-methyl-2-butanone	115-22-0	0.003	0.0003	0.01	TOE	—
propanediol, 2-ethyl-2-butyl-1,3-	115-84-4	0.003	0.0003	0.01	TOE	—
triphenylphosphate	115-86-6	0.003	0.0003	0.01	TOE	—
aldicarb	116-06-3	0.003	0.0003	—	40 CFR §141.60, 40 CFR §141.61	Total combined detections of CAS# 116-06-3, CAS# 1646- 87-3 and CAS# 1646- 88-4 shall not exceed

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
						0.007 mg/L (TAC) or 0.0007 (SPAC)
hexafluoropropene	116-15-4	0.003	0.0003	0.01	TOE	—
di(2-ethylhexyl)phthalate (PAE)	117-81-7	0.006	0.0006	—	40 CFR §141.60, 40 CFR §141.61	—
n-ethyl-1-naphthalenamide	118-44-5	0.003	0.0003	0.01	TOE	—
1,3-dichloro-5,5-dimethylhydantoin	118-52-5	40	7	—	NSF action level External peer review date: 05/05/2010	—
hydroxymethylpyrone	118-71-8	0.003	0.0003	0.01	TOE	—
hexachlorobenzene	118-74-1	0.001	0.0001	—	40 CFR §141.60, 40 CFR §141.61	—
benzoic acid, o-methyl-	118-90-1	0.003	0.0003	0.01	TOE	—
2'-hydroxyacetophenone	118-93-4	0.003	0.0003	0.01	TOE	—
2,4,6-trinitrotoluene	118-96-7	0.01	0.001	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 09/22/1988	—
methyl salicylate	119-36-8	0.003	0.0003	0.01	TOE	—
methylene bis(4-methyl-6-tertbutyl-phenol), 2,2'	119-47-1	0.003	0.0003	0.01	TOE	—

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benzophenone	119-61-9	0.3	0.03	2	NSF action level External peer review date: 09/21/2011	—
anthracene	120-12-7	0.003	0.0003	0.01	TOE	—
ethylparaben	120-47-8	0.003	0.0003	0.01	TOE	—
diethylene glycol dibenzoate	120-55-8	2	0.2	8	NSF action level External peer review date: 05/05/2015	—
dimethyl terephthalate	120-61-6	3	0.3	3	NSF action level External peer review date: 04/23/2009	—
benzothiazole, 2-methyl-	120-75-2	0.003	0.0003	0.01	TOE	—
trichlorobenzene (1,2,4-)	120-82-1	0.07	0.007	—	40 CFR §141.60, 40 CFR §141.61	—
dichlorophenol, 2,4-	120-83-2	0.05	0.005	0.08	NSF action level External peer review date: 04/22/2014	—
cyclopentanone	120-92-3	0.003	0.0003	0.01	TOE	—
2,4-dinitrotoluene	121-14-2	0.0005 (total)	0.00005 (total)	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 05/03/1989	Detections shall be summed with the following chemicals: CAS# 606-20-2
benzaldehyde, 4-hydroxy-3- methoxy (Vanillin)	121-33-5	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
triethylamine	121-44-8	0.1	0.01	3	WQA action level JPRSC consensus date: 09/16/2015	—
3-hydroxyacetophenone	121-71-1	0.003	0.0003	0.01	TOE	—
malathion	121-75-5	0.19	0.019	—	Health Canada MAC Issue date: 02/86	—
isophthalic acid	121-91-5	0.01	0.01	—	NSF action level Issue date: 12/18/95	—
acetophenone, 4-methyl	122-00-9	0.003	0.0003	0.01	TOE	—
triisopropanolamine	122-20-3	0.003	0.0003	0.01	TOE	—
simazine	122-34-9	0.004	0.0004	—	40 CFR §141.60, 40 CFR §141.61	—
diphenylamine, 4-hydroxy-	122-37-2	0.003	0.0003	0.01	TOE	—
diphenylamine	122-39-4	0.2	0.02	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 07/22/1986	—
phenyl glycidyl ether	122-60-1	0.006	0.0006	0.1	NSF action level External peer review date: 10/03/2002	—
sebacate, bis(2-ethylhexyl)-	122-62-3	0.003	0.0003	0.01	TOE	—

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1,2-diphenylhydrazine	122-66-7	0.0005	0.00005	=	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 10/29/1986	—
benzeneacetaldehyde	122-78-1	0.003	0.0003	0.01	TOE	—
ethanol, 2-phenoxy-	122-99-6	0.003	0.0003	0.01	TOE	—
hexanal, 2-ethyl-	123-05-7	0.003	0.0003	0.01	TOE	—
4-methoxy-benzaldehyde	123-11-5	6	0.6	30	NSF action level External peer review date: 09/20/2011	—
succinic acid, diethyl ester	123-25-1	0.003	0.0003	0.01	TOE	—
hydroquinone	123-31-9	2	0.2	4	NSF action level External peer review date: 04/18/2013	—
diacetone alcohol	123-42-2	3	0.3	10	NSF action level External peer review date: 05/10/2011	—
acetone, acetyl	123-54-6	0.1	0.01	0.6	NSF action level External peer review date: 10/20/2015	—
trioxane, 1,3,5-trimethyl-	123-63-7	0.003	0.0003	0.01	TOE	—
pyrrolidine	123-75-1	0.003	0.0003	0.01	TOE	—
n-butyl acetate	123-86-4	4	0.1	20	NSF action level External peer review date: 04/25/2002	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
1,4-dioxane	123-91-4	0.03	0.003	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels Verification date: 02/03/1988	—
stearic acid, butyl ester	123-95-5	0.003	0.0003	0.01	TOE	—
adipic acid	124-04-9	30	3	100	NSF action level External peer review date: 04/06/2005	—
hexamethylene-diamine	124-09-4	10	1	20	NSF action level External peer review date: 04/06/2006	—
octanal	124-13-0	0.003	0.0003	0.01	TOE	—
butyl carbitol acetate	124-17-4	0.003	0.0003	0.01	TOE	—
nonanal	124-19-6	0.003	0.0003	0.01	TOE	—
dodecanamine, 1-	124-22-1	0.003	0.0003	0.01	TOE	—
tetradecanal	124-25-4	0.003	0.0003	0.01	TOE	—
octadecanamide	124-26-5	0.003	0.0003	0.01	TOE	—
dimethylamine	124-40-3	1.2	0.12	—	NSF action level Issue date: 11/06/98	—
chlorodibromomethane	124-48-1	0.080 (total)	0.008 (total)	—	40 CFR §141.64	Detections shall be summed with the following chemicals: CAS# 75-25-2, CAS# 75-25-4, and CAS# 67- 66-3

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
2-amino-2-methylpropanol	124-68-5	0.003	0.0003	0.01	TOE	—
tetramethylene sulfone	126-33-0	0.003	0.0003	0.01	TOE	—
1,3-propanediol,2,2-dimethyl	126-60-7	0.01	0.01	—	UL action level JPRSC consensus date: 01/11/2017	—
tributyl phosphate	126-73-8	0.2 (total)	0.02 (total)	0.3 (total)	NSF action level External peer review date: 10/10/2006	Detections shall be summed with the following chemicals: CAS# 75-25-2 and CAS# 513-08-6
tetramethyldec-5-yne-4,7-diol, 2,4,7,9-	126-86-3	0.003	0.0003	0.01	TOE	—
tetrachloroethylene	127-18-4	0.005	0.0005	—	40 CFR §141.60, 40 CFR §141.61	—
N,N-dimethyl acetamide	127-19-5	2	0.2	2	NSF action level External peer review date: 10/05/2010	—
diphenyl sulfone	127-63-9	0.003	0.0003	0.01	TOE	—
2,6-di-t-butyl-4-methyl phenol	128-39-2	0.05	0.05	0.05	NSF action level External peer review date: 10/17/2012	—
pyrene	129-00-0	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
dimethyl phthalate	131-11-3	0.05	0.05	0.05	NSF action level External peer review date: 10/21/2014	—
dihydroxybenzophenone	131-56-6	0.003	0.0003	0.01	TOE	—
captan	133-06-2	0.003	0.0003	0.01	TOE	—
methyl anthranilate	134-20-3	0.003	0.0003	0.01	TOE	—
diphenylethanedione, 1,2-	134-81-6	0.003	0.0003	0.01	TOE	—
benzaldehyde, 3,5-dimethoxy-4- hydroxy-	134-96-3	0.003	0.0003	0.01	TOE	—
diethylbenzene, 1,2-	135-01-3	0.2 (total)	0.02 (total)	1 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
naphthylenamine, N-phenyl-2-	135-88-6	0.003	0.0003	0.01	TOE	—
phenylbutane, 2-	135-98-8	0.2 (total)	0.02 (total)	1 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
dimethyl-p-benzoquinone, 2,5-	137-18-8	0.003	0.0003	0.01	TOE	—
acetamide, 2-(diethylamino)-N- (2,6-dimethylphenyl)-	137-58-6	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
2-hydroxy propanoic acid, butyl ester	138-22-7	0.003	0.0003	0.01	TOE	—
myristyl dimethylbenzyl ammonium chloride	139-08-2	3 (total)	0.3 (total)	5 (total)	NSF action level External peer review date: 10/21/2014	Detections shall be summed with the following chemicals: CAS# 8001-54-5, CAS# 53516-76-0, CAS# 61789-71-7, CAS# 63449-41-2, CAS# 68391-01-5, CAS# 68424-85-1 and CAS# 85409-22-9
nitrilotriacetic acid	139-13-9	0.4	0.04	—	Health Canada MAC Issue date: 01/90	—
diphenyl sulfide	139-66-2	0.003	0.0003	0.01	TOE	—
benzyl acetate	140-11-4	0.003	0.0003	0.01	TOE	—
piperazine, 1-(2-aminoethyl)-	140-31-8	0.003	0.0003	0.01	TOE	—
ethyl acrylate	140-88-5	0.01	0.001	—	NSF action level Issue date: 01/28/1992	—
furaric acid, bis(2-ethylhexyl) ester	141-02-6	0.003	0.0003	0.01	TOE	—
bis(2-(2-butoxyethoxy)ethyl) adipate	141-17-3	0.6	0.06	8	NSF action level JPRSC consensus date: 10/29/2013	—
bis(2-butoxyethyl) adipate	141-18-4	0.7	0.07	0.7	NSF action level JPRSC consensus date: 10/29/2013	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
butyl acrylate	141-32-2	0.01	0.01	—	NSF action level Issue date: 12/13/1995	—
ethanolamine	141-43-5	0.3	0.03	4	NSF action level External peer review date: 04/17/2007	—
diethylbenzene, 1,3-	141-93-5	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
ethyl acetoacetate	141-97-9	0.003	0.0003	0.01	TOE	—
glyceryl monolaurate	142-18-7	0.003	0.0003	0.01	TOE	—
hexyne-2,5-diol, 2,5-dimethyl-3-	142-30-3	0.003	0.0003	0.01	TOE	—
hexanoic acid, n-	142-62-1	0.003	0.0003	0.01	TOE	—
oleate, n-butyl-	142-77-8	0.003	0.0003	0.01	TOE	—
methacrylate, lauryl-	142-90-5	0.003	0.0003	0.01	TOE	—
palmitate, isopropyl-	142-91-6	0.003	0.0003	0.01	TOE	—
n-dodecanoic acid	143-07-7	0.5	0.5	—	NSF action level JPRSC consensus date: 10/29/2013	—
ethanol, 2-(2-(2-butoxyethoxy)ethoxy)-	143-22-6	0.05	0.05	—	WQA action level JPRSC consensus date: 05/18/2016	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
tetraethylene glycol dimethyl ether	143-24-8	0.003	0.0003	0.01	TOE	—
pentanediol, 2,2,4-trimethyl-1,3-	144-19-4	0.4 (total)	0.04 (total)	5 (total)	NSF action level External peer review date: 05/10/2011	Detections shall be summed with the following chemicals: CAS# 77-68-9, CAS# 6846-50-0, CAS# 25265-77-4, CAS# 74367-33-2 and CAS# 74367-34-3
endothall	145-73-3	0.1	0.01	—	40 CFR §141.60, 40 CFR §141.61	—
sodium diethyldithiocarbamate	148-18-5	0.2	0.02	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 10/09/1985	—
vanillin, o-	148-53-8	0.003	0.0003	0.01	TOE	—
thiabendazole	148-79-8	0.003	0.0003	0.01	TOE	—
2-mercaptobenzothiazole	149-30-4	0.02	0.002	0.02	NSF action level External peer review date: 10/21/2014	—
2-ethylhexanoic acid	149-57-5	0.7	0.7	10	NSF action level External peer review date: 04/06/2005	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
sodium dodecyl sulfate	151-21-3		0.01	—	NSF action level Issue date:	—
dichloroethylene (cis-1,2-)	156-59-2	0.07	0.007	—	40 CFR §141.60, 40 CFR §141.61	—
dichloroethylene (trans-1,2)	156-60-5	0.1	0.01	—	40 CFR §141.60, 40 CFR §141.61	—
1,4-dioxaspiro(4,5)decane	177-10-6	0.003	0.0003	0.01	TOE	—
benzo(b)fluoranthene	205-99-2	0.0002	0.00002	—	WQA action level JPRSC consensus date: 03/09/2016	—
fluoranthene	206-44-0	0.003	0.0003	0.01	TOE	—
acenaphthylene	208-96-8	0.003	0.0003	0.01	TOE	—
benzo(b)naphtha(2,1-d)furan	239-30-5	0.003	0.0003	0.01	TOE	—
5H-indeno(1,2-b)pyridine	244-99-5	0.003	0.0003	0.01	TOE	—
acridine	260-94-6	0.003	0.0003	0.01	TOE	—
benzotropolidene, 3,4-	264-09-5	0.003	0.0003	0.01	TOE	—
1,2-benzisothiazole	272-16-2	0.003	0.0003	0.01	TOE	—
triethylene diamine	280-57-9	0.003	0.0003	0.01	TOE	—
cyclohexene oxide	286-20-4	0.01	0.01	0.01	NSF action level External peer review date: 10/30/2013	—
trithiane	291-21-4	0.003	0.0003	0.01	TOE	—
cycloheptane	291-64-5	0.2	0.02	—	WQA action level JPRSC consensus date: 01/13/2016	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
cyclododecane	294-62-2	0.003	0.0003	0.01	TOE	—
1,6,11-trioxacyclopentadecane	295-63-6	3 (total)	0.4 (total)	3 (total)	NSF action level External peer review date: 10/04/2002	Detections shall be summed with the following chemicals: CAS# 17043-02-6, CAS# 56890-57-4, and CAS# 64001-05-4
cyclohexadecane	295-65-8	0.003	0.0003	0.01	TOE	—
phorate	298-02-2	0.002	0.0002	—	Health Canada MAC Issue date: 02/86	—
benzene, 2-propenyl-	300-57-2	0.003	0.0003	0.01	TOE	—
amphetamine	300-62-9	0.003	0.0003	0.01	TOE	—
octadecenamide	301-02-0	0.003	0.0003	0.01	TOE	—
hydrazine	302-01-2	0.0001 (total)	0.00001 (total)	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 06/03/1987	Detections shall be summed with the following chemicals: CAS# 10034-93-2
chloral hydrate	302-17-0	0.7	0.07	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Agency Consensus Date: 11/16/1999	—

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aldrin	309-00-2	0.0007 (total)	0.00007 (total)	—	Health Canada MAC Issue date: 10/94	Detections shall be summed with the following chemicals: CAS# 60-57-4
taerine	321-64-2	0.003	0.0003	0.01	TOE	—
diuron	330-54-4	0.15	0.015	—	Health Canada MAC Issue date: 03/87	—
potassium thiocyanate	333-20-0	0.2 (total as SCN)	0.02 (total as SCN)	0.9 (total as SCN)	NSF action level External peer review date: 09/03/2003	Detections shall be summed with the following chemicals: CAS# 540-72-7 and CAS# 1762-95-4
diazinon	333-41-5	0.02	0.002	—	Health Canada MAC Issue date: 02/86	—
n-decanoic acid	334-48-5	0.5	0.5	—	NSF action level JPRSC consensus date: 10/29/2013	—
perfluorooctanoic acid	335-67-4	0.003	0.0003	0.01	TOE	—
benzene, 1-chloro-2-fluoro-	348-51-6	0.003	0.0003	0.01	TOE	—
1,1,2,3,3,4,4,5,5,6,6,7,7,7-tetradecafluoro-1-heptene	355-63-5	0.003	0.0003	0.01	TOE	—
acetic acid, 2-cyano-	372-09-8	0.003	0.0003	0.01	TOE	—
silane, fluorotrimethyl-	420-56-4	0.003	0.0003	0.01	TOE	—
piperidine, 2-propyl-	458-88-8	0.003	0.0003	0.01	TOE	—
cyanoguanidine	461-58-5	0.003	0.0003	0.01	TOE	—
carbonyl sulfide	463-58-4	0.003	0.0003	0.01	TOE	—

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hemanthamine	466-75-4	0.003	0.0003	0.01	TOE	—
p-menthan-4-ol	470-65-5	0.003	0.0003	0.01	TOE	—
pinanol	473-54-4	0.003	0.0003	0.01	TOE	—
alpha-cadinol	481-34-5	0.01	0.01	—	WQA action level JPRSC consensus date: 08/13/2014	—
ethyl hydroxyphthalide	485-26-7	0.003	0.0003	0.01	TOE	—
fluorenone	486-25-9	0.003	0.0003	0.01	TOE	—
benzaldehyde, 2,4,6-trimethyl-	487-68-3	0.05 (total)	0.05 (total)	0.05 (total)	NSF action level External peer review date: 10/30/2013	Detections shall be summed with the following chemicals: CAS# 5779-72-6
phenol, 2,6-di- <i>t</i> -butyl-4-methoxy-	489-01-0	0.003	0.0003	0.01	TOE	—
cyanostyrene, a	495-10-3	0.003	0.0003	0.01	TOE	—
diphenyl butanedione	495-71-6	0.003	0.0003	0.01	TOE	—
indene, 2,3-dihydro- also (2,3- dihydro-1H-)	496-11-7	0.003	0.0003	0.01	TOE	—
dihydrobenzofuran, 2,3-	496-16-2	0.003	0.0003	0.01	TOE	—
4'-hydroxy-3'- methoxyacetophenone	498-02-2	0.003	0.0003	0.01	TOE	—
L-cysteic acid	498-40-8	0.003	0.0003	0.01	TOE	—
2-methyl-5-(1-methylethyl)-phenol	499-75-2	0.003	0.0003	0.01	TOE	—
phenol, 4-(2-propenyl)-	501-92-8	0.003	0.0003	0.01	TOE	—
caprolactone	502-44-3	0.003	0.0003	0.01	TOE	—
hexadecanoic acid, 2-hydroxy-1,3- propanediyl ester	502-52-3	0.003	0.0003	0.01	TOE	—

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isocrotonic acid	503-64-0	0.003	0.0003	0.01	TOE	—
phorone	504-20-1	0.01	0.01	—	UL action level JPRSC consensus date: 03/09/2016	—
tetrahydropyridine, 2,3,4,5-	505-18-0	0.003	0.0003	0.01	TOE	—
1,4-dithiane	505-29-3	0.07	0.007	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 06/24/1992	—
1-tetracosanol	506-51-4	0.003	0.0003	0.01	TOE	—
butene, 2,3-dichloro-2-methyl-	507-45-9	0.003	0.0003	0.01	TOE	—
borneol	507-70-0	0.003	0.0003	0.01	TOE	—
chlorobenzilate	510-15-6	0.1	0.01	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 05/17/1989	—
fenchyl alcohol, alpha-	512-13-0	0.003	0.0003	0.01	TOE	—

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tripropyl phosphate	513-08-6	0.2 (total)	0.02 (total)	0.3 (total)	NSF action level External peer review date: 10/10/2006	Detections shall be summed with the following chemicals: CAS# 75-25-2 and CAS# 126-73-8
ferruginol	514-62-5	0.003	0.0003	0.01	TOE	—
benzoquinone, 2,6-dimethyl-1,4-	517-61-7	0.003	0.0003	0.01	TOE	—
dehydroacetic acid	520-45-6	0.003	0.0003	0.01	TOE	—
dihydromethoxymethyl oxypyridinecarbonitrile	524-40-3	0.003	0.0003	0.01	TOE	—
trimethylbenzene, 1,2,3-	526-73-8	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
tetramethylbenzene, 1,2,3,5-	527-53-7	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
benzene, 1-methyl-2-(1- methylethyl)-	527-84-4	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742-

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
						95-6) Class-Based Evaluation Level
benzenetricarboxylic acid, 1,2,4-	528-44-9	0.003	0.0003	0.01	TOE	—
benzaldehyde, 2-methyl-	529-20-4	0.003	0.0003	0.01	TOE	—
cyclohexanone, 2-hydroxy	533-60-8	0.003	0.0003	0.01	TOE	—
2-methylfuran	534-22-5	0.003	0.0003	0.01	TOE	—
benzenemethanol, 4-(1-methylethyl)-	536-60-7	0.003	0.0003	0.01	TOE	—
isobutylbenzene	538-93-2	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
benzyl ethyl ether	539-30-0	0.003	0.0003	0.01	TOE	—
sodium thiocyanate	540-72-7	0.2 (total as SCN)	0.02 (total as SCN)	0.9 (total as SCN)	NSF action level External peer review date: 09/03/2003	Detections shall be summed with the following chemicals: CAS# 333-20-0 and CAS# 1762-95-4
isooctane	540-84-1	0.05	0.05	4	WQA action level External peer review date: 10/20/2015	—
t-butyl acetate	540-88-5	0.6	0.06	2	NSF action level External peer review date: 04/17/2007	—

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dodecamethylcyclohexasiloxane	540-97-6	0.003	0.0003	0.01	TOE	—
decamethylcyclopentasiloxane	541-02-6	0.003	0.0003	0.01	TOE	—
butanamide	541-35-5	0.003	0.0003	0.01	TOE	—
dichlorobenzene m-	541-73-1	0.6	0.06	—	40 CFR §141.60, 40 CFR §141.61	see o-dichlorobenzene (CAS# 95-50-1)
2H-pyran-2-one, tetrahydro-	542-28-9	0.003	0.0003	0.01	TOE	—
bis(chloromethyl)ether	542-88-1	0.000002	0.0000002	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels: Verification date: 05/04/1988	—
octodrine	543-82-8	0.003	0.0003	0.01	TOE	—
tetradecanoic acid	544-63-8	0.5	0.5	—	NSF action level JPRSC consensus date: 8/13/2014	—
pinocampheol (also pinocamphone)	547-60-4	0.003	0.0003	0.01	TOE	—
tropic acid	552-63-6	0.003	0.0003	0.01	TOE	—
3-methyl-2-buten-1-ol	556-82-1	0.5	0.05	2	NSF action level External peer review date: 05/10/2011	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

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nitroguanidine	556-88-7	0.7	0.07	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 05/17/1989	—
allyl ether	557-40-4	0.003	0.0003	0.01	TOE	—
vinyl alcohol	557-75-5	0.003	0.0003	0.01	TOE	—
1,1-dichloropropene	563-58-6	0.003	0.0003	0.01	TOE	—
isobutyramide	563-83-7	0.003	0.0003	0.01	TOE	—
naphthalene, 1,8-dimethyl-	569-41-5	0.003	0.0003	0.01	TOE	—
naphthalene, 1,4-dimethyl-	571-58-4	0.003	0.0003	0.01	TOE	—
naphthalene, 1,5-dimethyl-	571-61-9	0.003	0.0003	0.01	TOE	—
naphthalene, 1,2-dimethyl-	573-98-8	0.003	0.0003	0.01	TOE	—
naphthalene, 1,7-dimethyl-	575-37-1	0.003	0.0003	0.01	TOE	—
naphthalene, 1,3-dimethyl-	575-41-7	0.003	0.0003	0.01	TOE	—
2,6-dimethylphenol	576-26-1	0.004	0.0004	—	Derived from the oral RfD on the USEPA IRIS database with an default 20% relative source contribution for drinking water. verification date: 01/22/1986	—
acetophenone, 2'-methyl-	577-16-2	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
aniline, 2-ethyl-	578-54-1	0.003	0.0003	0.01	TOE	—
aniline, 2,6-diethyl-	579-66-8	0.003	0.0003	0.01	TOE	—
naphthalene, 2,3-dimethyl-	581-40-8	0.003	0.0003	0.01	TOE	—
naphthalene, 2,6-dimethyl-	581-42-0	0.003	0.0003	0.01	TOE	—
naphthalene, 2,7-dimethyl-	582-16-1	0.003	0.0003	0.01	TOE	—
acetophenone, alpha-hydroxy-	582-24-1	0.003	0.0003	0.01	TOE	—
pentanedione, 1-phenyl 1,4-	583-05-1	0.003	0.0003	0.01	TOE	—
pyridine, 3,4-dimethyl-	583-58-4	0.003	0.0003	0.01	TOE	—
pyridine, 2,3-dimethyl-	583-61-9	0.003	0.0003	0.01	TOE	—
acetophenone, 3'-methyl-	585-74-0	0.003	0.0003	0.01	TOE	—
aniline, 3-ethyl-	587-02-0	0.003	0.0003	0.01	TOE	—
lanthanum carbonate	587-26-8	4	0.4	4	NSF action level External peer review date: 10/29/2009	—
benzaldehyde azine	588-68-1	0.003	0.0003	0.01	TOE	—
aniline, 4-ethyl-	589-16-2	0.003	0.0003	0.01	TOE	—
pyridine, 2,5-dimethyl-	589-93-5	0.003	0.0003	0.01	TOE	—
bromophenol, 3-	591-20-8	0.003	0.0003	0.01	TOE	—
pyridine, 3,5-dimethyl-	591-22-0	0.003	0.0003	0.01	TOE	—
cyclohexanol, 3-methyl-	591-23-1	0.003	0.0003	0.01	TOE	—
hexane, 2,5-dimethyl-	592-13-2	0.003	0.0003	0.01	TOE	—
hexamethylene oxide	592-90-5	0.003	0.0003	0.01	TOE	—
octadecane, n-	593-45-3	0.003	0.0003	0.01	TOE	—
heptacosane	593-49-7	0.003	0.0003	0.01	TOE	—
chloriodomethane	593-71-5	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
2,3-dibromo-2-methylbutane	594-51-4	0.003	0.0003	0.01	TOE	—
maneol	596-85-0	0.003	0.0003	0.01	TOE	—
propanal, 2,2-dimethyl-3-hydroxy-	597-31-9	0.003	0.0003	0.01	TOE	—
triethylsilanol	597-52-4	0.003	0.0003	0.01	TOE	—
acetamide, 2,2-dibromo-	598-70-9	0.003	0.0003	0.01	TOE	—
phenol, p-(alpha, alpha-dimethylbenzyl)-	599-64-4	0.003	0.0003	0.01	TOE	—
sulfonylbis(4-methyl)-benzene, 1,1'	599-66-6	0.003	0.0003	0.01	TOE	—
triphenyl stibine	603-36-1	0.003	0.0003	0.01	TOE	—
2,6-dinitrotoluene	606-20-2	0.0005 (total)	0.00005 (total)	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 05/03/1989	Detections shall be summed with the following chemicals: CAS# 121-14-2
1-(phenylmethoxy)-naphthalene	607-58-9	0.003	0.0003	0.01	TOE	—
2,6-dichloro-1,4-benzenediamine	609-20-1	0.02	0.002	0.02	NSF action level External peer review date: 04/22/2009	—
n,n-dimethyl-o-toluidine	609-72-3	0.003	0.0003	0.01	TOE	—
2-ethyltoluene	611-14-3	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
benzene, 1-ethenyl-2-methyl-	611-15-4	0.003	0.0003	0.01	TOE	—

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9,10-dihydroanthracene	613-31-0	0.003	0.0003	0.01	TOE	—
toluidine, N,N-diethyl-p-	613-48-9	0.003	0.0003	0.01	TOE	—
1,2-benzenediacetonitrile	613-73-0	0.003	0.0003	0.01	TOE	—
1-isocyanto-2-methylbenzene	614-68-6	0.003	0.0003	0.01	TOE	—
benzothiazole, 2- (methylmercapto)-	615-22-5	0.003	0.0003	0.01	TOE	—
1,2,4-tribromobenzene	615-54-3	0.04	0.004	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 05/15/1986	—
2-chloro-1,4-benzenediamine	615-66-7	0.3	0.03	0.5	NSF action level External peer review date: 04/20/2004	—
2,3-dichloro-1-propanol	616-23-9	0.01 (total)	0.004 (total)	0.01 (total)	NSF action level External peer review date: 10/21/2014	Detections shall be summed with the following chemicals: CAS# 96-23-1
cyanamide, diethyl-	617-83-4	0.003	0.0003	0.01	TOE	—
formamide, N,N-diethyl-	617-84-5	0.003	0.0003	0.01	TOE	—
2-phenyl-2-propanol	617-94-7	0.3	0.03	4	NSF action level Issue date: 08/11/2004	—

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furfural, 5-methyl	620-02-0	0.003	0.0003	0.01	TOE	—
3-ethyltoluene	620-14-4	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
benzaldehyde, 3-methyl-	620-23-5	0.003	0.0003	0.01	TOE	—
phenyl-(m-tolyl)-methane	620-47-3	0.003	0.0003	0.01	TOE	—
1-methyl-4-(phenylmethyl)- benzene	620-83-7	0.003	0.0003	0.01	TOE	—
4,4'-methylenediphenol	620-92-8	0.003	0.0003	0.01	TOE	—
isovanillin	621-59-0	0.003	0.0003	0.01	TOE	—
N-nitroso-di-N-propylamine	621-64-7	0.00005	0.000005	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 02/11/1987	—
benzene, (2-chloroethenyl)-	622-25-3	0.003	0.0003	0.01	TOE	—
4-morpholineethanol	622-40-2	0.003	0.0003	0.01	TOE	—
phenol, 4-ethoxy-	622-62-8	0.003	0.0003	0.01	TOE	—
4-ethyltoluene	622-96-8	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review	Detections shall be summed with chemicals under the

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
					date: 10/27/2016	High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
benzene, 1-ethenyl-4-methyl-	622-97-9	0.003	0.0003	0.01	TOE	—
urea, N,N',N'-trimethyl-	623-14-4	0.003	0.0003	0.01	TOE	—
1,4-benzenedicarbonitrile	623-26-7	0.003	0.0003	0.01	TOE	—
diethylurea, 1,3-	623-76-7	0.003	0.0003	0.01	TOE	—
fumaric acid, diethyl ester	623-91-6	0.003	0.0003	0.01	TOE	—
octadien-1-ol, 3,7-dimethyl-2,6-	624-15-7	0.003	0.0003	0.01	TOE	—
disulfide, dimethyl	624-92-0	0.003	0.0003	0.01	TOE	—
butenoic acid, 3-	625-38-7	0.003	0.0003	0.01	TOE	—
1,3-benzenedicarbonitrile	626-17-5	0.003	0.0003	0.01	TOE	—
methylpiperidine, 1-	626-67-5	0.003	0.0003	0.01	TOE	—
adipic acid, monomethyl ester	627-91-8	0.003	0.0003	0.01	TOE	—
dimethyl adipate	627-93-0	0.003	0.0003	0.01	TOE	—
diglycol chlorohydrin	628-89-7	0.003	0.0003	0.01	TOE	—
hexanediol, 1,6-	629-11-8	2	0.2	10	NSF action level External peer review date: 4/18/2017	—
ethane, 1,2-diethoxy	629-14-1	0.003	0.0003	0.01	TOE	—
hexadecanamide	629-54-9	0.003	0.0003	0.01	TOE	—
hexadecene-1	629-73-2	0.003	0.0003	0.01	TOE	—
heptadecane	629-78-7	0.003	0.0003	0.01	TOE	—
nonadecane	629-92-5	0.003	0.0003	0.01	TOE	—
heneicosane	629-94-7	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
docosane	629-97-0	0.003	0.0003	0.01	TOE	—
pentacosane	629-99-2	0.003	0.0003	0.01	TOE	—
hexacosane	630-01-3	0.003	0.0003	0.01	TOE	—
octacosane	630-02-4	0.003	0.0003	0.01	TOE	—
nonacosane	630-03-5	0.003	0.0003	0.01	TOE	—
1,1,1,2-tetrachloroethane	630-20-6	0.01	0.001	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. verification date: 05/04/1988	—
dibromoacetic acid	631-64-1	0.060 (total)	0.0060 (total)	0.060 (total)	40 CFR §141.64	Detections shall be summed with the following chemicals: CAS# 79-08-3, CAS# 76-03-9, CAS# 79-11- 8, and CAS# 79-43-6. Dichloroacetic acid (CAS# 79-43-6) must also be evaluated under its separate pass/fail criteria (TAC = 0.007 mg/L, SPAC = 0.0007 mg/L)
dimethyl thioacetamide	631-67-4	0.003	0.0003	0.01	TOE	—
tetramethyl urea	632-22-4	0.003	0.0003	0.01	TOE	—
trichloroaniline, 2,3,4-	634-67-3	0.003	0.0003	0.01	TOE	—
phenyl butanedioic acid	635-51-8	0.003	0.0003	0.01	TOE	—
trichloroaniline, 2,4,5-	636-30-6	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
benzene, 1-propenyl-	637-50-3	0.003	0.0003	0.01	TOE	—
ethyl t-butyl ether	637-92-3	20	2	20	NSF action level External peer review date: 10/06/2010	—
2,6,10,14-tetramethylhexadecane	638-36-8	0.003	0.0003	0.01	TOE	—
tetradecanamide	638-58-4	0.003	0.0003	0.01	TOE	—
tricosane, also (n-tricosane)	638-67-5	0.003	0.0003	0.01	TOE	—
n-triacontane	638-68-6	0.7	0.07	—	NSF action level Issue date: 06/10/99	—
benzenesulfonamide, n,4-dimethyl-	640-61-9	0.003	0.0003	0.01	TOE	—
1,1'-biphenyl, 3-methyl-	643-93-6	0.003	0.0003	0.01	TOE	—
acetophenone, p-isopropyl-	645-13-6	0.003	0.0003	0.01	TOE	—
benzenepropanenitrile	645-59-0	0.003	0.0003	0.01	TOE	—
ethylhex-2-en-1-al, 2-	645-62-5	0.003	0.0003	0.01	TOE	—
lauric anhydride	645-66-9	0.003	0.0003	0.01	TOE	—
decane, 1,10-diamino	646-25-3	0.003	0.0003	0.01	TOE	—
tetracosane	646-31-4	0.003	0.0003	0.01	TOE	—
imidazole, methylphenyl-	670-91-7	0.003	0.0003	0.01	TOE	—
benzaldehyde, 2-hydroxy-4-methoxy	673-22-3	0.003	0.0003	0.01	TOE	—
piperidone, 2-	675-20-7	0.003	0.0003	0.01	TOE	—
penten-2-one, 3,4-dimethyl-3-	684-94-6	0.003	0.0003	0.01	TOE	—
carbodiimide, di-t-butyl-	691-24-7	0.003	0.0003	0.01	TOE	—

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dodecanedioic acid	693-23-2	30	30	30	NSF action level External peer review date: 10/07/2005	—
aminoundecanoic acid, 12-	693-57-2	0.003	0.0003	0.01	TOE	—
trans-13-octadecanoic acid	693-71-0	0.003	0.0003	0.01	TOE	—
bicyclo[4.2.0]octa-1,3,5-triene	694-87-1	0.003	0.0003	0.01	TOE	—
pyridine, 2,3,5-trimethyl-	695-98-7	0.003	0.0003	0.01	TOE	—
2-hydroxy-4-methylbenzaldehyde	698-27-1	0.003	0.0003	0.01	TOE	—
2H-pyran-2-one, tetrahydro-6-propyl	698-76-0	0.003	0.0003	0.01	TOE	—
benzene, pentamethyl-	700-12-9	0.003	0.0003	0.01	TOE	—
benzylidenebenzylamine	708-25-6	0.003	0.0003	0.01	TOE	—
benzoquinone, 2,6-di- <i>t</i> -butyl-	719-22-2	0.003	0.0003	0.01	TOE	—
2,6-di- <i>tert</i> -butyl-4-nitrophenol	728-40-5	0.003	0.0003	0.01	TOE	—
formamide, N,N-dimethylthio-	758-16-7	0.003	0.0003	0.01	TOE	—
dimethylpropanamide	758-96-3	0.003	0.0003	0.01	TOE	—
formamide, N,N-di- <i>n</i> -butyl-	761-65-9	0.003	0.0003	0.01	TOE	—
2-methyl-1-pentene	763-29-1	0.003	0.0003	0.01	TOE	—
3-methyl-3-buten-1-ol	763-32-6	0.05 (total)	0.05 (total)	0.05 (total)	NSF action level External peer review date: 05/10/2011	Detections shall be summed with the following chemicals: CAS# 115-18-4
propanoic acid, 3-ethoxy-, ethyl ester	763-69-9	0.003	0.0003	0.01	TOE	—
2,4-dimethyl-1,3-dioxane	766-20-1	0.003	0.0003	0.01	TOE	—
maleic anhydride, 2,3-dimethyl-	766-39-2	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
formamide, N-cyclohexyl-	766-93-8	0.003	0.0003	0.01	TOE	—
indene, 1H-, 2,3-dihydro-1-methyl-	767-58-8	0.003	0.0003	0.01	TOE	—
3-oxo-3-phenylpropene	768-03-6	0.003	0.0003	0.01	TOE	—
n-phenylisopropylamine	768-52-5	0.003	0.0003	0.01	TOE	—
piperidene, 2,2,6,6-tetramethyl-	768-66-1	0.003	0.0003	0.01	TOE	—
4-tert-butylaniline	769-92-6	0.003	0.0003	0.01	TOE	—
propanol, 1-phenoxy 2-	770-35-4	0.003	0.0003	0.01	TOE	—
dioxane, 4-phenyl-1,3-	772-00-9	0.003	0.0003	0.01	TOE	—
dioxacyclododecane-7,12-dione, 1,6-	777-95-7	0.05	0.05	—	WQA action level JPRSC consensus date: 08/17/2016	—
toluenesulfonic acid, p-, butyl ester	778-28-9	0.003	0.0003	0.01	TOE	—
alpha-(phenylimino)-ortho-cresol	779-84-0	0.003	0.0003	0.01	TOE	—
benzenemethanamine, N- (phenylmethylene)-	780-25-6	0.003	0.0003	0.01	TOE	—
triphenylphosphine oxide	791-28-6	0.003	0.0003	0.01	TOE	—
phenylene diamine, n-(1,3- dimethylbutyl)-n'-phenyl-p-	793-24-8	0.003	0.0003	0.01	TOE	—
tributylphosphine oxide	814-29-9	0.003	0.0003	0.01	TOE	—
hexanoic acid, 2-ethyl-, methyl ester	816-19-3	0.003	0.0003	0.01	TOE	—
hex-5-en-1-ol	821-41-0	0.003	0.0003	0.01	TOE	—
dithiolane-2-thione, 1,3-	822-38-8	0.003	0.0003	0.01	TOE	—
toluene, 2,6-diamino-	823-40-5	0.003	0.0003	0.01	TOE	—

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indene, 1H-, 2,3-dihydro-4-methyl-	824-22-6	0.003	0.0003	0.01	TOE	—
cyclopentylidenecyclopentan-2-one	825-25-2	0.003	0.0003	0.01	TOE	—
2,2,6,6-tetramethyl-4-piperidinone	826-36-8	0.05 (total)	0.05 (total)	0.05 (total)	NSF action level External peer review date: 05/10/2011	Detections shall be summed with the following chemicals: CAS# 2403-88-5
cyclododecanone	830-13-7	0.05 (total)	0.05 (total)	4 (total)	NSF action level External peer review date: 04/22/2014	Detections shall be summed with the following chemicals: CAS# 1724-39-6 and CAS# 58567-11-6
p-hydroxybenzhydrol	833-39-6	0.01	0.01	0.01	NSF action level External peer review date: 04/18/2013	—
methacrylic acid, 2-hydroxyethyl ester	868-77-9	0.003	0.0003	0.01	TOE	—
N-butyl formamide	871-71-6	0.003	0.0003	0.01	TOE	—
N-methyl-2-pyrrolidone	872-50-4	1	0.1	—	NSF action level Issue date: 06/17/93	—
benzene, cyclopropyl-	873-49-4	0.003	0.0003	0.01	TOE	—
benzene, trans-1-propenyl-	873-66-5	0.003	0.0003	0.01	TOE	—
indene, 1H-, 2,3-dihydro-5-methyl-	874-35-1	0.003	0.0003	0.01	TOE	—
1,3-dimethyl-4-ethylbenzene	874-41-9	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742-

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
						95-6) Class-Based Evaluation Level
xlenol, 4-tert-butyl-2,6-	879-97-0	0.003	0.0003	0.01	TOE	—
alpha-benzene-succinic acid	884-33-3	0.003	0.0003	0.01	TOE	—
1,1,1-trichloro-2-propanone	918-00-3	0.003	0.0003	0.01	TOE	—
silane, gamma-aminopropyl triethoxy-	919-30-2	0.003	0.0003	0.01	TOE	—
butane, 2-ethoxy-2-methyl-	919-94-8	0.003	0.0003	0.01	TOE	—
hydroxypropyl methacrylate, 2-	923-26-2	0.003	0.0003	0.01	TOE	—
N-nitroso-di-n-butylamine	924-16-3	0.00006	0.000006	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 10/29/1986	—
hex-2-en-1-ol, cis-	928-94-9	0.003	0.0003	0.01	TOE	—
hex-2-en-1-ol, trans-	928-95-0	0.003	0.0003	0.01	TOE	—
N-nitrosopyrrolidine	930-55-2	0.0002	0.00002	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 10/14/86	—
1,2-dimethyl-3-ethylbenzene	933-98-2	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
benzothiazolinone, 2-	934-34-9	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
1,3-dimethyl-5-ethylbenzene	934-74-7	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
1,2-dimethyl-4-ethylbenzene	934-80-5	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
benzene, (1-methoxy 1- methylethyl)-	935-67-1	0.003	0.0003	0.01	TOE	—
phenyl 1-buten-4-ol, 4-	936-58-3	0.003	0.0003	0.01	TOE	—
1-(4-ethylphenyl) ethanone	937-30-4	0.003	0.0003	0.01	TOE	—
naphthalene, 2-ethyl-	939-27-5	0.003	0.0003	0.01	TOE	—
4,6,8-trimethylazulene	941-81-1	0.003	0.0003	0.01	TOE	—
1-hexanone, 1-phenyl	942-92-7	0.003	0.0003	0.01	TOE	—
lauro lactam	947-04-6	0.4	0.04	2	NSF action level External peer review date: 10/15/2008	—
butane, 2-methoxy 2-methyl-	994-05-8	0.003	0.0003	0.01	TOE	—
butanone, 1-phenyl-2-	1007-32-5	0.003	0.0003	0.01	TOE	—
phenylene) bis-ethanone, 1,1'-(1,4-	1009-61-6	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
1,3-bis(1,1-dimethylethyl)benzene	1014-60-4	0.003	0.0003	0.01	TOE	—
heptachlor epoxide	1024-57-3	0.0002	0.00002	—	40 CFR §141.60, 40 CFR §141.61	—
triallyl isocyanurate	1025-15-6	0.04	0.04	0.04	NSF action level External peer review date: 05/06/2010	—
butanoic acid, 3,3-dimethyl-	1070-83-3	0.003	0.0003	0.01	TOE	—
methane, di- <i>t</i> -butyl-	1070-87-7	0.003	0.0003	0.01	TOE	—
glyphosate	1071-83-6	0.7	0.07	—	40 CFR §141.60, 40 CFR §141.61	—
benzene (1,2-dichloroethyl)-	1074-11-9	0.003	0.0003	0.01	TOE	—
1-methyl-2-propylbenzene	1074-17-5	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
1-methyl-3-propylbenzene	1074-43-7	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
1-methyl-4-propylbenzene	1074-55-1	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review	Detections shall be summed with

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
					date: 10/27/2016	chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
diethylmethyl borane	1115-07-7	0.003	0.0003	0.01	TOE	—
butenal, methyl-	1115-11-3	0.003	0.0003	0.01	TOE	—
N-nitrosodiethanolamine	1116-54-7	0.0001	0.00001	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 01/28/1987	—
dimethyl glutarate	1119-40-0	0.01	0.01	0.01	NSF action level External peer review date: 04/22/2009	—
1,2-decanediol	1119-86-5	0.003	0.0003	0.01	TOE	—
dodecanamide	1120-16-7	0.003	0.0003	0.01	TOE	—
tetradecane	1120-36-1	0.003	0.0003	0.01	TOE	—
2,3-dimethyl-2-cyclopentene-1-one	1121-05-7	0.003	0.0003	0.01	TOE	—
dimethylaminopyridine	1122-58-3	0.003	0.0003	0.01	TOE	—
benzaldehyde, 2,6-dimethyl-	1123-56-4	0.003	0.0003	0.01	TOE	—
tetramethylpyrazine, 2,3,5,6-	1124-11-4	0.003	0.0003	0.01	TOE	—
acetamide, n-cyclohexyl-	1124-53-4	0.003	0.0003	0.01	TOE	—
pyridine, 1,2,3,6-tetrahydro-2,2,2,6-tetramethyl-	1124-69-2	0.003	0.0003	0.01	TOE	—
propanamide, n-cyclohexyl	1126-56-3	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
naphthalene, 1-ethyl-	1127-76-0	0.003	0.0003	0.01	TOE	—
4-hydroxybenzophenone	1137-42-4	0.01	0.01	0.01	NSF action level External peer review date: 04/18/2013	—
propenoic acid, 2-methyl-, 1- methyl-1,3-propanediyl ester, 2-	1189-08-8	0.003	0.0003	0.01	TOE	—
pentaethylene glycol dimethyl ether	1191-87-3	0.003	0.0003	0.01	TOE	—
cyclohexen-1-one, 3-methyl-2-	1193-18-6	0.003	0.0003	0.01	TOE	—
furylmethylketone, 5-methyl-2-	1193-79-9	0.003	0.0003	0.01	TOE	—
benzyl alcohol, alpha, alpha, 4- trimethyl-	1197-01-9	0.003	0.0003	0.01	TOE	—
glycine, n-benzoyl-, methyl ester	1205-08-9	0.003	0.0003	0.01	TOE	—
4-chlorodiphenylamine	1205-71-6	0.003	0.0003	0.01	TOE	—
tricyclopentabenzene	1206-79-7	0.003	0.0003	0.01	TOE	—
sodium p-sulfophenyl methallyl ether	1208-67-9	0.003	0.0003	0.01	TOE	—
phosphate, diphenyl-2-ethylhexyl-	1241-94-7	0.003	0.0003	0.01	TOE	—
sodium xylenesulfonate	1300-72-7	0.05	0.05	—	NSF action level Issue date: 04/96	—
cerium oxide	1306-38-3	0.05	0.05	0.05	NSF action level External peer review date: 05/02/2012	—
lanthanum oxide	1312-81-8	0.003	0.0003	0.01	TOE	—
cyclohexanol, trimethyl-	1321-60-4	0.003	0.0003	0.01	TOE	—
benzene, divinyl-	1321-74-0	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
asbestos	1332-21-4	7 MFL	0.7 MFL	—	40 CFR §141.60, 40 CFR §141.62	MFL = Million Fibers per liter, with fiber length > 10 microns.
Tetramethyldecynediol	1333-17-1	0.003	0.0003	0.01	TOE	—
benzaldehyde, 2-, 3-, 4-methyl- mixed isomers	1334-78-7	0.003	0.0003	0.01	TOE	—
propanol, phenyl-1-	1335-12-2	0.003	0.0003	0.01	TOE	—
polychlorinated biphenyls	1336-36-3	0.0005	0.00005	—	40 CFR §141.60, 40 CFR §141.61	CAS# 1336-36-3 is representative of polychlorinated biphenyls as a chemical class
sorbitan monopalmitate	1338-40-5	—	0.05 (total)	—	NSF action level Issue date: 12/96	Detections shall be summed with the following chemicals: CAS# 1338-41-6
sorbitan monostearate	1338-41-6	—	0.05 (total)	—	NSF action level Issue date: 12/96	Detections shall be summed with the following chemicals: CAS# 1338-40-5
sorbitan monooleate	1338-43-8	4	0.4	20	NSF action level External peer review date: 10/17/2012	—
xlenol, 6-tert-butyl-3,4-	1445-23-4	0.003	0.0003	0.01	TOE	—
benzenemethanol, alpha-methyl-, - (S)-	1445-91-6	0.003	0.0003	0.01	TOE	—
benzenebutanoic acid, 2,5- dimethyl-	1453-06-1	0.003	0.0003	0.01	TOE	—
1-heptadecanol	1454-85-9	0.003	0.0003	0.01	TOE	—

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2-pentene, 4-chloro	1458-99-7	0.002	0.0002	—	WQA action level JPRSC consensus date: 06/11/2014	—
pyridine, 2,3,6-trimethyl-	1462-84-6	0.003	0.0003	0.01	TOE	—
dimethylcyanamide	1467-79-4	0.003	0.0003	0.01	TOE	—
oct-2-enoic acid	1470-50-4	0.003	0.0003	0.01	TOE	—
benzenemethanamine, 1,3-	1477-55-0	0.003	0.0003	0.01	TOE	—
benzenemethanol, alpha-methyl-, 1-	1517-69-7	0.003	0.0003	0.01	TOE	—
piperidinocarbonitrile	1530-87-6	0.003	0.0003	0.01	TOE	—
morpholine, 4-dodecyl-	1541-81-7	0.003	0.0003	0.01	TOE	—
2-[2-(ethylhexyl)oxy]ethanol	1559-35-9	0.003	0.0003	0.01	TOE	—
1-cyclopentene-1-carboxylic acid	1560-11-8	0.003	0.0003	0.01	TOE	—
2-chlorocyclohexanol	1561-86-0	0.003	0.0003	0.01	TOE	—
carbofuran	1563-66-2	0.04	0.004	—	40 CFR §141.60, 40 CFR §141.61	—
4[[(4-dimethylamino)phenyl)methylene]- 2-phenyl-5(4H)-oxazolone	1564-29-0	0.003	0.0003	0.01	TOE	—
3-phenyl-3-pentanol	1565-71-5	0.003	0.0003	0.01	TOE	—
alpha-ethyl-alpha-methylbenzyl alcohol	1565-75-9	0.003	0.0003	0.01	TOE	—
propanol, 1-propoxy-2-	1569-01-3	0.003	0.0003	0.01	TOE	—
penten-2-ol, 3-	1569-50-2	0.003	0.0003	0.01	TOE	—
pentenal, trans-2-	1576-87-0	0.003	0.0003	0.01	TOE	—

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trifluralin	1582-09-8	0.045	0.0045	—	Health Canada MAC Issue date: 02/89	—
ethyl benzoylformate	1603-79-8	0.003	0.0003	0.01	TOE	—
benzaldehyde, 3,5-di-tert-butyl-4-hydroxy-	1620-98-0	0.003	0.0003	0.01	TOE	—
hex-1-ene, 2-ethyl-	1632-16-2	0.003	0.0003	0.01	TOE	—
fenchyl alcohol	1632-73-1	0.003	0.0003	0.01	TOE	—
aldicarb sulphoxide	1646-87-3	0.004	0.0004	—	40 CFR §141.60, 40 CFR §141.61	Total combined detection of CAS# 116- 06-3, CAS# 1646-87-3 and CAS# 1646-88-4 shall not exceed 0.007 mg/L (TAC) or 0.0007 (SPAC)
aldicarb sulphone	1646-88-4	0.002	0.0002	—	40 CFR §141.60, 40 CFR §141.61	Total combined detection of CAS# 116- 06-3, CAS# 1646-87-3 and CAS# 1646-88-4 shall not exceed 0.007 mg/L (TAC) or 0.0007 (SPAC)
propanenitrile, 3,3'-oxybis-	1656-48-0	0.003	0.0003	0.01	TOE	—
bisphenol A diglycidyl ether	1675-54-3	1 (total)	0.1 (total)	5 (total)	NSF action level External peer review date: 10/03/2002	Detections shall be summed with the following chemicals: CAS# 5581-32-8
3H-1,2-Benzodithiol-3-one	1677-27-6	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
methyl 4 isopropyl cyclohexane, trans-1-	1678-82-6	0.003	0.0003	0.01	TOE	—
terephthalic acid, monomethyl ester	1679-64-7	0.003	0.0003	0.01	TOE	—
1H-indene, 2,3-dihydro, 4,6- dimethyl-	1685-82-1	0.003	0.0003	0.01	TOE	—
bromoxynil	1689-84-5	0.005	0.0005	—	Health Canada MAC Issue date: 03/87	—
1,3-dimethyl piperidinone	1690-76-2	0.003	0.0003	0.01	TOE	—
2,5-dimethylanilsole	1706-11-2	0.003	0.0003	0.01	TOE	—
cyclododecanol	1724-39-6	0.05 (total)	0.05 (total)	4 (total))	NSF action level External peer review date: 04/22/2014	Detections shall be summed with the following chemicals: CAS# 830-13-7 and CAS# 58567-11-6
diphenyl(ethyl)phosphine oxide	1733-57-9	0.003	0.0003	0.01	TOE	—
dimethylaminopropanenitrile	1738-25-6	0.003	0.0003	0.01	TOE	—
dehydroabietic acid	1740-19-8	0.003	0.0003	0.01	TOE	—
phenol, 2-allyl-	1745-81-9	0.003	0.0003	0.01	TOE	—
2,3,7,8-TCDD (dioxin)	1746-01-6	0.00000003	0.000000003	—	40 CFR §141.60, 40 CFR §141.61 USEPA Toxic Equivalency Factor: 1	—
allyl phenol ether	1746-13-0	0.003	0.0003	0.01	TOE	—

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1,4-dimethyl-2-ethylbenzene	1758-88-9	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
n-cyclohexylbenzamide	1759-68-8	0.003	0.0003	0.01	TOE	—
cyclohexanamine, 4,4'-methylene- bis-	1761-71-3	0.003	0.0003	0.01	TOE	—
ammonium thiocyanate	1762-95-4	0.2 (total as SCN)	0.02 (total as SCN)	0.9 (total as SCN)	NSF action level External peer review date: 09/03/2003	Detections shall be summed with the following chemicals: CAS# 333-20-0 and CAS# 540-72-7
aniline, 2-propyl-	1821-39-2	0.003	0.0003	0.01	TOE	—
methoxytrimethylsilane	1825-61-2	0.003	0.0003	0.01	TOE	—
anilinobenzothiazole	1843-21-6	0.003	0.0003	0.01	TOE	—
benzimidazolone, 3-methyl-2-	1849-01-0	0.003	0.0003	0.01	TOE	—
1,2,3-trichloro-2-methylpropane	1871-58-5	0.003	0.0003	0.01	TOE	—
2-octenoic acid, (2E)-	1871-67-6	0.003	0.0003	0.01	TOE	—
xyleneol, 6-tert-butyl-1,4-	1879-09-0	0.003	0.0003	0.01	TOE	—
hydroxymethylcyclododecane	1892-12-2	0.003	0.0003	0.01	TOE	—
cembrene	1898-13-1	0.003	0.0003	0.01	TOE	—
benzopyrimidine, 3,4-dihydro-	1904-64-9	0.003	0.0003	0.01	TOE	—
paraquat (as dichloride)	1910-42-5	0.01	0.001	—	Health Canada MAC Issue date: 02/86	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
atrazine	1912-24-9	0.003	0.0003	—	40 CFR §141.60, 40 CFR §141.61	—
atrazine and metabolites	1912-24-9	0.005 (total)	0.0005 (total)	—	Health Canada MAG Issue date: 04/93	Atrazine (CAS# 1912- 24-9) may not exceed its individual criteria of 0.003 mg/L (TAC) or 0.0003 mg/L (SPAC). Atrazine metabolites may include the following: CAS# 1007- 28-9, CAS# 3397-62-4 and CAS# 6190-65-4
dicamba	1918-00-9	0.12	0.012	—	Health Canada MAG Issue date: 03/87	—
picloram	1918-02-1	0.19	0.019	—	Health Canada MAG Issue date: 06/88	—
octadecenoic acid, 9(E)-, methyl ester	1937-62-8	0.003	0.0003	0.01	TOE	—
methyl (Z)-octadec-11-enoate	1937-63-9	0.003	0.0003	0.01	TOE	—
t-butyl hydroquinone	1948-33-0	5	0.5	7	NSF action level External peer review date: 10/11/2006	—
1,1'-dimethyl-3-chloropropanol	1985-88-2	0.003	0.0003	0.01	TOE	—
phenol, 4-(1-phenylethyl)-	1988-89-2	0.003	0.0003	0.01	TOE	—
benzenedimethanol, a,a',a'- tetramethyl-1,3-	1999-85-5	0.003	0.0003	0.01	TOE	—
2,6-dichlorobenzamide	2008-58-4	0.003	0.0003	0.01	TOE	—
tetradecanamine, 1-	2016-42-4	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
decylamine, n-	2016-57-1	0.003	0.0003	0.01	TOE	—
morpholine, 4-(2-aminoethyl)-	2038-03-1	0.003	0.0003	0.01	TOE	—
benzenepropanamine	2038-57-5	0.003	0.0003	0.01	TOE	—
benzenebutanenitrile	2046-18-6	0.003	0.0003	0.01	TOE	—
dibutyl cyanamide, N,N-	2050-54-6	0.003	0.0003	0.01	TOE	—
butanediol dimethacrylate, 1,4-	2082-81-7	0.003	0.0003	0.01	TOE	—
berberine	2086-83-1	0.003	0.0003	0.01	TOE	—
dioxathiocane, 1,3,6-	2094-92-0	0.003	0.0003	0.01	TOE	—
bisphenol F diglycidyl ether	2095-03-6	0.003	0.0003	0.01	TOE	—
1,10-dichlorodecane	2162-98-3	0.003	0.0003	0.01	TOE	—
glycidyl ether, 2-methylphenyl-	2210-79-9	0.003	0.0003	0.01	TOE	—
cyclohexanamine, n- (phenylmethylene)-	2211-66-7	0.003	0.0003	0.01	TOE	—
n,n-diethyl p-nitroaniline	2216-15-1	0.003	0.0003	0.01	TOE	—
n,n-diethyl 3-nitroaniline	2216-16-2	0.003	0.0003	0.01	TOE	—
2-(1,1-dimethylethyl)-6-methyl phenol	2219-82-1	0.003	0.0003	0.01	TOE	—
phosphonic acid, (nitrilotris(methylene))tri-, pentasodium	2235-43-0	0.003	0.0003	0.01	TOE	—
benzothiazole-2-thione, N-methyl-	2254-94-6	0.003	0.0003	0.01	TOE	—

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propargite	2312-35-8	0.1	0.01	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 03/23/1988	—
ethanol, 2-[2-[4-(1,1,3,3-tetramethylbutyl)phenoxy]ethoxy]-	2315-61-9	0.003	0.0003	0.01	TOE	—
fluorescein	2321-07-5	0.003	0.0003	0.01	TOE	—
octadecenoic acid, 8-, methyl ester	2345-29-1	0.003	0.0003	0.01	TOE	—
diethylene glycol dimethacrylate	2358-84-1	0.003	0.0003	0.01	TOE	—
nonanal, 2-oxo-	2363-87-3	0.003	0.0003	0.01	TOE	—
decadienal, 2,4-	2363-88-4	0.003	0.0003	0.01	TOE	—
2-octenal	2363-89-5	0.003	0.0003	0.01	TOE	—
2,2-dimethyl-1-hexanol	2370-13-0	0.003	0.0003	0.01	TOE	—
oxabicyclo (4.1.0) heptane-3-carboxylic acid, 7-	2386-87-0	0.003	0.0003	0.01	TOE	—
1,3-dicyclohexylurea	2387-23-7	0.003	0.0003	0.01	TOE	—
benzene, 1-ethyldecyl-	2400-00-2	0.003	0.0003	0.01	TOE	—
benzene, 1-hexylheptyl-	2400-01-3	0.003	0.0003	0.01	TOE	—
2,2,6,6-tetramethyl-4-piperidinol	2403-88-5	0.05 (total)	0.05 (total)	0.05 (total)	NSF action level External peer review date: 05/10/2011	Detections shall be summed with the following chemicals: CAS# 826-36-8

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piperidinol, 1,2,2,6,6-pentamethyl-4-	2403-89-6	0.003	0.0003	0.01	TOE	—
(phenylimino)-cyclohexadiene	2406-04-4	0.003	0.0003	0.01	TOE	—
propanol, 1-[4-(1,1-dimethylethyl)phenoxy]-2-	2416-30-0	0.003	0.0003	0.01	TOE	—
1-chlorotetradecane	2425-54-9	0.003	0.0003	0.01	TOE	—
formamide, N-(1,1-dimethylethyl)-	2425-74-3	0.003	0.0003	—	TOE	—
butanediol diglycidyl ether, 1,4-	2425-79-8	0.003	0.0003	0.01	TOE	—
n-butyl glycidyl ether	2426-08-6	0.003	0.0003	0.01	TOE	—
11-aminoundecanoic acid	2432-99-7	0.05	0.05		NSF action level Issue date: 04/15/99	—
2,3,4-trimethylquinoline	2437-72-1	0.003	0.0003	0.01	TOE	—
benzotriazole, 2-(2-hydroxy-5-methyl-phenyl)-	2440-22-4	0.003	0.0003	0.01	TOE	—
2-ethylhexyl glycidyl ether	2461-15-6	0.003	0.0003	0.01	TOE	—
dodecyl glycidyl ether	2461-18-9	0.003	0.0003	0.01	TOE	—
octadecanoic acid, 9-, methyl ester	2462-84-2	0.003	0.0003	0.01	TOE	—
2,2'-bisphenol F	2467-02-9	0.003	0.0003	0.01	TOE	—
2,4'-bisphenol F	2467-03-0	0.003	0.0003	0.01	TOE	—
trimethylthiourea	2489-77-2	0.003	0.0003	0.01	TOE	—
3-Methoxybutanol	2517-43-3	0.003	0.0003	0.01	TOE	—
methacrylic acid, 3-(trimethylsilyl)propyl ester	2530-85-0	0.003	0.0003	0.01	TOE	—
nonanoic acid, 9-oxo-	2553-17-5	0.003	0.0003	0.01	TOE	—
9,12-octadecanoic acid, methyl ester	2566-97-4	0.003	0.0003	0.01	TOE	—

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methane, di-t-butoxy	2568-93-6	0.003	0.0003	0.01	TOE	—
cyclohexanedimethanamine, 1,3-	2579-20-6	0.003	0.0003	0.01	TOE	—
piperidine, 1-formyl	2591-86-8	0.003	0.0003	0.01	TOE	—
cyclohexadiene-1-one, 2,6-(1,1-dimethylethyl)-4-methylene-2,5-	2607-52-5	0.003	0.0003	0.01	TOE	—
2,4-dichlorophenyl isocyanate	2612-57-9	0.003	0.0003	0.01	TOE	—
benzothiazolin-3-one	2634-33-5	0.003	0.0003	0.01	TOE	—
octadecadienoic acid, (Z,Z)-9,12-, butyl ester	2634-45-9	0.003	0.0003	0.01	TOE	—
1,1-cyclohexanedimethanol	2658-60-8	0.003	0.0003	0.01	TOE	—
3,4-dichlorobenzenediamine	2670-38-4	0.003	0.0003	0.01	TOE	—
pyrrolidinone, 1-dodecyl-2-	2687-96-9	0.003	0.0003	0.01	TOE	—
aniline, 4-n-propyl-	2696-84-6	0.003	0.0003	0.01	TOE	—
benzene, 1-methylundecyl-	2719-61-1	0.003	0.0003	0.01	TOE	—
benzene, 1-pentylheptyl-	2719-62-2	0.003	0.0003	0.01	TOE	—
benzene, 1-butylectyl-	2719-63-3	0.003	0.0003	0.01	TOE	—
benzene, 1-propylnonyl-	2719-64-4	0.003	0.0003	0.01	TOE	—
dilauryl disulfide	2757-37-1	0.003	0.0003	0.01	TOE	—
3-hydroxypropyl methacrylate	2761-09-3	0.003	0.0003	0.01	TOE	—
diquat	2764-72-9	0.02	0.002	—	40 CFR §141.60, 40 CFR §141.61	—
octadecenoic acid, 6(Z), methyl ester	2777-58-4	0.003	0.0003	—	TOE	—
octadecanoic acid, octadecyl ester	2778-96-3	0.003	0.0003	0.01	TOE	—

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tetramethylthiourea	2782-91-4	0.01	0.001	0.2	NSF action level External peer review date: 09/20/2011	—
1-hydroxyethylidene-1, 1- diphosphonic acid (HEDP)	2809-21-4	—	0.02	—	NSF action level Issue date: 07/08/99	—
isophorone diamine	2855-13-2	0.1	0.01	0.6	NSF action level External peer review date: 10/15/2008	—
1,3-dimethyl-2-ethylbenzene	2870-04-4	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Detections shall be summed with chemicals under the High Flash Aromatic Naphtha (CAS# 64742- 95-6) Class-Based Evaluation Level
2-nonen-4-one, 2-methyl-	2903-23-3	0.003	0.0003	0.01	TOE	—
1,3-dioxolane, 2,2-dimethyl-	2916-31-6	0.003	0.0003	0.01	TOE	—
chlorpyrifos	2921-88-2	0.09	0.009	—	Health Canada MAC Issue date: 02/86	—
benzenedimethanol, a,a,a',a'- tetramethyl-1,4-	2948-46-1	0.003	0.0003	0.01	TOE	—
benzyl diphenyl phosphine oxide	2959-74-2	0.003	0.0003	0.01	TOE	—
dimethyldodecanamide, N,N-	3007-53-2	0.003	0.0003	0.01	TOE	—
3-methyl-cinnamic acid	3029-79-6	0.003	0.0003	0.01	TOE	—
2-methyl-4-phenyl morpholine	3077-16-5	0.003	0.0003	0.01	TOE	—
cyclohexyl isocyanate	3173-53-3	0.003	0.0003	0.01	TOE	—

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hexen-2-one, 5-methyl-5-	3240-09-3	0.003	0.0003	0.01	TOE	—
1,2,3,4,6,7,8,9-octa-chlorodibenzo- p-dioxin	3268-87-9	0.0003	0.00003	—	USEPA Toxic Equivalency Factor: 0.0001	—
trimethylolpropane trimethacrylate	3290-92-4	0.003	0.0003	0.01	TOE	—
1,2,3,4-tetrahydroacridine	3295-64-5	0.003	0.0003	0.01	TOE	—
3,5,5-trimethylhexanoic acid	3302-10-1	0.003	0.0003	0.01	TOE	—
tetramethyl-succinonitrile	3333-52-6	0.01	0.01	0.01	NSF action level External peer review date: 05/06/2010	—
3-methyl-5-phenyl-1H-pyrazole	3347-62-4	0.003	0.0003	0.01	TOE	—
triclosan	3380-34-5	0.3	0.03	0.7	NSF action level External peer review date: 10/21/2014	—
octen-3-ol, 1-	3391-86-4	0.003	0.0003	0.01	TOE	—
1-pentene, 3,3-dimethyl	3404-73-7	0.003	0.0003	0.01	TOE	—
morpholinecarboxamide, N- cyclohexyl-4-	3417-54-7	0.003	0.0003	0.01	TOE	—
benzyl alcohol, a,a-dimethyl-p- isopropyl-	3445-42-9	0.003	0.0003	0.01	TOE	—
formamidine, N,N-dimethyl-N'- cyclohexyl-	3459-75-4	0.003	0.0003	0.01	TOE	—
9H-pyrido(3,3-b)indole-1-carboxylic acid, methyl ester	3464-66-2	0.003	0.0003	0.01	TOE	—
hexane, 2,2,5-trimethyl	3522-94-9	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
N-butylbenzene-sulfonamide	3622-84-2	0.01	0.01	0.01	NSF action level External peer review date: 09/20/2011	—
ethanone, 1-(3,4-dimethylphenyl-	3637-01-2	0.003	0.0003	0.01	TOE	—
1,2-benzenedicarboxylic acid, diundecyl ester	3648-20-2	0.003	0.0003	0.01	TOE	—
dimethyl trisulfide	3658-80-8	0.003	0.0003	0.01	TOE	—
butenoic acid, 2-	3724-65-0	0.003	0.0003	0.01	TOE	—
1-ethyl-2-methyl-cyclohexane	3728-54-9	0.003	0.0003	0.01	TOE	—
dimethyldithiocarbamate, methyl	3735-92-0	0.003	0.0003	0.01	TOE	—
2-butanol, 1-(dimethylamino-)	3760-96-1	0.003	0.0003	0.01	TOE	—
furan, 2-pentyl-	3777-69-3	0.003	0.0003	0.01	TOE	—
benzoic acid, 2-cyano-	3839-22-3	0.003	0.0003	0.01	TOE	—
triphenylphosphine sulfide	3878-45-3	0.003	0.0003	0.01	TOE	—
monomethyl succinate (monomethyl ester butanedioic acid)	3878-55-5	0.003	0.0003	0.01	TOE	—
octadecanamide, N,N-dimethyl-	3886-90-6	0.003	0.0003	0.01	TOE	—
hexadecanamide, N,N-dimethyl-	3886-91-7	0.003	0.0003	0.01	TOE	—
2,6,10-trimethyl-dodecane	3891-98-3	0.003	0.0003	0.01	TOE	—
phenylindan, 1,1,3-trimethyl-3-	3910-35-8	0.003	0.0003	0.01	TOE	—
1,2-cycloheanedimethanol	3971-29-7	0.003	0.0003	0.01	TOE	—
benzene, (1,2-dimethoxyethyl)- isomers	4013-37-0	0.05	0.005	—	WQA action level JPRSC consensus date: 02/10/2016	—

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benzenesulfonyl isocyanate, 4-methyl	4083-64-1	0.003	0.0003	0.01	TOE	—
dimethyl-3,3'-thiobispropionate	4131-74-2	0.003	0.0003	0.01	TOE	—
1,4-dibutoxybutane	4161-40-4	0.003	0.0003	0.01	TOE	—
1H-indene, 2,3-dihydro, 1,3-dimethyl-	4175-53-5	0.003	0.0003	0.01	TOE	—
benzene, 1-ethyl-4-(1-methylethyl)-	4218-48-8	0.003	0.0003	0.01	TOE	—
phenol, o-(1-phenylethyl)-	4237-44-9	0.003	0.0003	0.01	TOE	—
isobutyl 4-hydroxybenzoate	4247-02-4	0.003	0.0003	0.01	TOE	—
1,1,2-trimethylcyclopentane	4259-00-1	0.003	0.0003	0.01	TOE	—
phosphinic acid, P-phenyl-, Na salt	4297-95-4	0.003	0.0003	0.01	TOE	—
adipic acid, mono(2-ethylhexyl) ester	4337-65-9	0.003	0.0003	0.01	TOE	—
1-benzothiepin, 2,3,4,5-tetrahydro-	4370-78-9	0.003	0.0003	0.01	TOE	—
methyl hydrogen-phthalate	4376-18-5	0.003	0.0003	0.01	TOE	—
n,n-dimethylhexylamine	4385-04-0	0.003	0.0003	0.01	TOE	—
nonane, 2,2,4,4,6,8,8-heptamethyl	4390-04-9	0.003	0.0003	0.01	TOE	—
morpholinecarbaldehyde, 4-	4394-85-8	0.003	0.0003	0.01	TOE	—
2,2'-azobis(2,4-dimethylvaleronitrile)	4419-11-8	0.003	0.0003	0.01	TOE	—
2-(n-morpholinylmethyl)phenol	4438-01-1	0.003	0.0003	0.01	TOE	—
2,5-tetrahydrodipropylfuran	4457-62-8	0.003	0.0003	0.01	TOE	—
tridecane, 6-phenyl-	4534-49-0	0.003	0.0003	0.01	TOE	—
benzene, 1-butyl-nonyl-	4534-50-3	0.003	0.0003	0.01	TOE	—
benzene, 1-propyldecyl-	4534-51-4	0.003	0.0003	0.01	TOE	—
benzene, 1-ethylundecyl-	4534-52-5	0.003	0.0003	0.01	TOE	—

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benzene, 1-methyldodecyl-	4534-53-6	0.003	0.0003	0.01	TOE	—
benzene, 1-propyloctyl-	4536-86-1	0.003	0.0003	0.01	TOE	—
benzene, 1-ethylnonyl-	4536-87-2	0.003	0.0003	0.01	TOE	—
benzene, 1-methyldecyl-	4536-88-3	0.003	0.0003	0.01	TOE	—
benzene, 1-butylheptyl-	4537-15-9	0.003	0.0003	0.01	TOE	—
morpholinepropanenitrile, 4-	4542-47-6	0.003	0.0003	0.01	TOE	—
urea, 1,1,3,3-tetrabutyl-	4559-86-8	0.003	0.0003	0.01	TOE	—
benzoquinone, 2,5-di-tert-pentyl-p-	4584-63-8	0.003	0.0003	0.01	TOE	—
methyldiethyl carbamate	4652-44-2	0.003	0.0003	0.01	TOE	—
buten-1-ol, 2-methyl-2-	4675-87-0	0.003	0.0003	0.01	TOE	—
benzene, 2,4-dimethyl-1-(methylethyl)-	4706-89-2	0.003	0.0003	0.01	TOE	—
benzene, 1,3-dimethyl-5-isopropyl-	4706-90-5	0.003	0.0003	0.01	TOE	—
benzaldehyde, 4-ethyl	4748-78-1	0.003	0.0003	0.01	TOE	—
15-octadecanoic acid, methyl ester	4764-72-1	0.003	0.0003	0.01	TOE	—
1-chloro-3-phenoxy-2-propanol	4769-73-7	0.003	0.0003	0.01	TOE	—
3-cyclohexene-1-carboxylic acid	4771-80-6	0.003	0.0003	0.01	TOE	—
alpha-chloro-benzeneacetic acid-, ethyl ester	4773-33-5	0.003	0.0003	0.01	TOE	—
cyclobutane, ethyl-	4806-61-5	0.003	0.0003	0.01	TOE	—
3,4-diphenylfuran-2,5-dione	4808-48-4	0.003	0.0003	0.01	TOE	—
2,5-dimethyl-3-hydroxy-4-pyridinemethanol	4811-03-4	0.003	0.0003	0.01	TOE	—
butylamine, N-butylidene	4853-56-9	0.003	0.0003	0.01	TOE	—
cyclopentylcyclopentanone, 2-	4884-24-6	0.003	0.0003	0.01	TOE	—

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9-(ethoxycarbonyl)phenanthrene	4895-92-5	0.003	0.0003	0.01	TOE	—
pinanol (or cis-2-pinanol)	4948-28-1	0.003	0.0003	0.01	TOE	—
pinanol, trans-2-	4948-29-2	0.003	0.0003	0.01	TOE	—
3-(2,6,6-Trimethyl-1-cyclohexen-1-yl)acrylaldehyde	4951-40-0	0.3	0.03	—	WQA action level JPRSC consensus date: 08/17/2016	—
benzene, 1,1'-methylenebis(4-methyl)-	4957-14-6	0.003	0.0003	0.01	TOE	—
ethylcyclopentanone	4971-18-0	0.003	0.0003	0.01	TOE	—
4-phenylcyclohexene	4994-16-5	0.003	0.0003	0.01	TOE	—
dimethyldiphenyl sulphone	5097-12-1	0.003	0.0003	0.01	TOE	—
cyclohexanemethanol, trans-alpha,alpha,4-trimethyl-	5114-00-1	0.003	0.0003	0.01	TOE	—
methyl-14-methylpentadecanoate	5129-60-2	0.003	0.0003	0.01	TOE	—
heptadecanoic acid, 16-methyl-, methyl ester	5129-61-3	0.003	0.0003	0.01	TOE	—
4-chloro-1,3-benzenediamine	5131-60-2	0.3	0.03	0.3	NSF action level External peer review date: 04/06/2005	—
propylene glycol n-butyl ether	5131-66-8	2	0.2	30	NSF action level External peer review date: 10/03/2002	—
13-isopropylpodocarpa-8,11,13-trien-16-oic acid	5155-70-4	0.003	0.0003	0.01	TOE	—
hexen-2-one, 5-methyl-3-	5166-53-0	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
benzene, 4,6-diisopropyl-1,3-dimethyl-	5186-68-5	0.003	0.0003	0.01	TOE	—
3,4,5,6-tetrahydro-1,3-oxazin-2-one	5259-97-2	0.003	0.0003	0.01	TOE	—
dodecyl tetraglycol	5274-68-0	0.003	0.0003	0.01	TOE	—
n-nonanoyl morpholine	5299-64-9	0.003	0.0003	0.01	TOE	—
acetaldehyde, di-sec-butyl acetal	5314-41-0	0.003	0.0003	0.01	TOE	—
hexamethylene dibenzamide	5326-21-6	0.003	0.0003	0.01	TOE	—
hexanamine, 2-	5329-79-3	0.003	0.0003	0.01	TOE	—
urea, N,N-bis-(1,1-dimethylethyl)-	5336-24-3	0.003	0.0003	0.01	TOE	—
propanenitrile, 3-(diethylamino)-	5351-04-2	0.003	0.0003	0.01	TOE	—
ethanone, 1-(4-(1-methylethenyl)phenyl)-	5359-04-6	0.01	0.01	—	CSA action level JPRSC consensus date: 08/13/2014	—
2,5-dichlorophenyl isocyanate	5392-82-5	0.003	0.0003	0.01	TOE	—
ethanol, 2-(4-methoxyphenoxy)-	5394-57-0	0.003	0.0003	0.01	TOE	—
dihydromethyl benzimidazolone	5400-75-9	0.003	0.0003	0.01	TOE	—
3,4-dihydro-3,3,6,8-tetramethylnaphthalen-1(2H)-one	5409-55-2	0.003	0.0003	0.01	TOE	—
2,6-di-tert-butyl-4-isopropyl phenol	5427-03-2	0.003	0.0003	0.01	TOE	—
cinnamate, 2-ethylhexyl-4-methoxy-	5466-77-3	0.003	0.0003	0.01	TOE	—
butanone, 4-(4-hydroxyphenyl)-2-	5471-51-2	0.003	0.0003	0.01	TOE	—
bisphenol A diglycidyl ether	5581-32-8	1 (total)	0.1 (total)	5 (total)	NSF action level External peer review date: 10/03/2002	Detections shall be summed with the following chemicals: CAS# 1675-54-3

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2,2-bis(3,5-dimethyl-4-hydroxyphenyl)propane	5613-46-7	0.003	0.0003	0.01	TOE	—
benzeneamine, 4-(1-methylethyl)-N-phenyl-	5650-10-2	0.003	0.0003	0.01	TOE	—
1-propanone, 3-hydroxy-1-phenyl-	5650-41-9	0.003	0.0003	0.01	TOE	—
pyrrolo(1,2-a)pyrazine-1,4-dione, hexahydro-3-(2-methylpropyl)-	5654-86-4	0.003	0.0003	0.01	TOE	—
phenanthro[3,4-c]furan-1,3-dione	5723-54-6	0.003	0.0003	0.01	TOE	—
benzaldehyde, 2,4,5-trimethyl-	5779-72-6	0.05 (total)	0.05 (total)	0.05 (total)	NSF action level External peer review date: 10/30/2013	Detections shall be summed with the following chemicals: CAS# 487-68-3
dimethylbenzaldehyde, 2,5	5779-94-2	0.003	0.0003	0.01	TOE	—
benzaldehyde, 3,5-dimethyl-	5799-95-3	0.003	0.0003	0.01	TOE	—
acetylhexamethyleneimine	5809-41-6	0.003	0.0003	0.01	TOE	—
tau-cadinol	5937-11-1	0.01	0.01	—	WQA action level JPRSC consensus date: 08/13/2014	—
dimethylbenzaldehyde, 3,4-	5973-71-7	0.003	0.0003	0.01	TOE	—
dioxadithionane, 1,3,6,7-	5980-67-6	0.003	0.0003	0.01	TOE	—
trioxepane, 1,3,5-	5981-06-6	0.003	0.0003	0.01	TOE	—
octadien-2-ol, 2,6-dimethyl-5,7-	5986-38-9	0.003	0.0003	0.01	TOE	—
methylenephenoethyl alcohol, beta-	6006-81-1	0.003	0.0003	0.01	TOE	—
cyclohexane, cis-1-methyl-4-isopropyl-	6069-98-3	0.003	0.0003	0.01	TOE	—

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formylcyclopentene, 1-	6140-65-4	0.003	0.0003	0.01	TOE	—
tris(2-chloropropyl) phosphate	6145-73-9	0.4 (total)	0.04 (total)	2 (total)	NSF action level External peer review date: 04/19/2017	Detections shall be summed with the following chemicals: CAS# 13674-84-5, CAS# 76649-15-5, CAS# 76649-15-5, CAS# 137888-35-8 and CAS# 137909-40-1
benzyl alcohol, 4-ethoxy	6214-44-4	0.003	0.0003	0.01	TOE	—
acridine, 9,10-dihydro-9,9- dimethyl-	6267-02-3	0.01	0.01	—	IAPMO action level JPRSC consensus date: 05/20/2014	—
phenol, p-phenylethyl-	6335-83-7	0.003	0.0003	0.01	TOE	—
indan-1-ol	6351-10-6	0.003	0.0003	0.01	TOE	—
4-chloro-2,5-dimethoxybenzamine	6358-64-1	0.003	0.0003	0.01	TOE	—
methyl 3-(3,5-di-tert-butyl-4- hydroxyphenyl) propionate	6386-38-5	0.02 (total)	0.002 (total)	0.1 (total)	NSF action level External peer review date: 04/20/2004	Detections shall be summed with the following chemicals: CAS# 20170-32-5
fluorescein, dipotassium salt	6417-85-2	0.003	0.0003	0.01	TOE	—
terephthalic acid, di(2-ethylhexyl) ester	6422-86-1	0.003	0.0003	0.01	TOE	—
di(2-ethylhexyl) terephthalate	6422-86-2	1	0.1	9	NSF action level External peer review date: 04/17/2008	—
carbonic acid, diisopropyl ester	6482-34-4	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
benzene, 1-(1,1-dimethylethyl)-3-ethyl-5-methyl-	6630-01-9	0.003	0.0003	0.01	TOE	—
6-amino-1,3-dimethyluracil	6642-31-5	0.003	0.0003	0.01	TOE	—
benzene, (1,1-dimethylethoxy)-	6669-13-2	0.003	0.0003	0.01	TOE	—
2,3-dihydro-4,5,7-trimethyl-1H-indene	6682-06-0	0.003	0.0003	0.01	TOE	—
hexamethyleneimine, 1-ethyl-	6763-91-3	0.003	0.0003	0.01	TOE	—
phenylene) bis-ethanone, 1,1'-(1,3-	6781-42-6	0.003	0.0003	0.01	TOE	—
2-chloro-1,3-dimethylbenzene	6781-98-2	0.003	0.0003	0.01	TOE	—
2,2,4-trimethyl-1,3-pentanediol diisobutyrate	6846-50-0	0.4 (total)	0.04 (total)	5 (total)	NSF action level External peer review date: 05/10/2011	Detections shall be summed with the following chemicals: CAS# 77-68-9, CAS# 144-19-4, CAS# 25265-77-4, CAS# 74367-33-2 and CAS# 74367-34-3
2,2'-dimethyl-4,4'-methylene bis(cyclohexylamine)	6864-37-5	0.003	0.0003	0.01	TOE	—
2-methylindoline	6872-06-6	0.003	0.0003	0.01	TOE	—
4-chlorophenyl phenyl ether	7005-72-3	0.003	0.0003	0.01	TOE	—
acrylic acid, 2-cyano-, ethyl ester	7085-85-0	0.003	0.0003	0.01	TOE	—
octanamide, N-(2-hydroxyethyl)-	7112-02-9	0.01	0.01	—	UL action level JPRSC consensus date: 10/06/2016	—

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Ethanol, 2-[2-(2- phenoxyethoxy)ethoxy]-	7204-16-2	0.003	0.0003	0.01	TOE	—
2-thiazolecarboxylic acid, 4-methyl- ethyl ester	7210-73-3	0.003	0.0003	0.01	TOE	—
butyl glycolate	7397-62-8	0.003	0.0003	0.01	TOE	—
3-nitro-1-phenyl-1-butanone	7404-78-6	0.003	0.0003	0.01	TOE	—
aluminum	7429-90-5	9	2	9	NSF action level External peer review date: 05/10/2011	—
lead	7439-92-1	II (action level 0.005 mg/L)	0.0005	—	40 CFR §141.80; 65 FR 1950	II = treatment technique ^{8,9}
lithium	7439-93-2	1	0.3	—	NSF action level Issue date: 09/27/99	—
manganese	7439-96-5	0.3	0.03	—	Derived from the oral RfD on the USEPA IRIS database, with a 3x modifying factor because of the large contribution from food sources and a default 20% relative source contribution for drinking water. Verification date: 05/12/1995	—
mercury (inorganic)	7439-97-6	0.002	0.0002	—	40 CFR §141.60, 40 CFR §141.62	—

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molybdenum	7439-98-7	0.04	0.004	—	USEPA Draft Health Advisory Issue date: 1993	—
neodymium	7440-00-8	0.003	0.0003	0.01	TOE	—
nickel	7440-02-0	0.1	0.02	—	WQA action level External peer review date: 10/20/2015	—
niobium	7440-03-1	0.003	0.0003	0.01	TOE	—
palladium	7440-05-3	0.003	0.0003	0.01	TOE	—
platinum	7440-06-4	0.01	0.001	—	WQA action level JPRSC consensus date: 02/12/2014	—
potassium-39	7440-09-7	500	50	—	WQA action level JPRSC consensus date: 02/12/2014	—
rhodium	7440-15-5	0.003	0.0003	0.01	TOE	—
ruthenium	7440-18-8	0.003	0.0003	0.01	TOE	—
silicon	7440-21-3	1	0.1	—	NSF action level Issue date:	—
silver	7440-22-4	0.1	0.01	—	USEPA Lifetime Drinking Water Health Advisory Issue date: 1992	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
strontium	7440-24-6	4	0.4	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 06/23/1992	—
tantalum	7440-25-7	0.003	0.0003	0.01	TOE	—
thallium	7440-28-0	0.002	0.0002	—	40 CFR §141.60, 40 CFR §141.62	—
tin, inorganic	7440-31-5	4	0.4	—	NSF action level JPRSC consensus date: 10/29/2013	—
titanium	7440-32-6	90 (total as Ti)	9 (total as Ti)	90 (total as Ti)	NSF action level External peer review date: 09/04/2003	Detections shall be summed with the following chemicals: CAS# 13463-67-7
tungsten	7440-33-7	0.01	0.01	0.01	NSF action level External peer review date: 04/06/2005	—
antimony	7440-36-0	0.006	0.0006	—	40 CFR §141.60, 40 CFR §141.62	—
arsenic	7440-38-2	0.01	0.001	—	40 CFR §141.60, 40 CFR §141.62	—

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barium	7440-39-3	2	0.2	—	40 CFR §141.60, 40 CFR §141.62	—
beryllium	7440-41-7	0.004	0.0004	—	40 CFR §141.60, 40 CFR §141.62	—
boron	7440-42-8	5	0.5	—	Health Canada Issue date: 09/1990	—
cadmium	7440-43-9	0.005	0.0005	—	40 CFR §141.60, 40 CFR §141.62	—
cerium	7440-45-1	0.003	0.0003	0.01	TOE	—
chromium (total)	7440-47-3	0.1	0.01	—	40 CFR §141.60, 40 CFR §141.62	—
cobalt	7440-48-4	0.007	0.0007	0.2	WQA action level JPRSC consensus date: 05/20/2014	—
copper	7440-50-8	TT (action level 1.3 mg/L)	0.13	—	40 CFR §141.80, 65 FR 1950	TT = treatment technique ⁸
gallium	7440-55-3	0.003	0.0003	0.01	TOE	—
hafnium	7440-58-6	0.003	0.0003	0.01	TOE	—
uranium	7440-61-1	0.03 (20 pCi/L)	0.003 (2 pCi/L)	—	40 CFR §141.66	—
vanadium	7440-62-2	0.03	0.003	—	NSF action level Issue date: 02/11/00	—
yttrium	7440-65-5	0.003	0.0003	0.01	TOE	—

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zinc	7440-66-6	3	0.3		NSF action level JPRSC consensus date: 01/17/2013	Under NSF/ANSI 60, direct additives containing zinc as an intentional component (e.g. zinc orthophosphate) may be evaluated at maximum use levels based on 2 mg/L as zinc
zirconium	7440-67-7	0.7	0.07	—	NSF action level Issue date:	—
bismuth	7440-69-9	0.4	0.04	—	NSF action level External peer review date: 05/11/2016	
Propanone, 1-, 2-hydroxy-2- methyl-1-phenyl-	7473-98-5	0.003	0.0003	0.01	TOE	—
isobornyl methacrylate	7534-94-3	0.03	0.003	0.4	NSF action level External peer review date: 10/21/2015	—
Iodine	7553-56-2	0.3	0.1	0.3	NSF action level External peer review date: 04/25/2002	Std. 60 D2, Std. 61 D2
aconitic acid, tributyl ester	7568-58-3	0.003	0.0003	0.01	TOE	—
chloromethyl p-tolyl sulfone	7569-26-8	0.003	0.0003	0.01	TOE	—
2,7-dimethylxanthone	7573-15-1	0.003	0.0003	0.01	TOE	—
2-ethylhexyl mercaptoacetate	7659-86-1	0.003	0.0003	0.01	TOE	—

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ammonia	7664-41-7	0.003	0.0003	0.01	TOE	—
squalene	7683-64-9	0.003	0.0003	0.01	TOE	—
bromine	7726-95-6	10 (total)	1 (total)	10 (total)	NSF action level External peer review date: 09/21/2011	Detections shall be summed with the following chemicals: CAS# 24959-67-9
selenium	7782-49-2	0.05	0.005	—	40 CFR §141.60, 40 CFR §141.62 Health Canada MAC Issue date: 03/14	—
chlorine (free as Cl ₂)	7782-50-5	4	0.4	—	40 CFR §141.65	Pass/fail values represent the maximum residual disinfectant level (MRDL).
Gerium chloride	7790-86-5	0.003	0.0003	0.01	NSF action level External peer review date: 05/02/2012	—
toxaphene	8001-35-2	0.003	0.0003	—	40 CFR §141.60, 40 CFR §141.61	—
alkyl dimethylbenzyl ammonium chloride	8001-54-5	3 (total)	0.3 (total)	5 (total)	NSF action level External peer review date: 10/21/2014	Detections shall be summed with the following chemicals: CAS# 139-08-2, CAS# 53516-76-0, CAS# 61789-71-7, CAS# 63449-41-2, CAS# 68391-01-5, CAS#

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						68424-85-1 and CAS# 85409-22-9
mineral oil (high viscosity, ≥ 11 centistokes)	8012-95-1	700	70	700	NSF action level External peer review date: 04/24/2004	Alternate CASA# 8042- 47-5 (white)
mineral oil (medium and low viscosity Class I, 8.5-11 centistokes)	8012-95-1	700	70	700	NSF action level External peer review date: 04/24/2004	Alternate CASA# 8042- 47-5 (white)
mineral oil (medium and low viscosity Class II, 7.0-8.5 centistokes)	8012-95-1	40	4	40	NSF action level External peer review date: 04/24/2004	Alternate CASA# 8042- 47-5 (white)
mineral oil (medium and low viscosity Class III, 3.0-7.0 centistokes)	8012-95-1	4	0.1	2	NSF action level External peer review date: 04/24/2004	Alternate CASA# 8042- 47-5 (white)
polyoxyethylene (6) lauryl ether	9002-92-0	—	0.05	—	NSF action level Issue date: 12/28/96	—
polyoxyethylene (9) octyl phenol	9002-93-1	—	0.05 (total)	—	NSF action level Issue date: 12/28/96	Detections shall be summed with the following chemicals: polyoxyethylene (40) octyl phenol
polyoxyethylene (40) octyl phenol	9002-93-1	—	0.05 (total)	—	NSF action level Issue date: 12/28/96	Detections shall be summed with the following chemicals: polyoxyethylene (9) octyl phenol

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
polyoxyethylene sorbitan monolaurate	9005-64-5	—	4 (total)	—	NSF action level Issue date: 01/97	Detections shall be summed with the following chemicals: CAS# 9005-65-6, CAS# 9005-66-7 and CAS# 9005-67-8
polyoxyethylene sorbitan monooleate	9005-65-6	—	4 (total)	—	NSF action level Issue date: 01/97	Detections shall be summed with the following chemicals: CAS# 9005-64-5, CAS# 9005-66-7 and CAS# 9005-67-8
polyoxyethylene sorbitan monopalmitate	9005-66-7	—	4 (total)	—	NSF action level Issue date: 01/97	Detections shall be summed with the following chemicals: CAS# 9005-64-5, CAS# 9005-65-6 and CAS# 9005-67-8
polyoxyethylene sorbitan monostearate	9005-67-8	—	4 (total)	—	NSF action level Issue date: 01/97	Detections shall be summed with the following chemicals: CAS# 9005-64-5, CAS# 9005-65-6 and CAS# 9005-66-7
polyoxyethylene sorbitan tristearate	9005-71-4	—	0.05	—	NSF action level Issue date: 12/96	—
polyoxyethylene (6) dodecyl phenol	9014-92-0	—	0.01	—	NSF action level Issue date: 12/28/96	—

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polyoxyethylene (9) dodecyl phenol	9014-92-0	—	0.05	—	NSF action level Issue date: 12/28/96	—
polyoxyethylene (40) dodecyl phenol	9014-92-0	—	0.05	—	NSF action level Issue date: 12/28/96	—
polyoxyethylene (4, 9, 15, 30 or 40) nonyl phenol	9016-45-9	—	0.05 (total)	—	NSF action level Issue date: 12/28/96	Detections of each specified polyoxyethylene length shall be summed and not exceed the specified criteria
polyoxyethylene (6 or 20) nonyl phenol	9016-45-9	—	0.01 (total)	—	NSF action level Issue date: 12/28/96	Detections of each specified polyoxyethylene length shall be summed and not exceed the specified criteria
hydrazine sulfate	10034-93-2	0.0001 (total)	0.00001 (total)	—	USEPA IRIS $10^{-5}/10^{-6}$ cancer risk levels. Verification date: 06/03/1987	Detections shall be summed with the following chemicals: CAS# 302-01-2
heptanol, 2-propyl-1-	10042-59-8	0.003	0.0003	0.01	TOE	—
chlorine dioxide (as ClO ₂)	10049-04-4	0.8	0.08	—	40 CFR §141.65	Pass/fail values represent the maximum residual disinfectant level (MRDL).

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Cis-1,3-dichloropropene	10061-01-5	0.004 (total)	0.0004 (total)	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Agency Consensus Date: 04/20/2000	Detections shall be summed with the following chemicals: CAS# 10061-02-6
trans-1,3-dichloropropene	10061-02-6	0.004 (total)	0.0004 (total)	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Agency Consensus Date: 04/20/2000	Detections shall be summed with the following chemicals: CAS# 10061-01-5
lanthanum chloride	10099-58-8	0.003	0.0003	0.01	TOE	—
2,2-dibromo-3-nitrilo-propionamide	10222-01-2	0.4	0.09	2	NSF action level External peer review date: 04/20/2004	—
n-hexyl-butanamide	10264-17-2	0.003	0.0003	0.01	TOE	—
N-butyl-N,4-dimethylbenzenesulfonamide	10285-91-3	0.01	0.01	—	WQA action level JPRSC consensus date: 08/13/2014	—
1-[2-(dimethylamino)phenyl]-ethanone	10336-55-7	0.003	0.0003	0.01	TOE	—
(1-methyl-3-butenyl)-benzene	10340-49-5	0.003	0.0003	0.01	TOE	—
DL-camphorquinone	10373-78-1	0.003	0.0003	0.01	TOE	—
cyclohexadiene-1-one, 2,6-di-tert-butyl-4-hydroxy-4-methyl-2,5-chloroethane, 1-butoxy-2-	10396-80-2	0.003	0.0003	0.01	TOE	—
	10503-96-5	0.003	0.0003	0.01	TOE	—
N-nitroso-N-methylethylamine	10595-95-6	0.00002	0.000002	—	USEPA IRIS 10 ⁻⁵ /10 ⁻⁶ cancer risk levels. Verification date: 02/11/1987	—
chloramines (total as Cl ₂)	10599-90-3	4	0.4	—	40 CFR §141.65	Pass/fail values represent the maximum

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
						residual disinfectant level (MRDL).
Methyltetrahydrophthalic anhydride	11070-44-3	0.05 (total)	0.05 (total)	0.05 (total)	NSF action level External peer review date: 10/17/2012	Detections shall be summed with the following chemicals: CAS# 85-42-7, CAS# 85-43-8, CAS# 25134-21-8 and CAS# 25550-51-0
gross alpha particle activity	12587-46-1	15 pCi/L	1.5 pCi/L	—	40 CFR §141.15	—
beta particle and photon activity	12587-47-2	4 mrem/y	0.4 mrem/y	—	40 CFR §141.16	—
cresol, 2-tert-butyl-m-	13037-79-1	0.003	0.0003	0.01	TOE	—
terbufos	13071-79-9	0.001	0.0001	—	Health Canada MAC Issue date: 01/87	—
1-octene, 6-methyl-	13151-10-5	0.003	0.0003	0.01	TOE	—
2,2'-Azobis(2-amidinopropane)	13217-66-8	0.003	0.0003	0.01	TOE	—
2,5-diethylpyrazine	13238-84-1	0.003	0.0003	0.01	TOE	—
titanium dioxide	13463-67-7	90 (total as Ti)	9 (total as Ti)	90 (total as Ti)	NSF action level External peer review date: 09/04/2003	Detections shall be summed with the following chemicals: CAS# 7440-32-6
docosane, 11-butyl-	13475-76-8	0.003	0.0003	0.01	TOE	—
octadecenoic acid, 10-, methyl ester	13481-95-3	0.003	0.0003	0.01	TOE	—
1-chloro-4-(1-chloroethenyl)- cyclohexene	13547-06-3	0.003	0.0003	0.01	TOE	—

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1-chloro-5-(1-chloroethenyl)- cyclohexene	13547-07-4	0.003	0.0003	0.01	TOE	—
Tris(1-chloro-2-propyl) phosphate	13674-84-5	0.4 (total)	0.04 (total)	2 (total)	NSF action level External peer review date: 04/19/2017	Detections shall be summed with the following chemicals: CAS# 76025-08-6, CAS# 76649-15-5, CAS# 6145-73-9, CAS# 137888-35-8 and CAS# 137909-40-4
1-propene, 3-(2-(2- methoxyethoxy)ethoxy)-	13752-97-1	0.003	0.0003	0.01	TOE	—
2-butanamine	13952-84-6	0.003	0.0003	0.01	TOE	—
radium-226	13982-63-3	5 pCi/L (total)	0.5 pCi/L (total)	—	40 CFR §141.15	Detections shall be summed with the following chemicals: CAS# 15262-20-4
pentanedioic acid, 2-methyl-, 1,5- dimethyl ester	14035-94-0	0.003	0.0003	0.01	TOE	—
N,N-dibutylbutanamide	14287-95-7	0.2	0.02	3	WQA action level External peer review date: 04/18/2017	—
3-methyl-2-biphenylamine	14294-33-8	0.003	0.0003	0.01	TOE	—
benzylbenzenecarbothiamide	14309-89-8	0.003	0.0003	0.01	TOE	—
D-Acetone glycerol	14347-78-5	0.003	0.0003	0.01	TOE	—
trans-cinnamaldehyde	14371-10-9	0.003	0.0003	0.01	TOE	—
decanamide, N,N-dimethyl-	14433-76-2	0.003	0.0003	0.01	TOE	—

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2-methoxythiazole	14542-13-3	0.003	0.0003	0.01	TOE	—
fenchyl alcohol, alpha-	14575-74-7	0.003	0.0003	0.01	TOE	—
nitrate (as N)	14797-55-8	10	1	—	40 CFR §141.60, 40 CFR §141.62	—
nitrate + nitrite (both as N)	14797-55-8	10	1	—	40 CFR §141.60, 40 CFR §141.62	—
nitrite (as N)	14797-65-0	1	0.1	—	40 CFR §141.60, 40 CFR §141.62	—
perchlorate	14797-73-0	0.015	0.005	—	USEPA Interim Health Advisory Issue Date: 2008	Compliance to Single Product Allowable Concentrations based on US State or other regulatory levels may be demonstrated by establishing the SPAC as 1/3 of the regulatory level.
(E)-4-octene	14850-23-8	0.003	0.0003	0.01	TOE	—
chlorate	14866-68-3	1	0.3	—	Health Canada MAC Issue date: 06/2008	—
chlorite	14998-27-7	1	0.1	—	40 CFR §141.64	—
furan, tetrahydro-2,2,5,5- tetramethyl-	15045-43-9	0.003	0.0003	0.01	TOE	—
4-hydroxy-3-methylbenzaldehyde	15174-69-3	0.003	0.0003	0.01	TOE	—
benzeneacetic acid, alpha-oxo-, methyl ester	15206-55-0	0.003	0.0003	0.01	TOE	—

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radium-228	15262-20-4	5 pCi/L (total)	0.5 pCi/L (total)	—	40 CFR §141.15	Detections shall be summed with the following chemicals: CAS# 13982-63-3
2-methyl-1,5-pentanediamine	15520-10-2	0.003	0.0003	0.01	TOE	—
bromate	15541-45-4	0.010	0.0033	—	40 CFR §141.64	—
cis-1,2-Cyclohexanedimethanol	15753-50-4	0.003	0.0003	0.01	TOE	—
dimethylbenzaldehyde, 2,4-	15764-16-6	0.003	0.0003	0.01	TOE	—
benzyltriphenylphosphonium	15853-35-7	0.003	0.0003	0.01	TOE	—
octane, 2,2-dimethyl-	15869-87-4	0.003	0.0003	0.01	TOE	—
alachlor	15972-60-8	0.002	0.0002	—	40 CFR §141.60, 40 CFR §141.61	—
thiocyanic acid, o-anilinophenyl ester	15973-81-6	0.003	0.0003	0.01	TOE	—
1,4-thioxane	15980-15-4	0.003	0.0003	0.01	TOE	—
1-bromo-3-chloro-5,5- dimethylhydantoin	16079-88-2	50	9	—	NSF action level External peer review date: 05/05/2010	—
norbornene, 5-ethylidene-2-	16219-75-3	0.003	0.0003	0.01	TOE	—
2,4-dimethylbenzyl alcohol	16308-92-2	0.003	0.0003	0.01	TOE	—
1-methyl-4-phosphorinanone	16327-48-3	0.003	0.0003	0.01	TOE	—
1,2,3,4,6,8-Alpha-hexahydro-1- isopropyl-4,7-dimethylnaphthalene	16728-99-7	0.003	0.0003	0.01	TOE	—
hexane, 2,3,4-trimethyl	16747-26-5	0.003	0.0003	0.01	TOE	—

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fluoride	16984-48-8	1.2	1.2 (direct additive) 0.12 (contaminant)	—	40 CFR §141.60, 40 CFR §141.62	Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States, August 17, 2001 / Morbidity & Mortality Weekly Report 50 (RR14); 1- 42.
1,6,11,16-Tetraoxacycloeicosane	17043-02-6	3 (total)	0.4 (total)	3 (total)	NSF action level External peer review date: 10/04/2002	Detections shall be summed with the following chemicals: CAS# 295-63-6, CAS# 56890-57-4, and CAS# 64001-05-4
chlorosulfamic acid	17172-27-9	0.01	0.01	0.01	NSF action level External peer review date: 05/02/2012	—
4-acetamidobenzaldehyde n-(4- methoxyphenyl)imine	17224-12-3	0.003	0.0003	0.01	TOE	—
diethyl 2-ethoxysuccinate	17596-10-0	2	0.2	2	NSF action level External peer review date: 10/29/2009	—
benzene, 2-ethoxyethenyl-	17655-74-2	0.003	0.0003	0.01	TOE	—
1-(1-indanylidene)indan	17666-94-3	0.003	0.0003	0.01	TOE	—
tert-octyl isothiocyanate	17701-76-7	0.003	0.0003	0.01	TOE	—
benzenemethanol, 2-chloro-	17849-38-6	0.003	0.0003	0.01	TOE	—
2(3H)-benzoxazolinine 3-methyl-	18034-93-0	0.003	0.0003	0.01	TOE	—

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phenol, o-(alpha, alpha-dimethylbenzyl)-	18168-40-6	0.003	0.0003	0.01	TOE	—
tetraethyleneglycol di-(2-ethylhexoate)	18268-70-7	0.003	0.0003	0.01	TOE	—
1-methoxy-4-(1-methyl-2-propenyl)-benzene	18272-83-8	0.003	0.0003	0.01	TOE	—
ethanedioic acid, bis(trimethylsilyl)ester	18294-04-7	0.003	0.0003	0.01	TOE	—
hexadecanoic acid, (2,2-dimethyl-1,3-dioxolan-4-yl) methyl ester	18418-21-8	0.003	0.0003	0.01	TOE	—
1-nonadecene	18435-45-5	0.003	0.0003	0.01	TOE	—
octadion-3-ol, 3,7-dimethyl-4,6-	18479-54-4	0.003	0.0003	0.01	TOE	—
spiro-[bicyclo[2.2.1]heptane-2,2'-[1,3]-dioxolane]-3-one, 1,7,7-trimethyl-	18501-56-9	0.003	0.0003	0.01	TOE	—
chromium VI	18540-29-9	0.02	0.002	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Agency consensus date: 04/28/1998	—
propenone, (dihydroxy methoxyphenyl) phenyl-	18956-15-5	0.003	0.0003	0.01	TOE	—
phosphonic acid, dioctadecyl ester	19047-85-9	0.003	0.0003	0.01	TOE	—
benzimidazolone, 4-methyl-	19190-68-2	0.003	0.0003	0.01	TOE	—

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1,2,3,7,8,9-hexachloro-dibenzo-p-dioxin	19408-74-3	0.0000003	0.00000003		USEPA Toxic Equivalency Factor: 0.1	—
methyl m-hydroxybenzoate	19438-10-9	0.003	0.0003	0.01	TOE	—
1,3-dioxolane, 2,2-dipropanoic acid, diethyl ester	19719-88-1	0.003	0.0003	0.01	TOE	—
benzoxazole, N-methyl-2-	19776-98-8	0.003	0.0003	0.01	TOE	—
3,3-dimethyl-2-pentanol	19781-24-9	0.003	0.0003	0.01	TOE	—
4,4'-methylenebis (2,6- diisopropylaniline)	19900-69-7	0.05	0.05	0.05	NSF action level External peer review date: 10/29/2009	—
tau-muurolel	19912-62-0	0.003	0.0003	0.01	TOE	—
phenylenediamine, N,N-bis(1,3- dimethylbutyl)-N'-phenyl-p-	19929-72-7	0.003	0.0003	0.01	TOE	—
glycidyl 2,2,3,3,4,4,5,5- octafluoropentyl ether	19932-27-5	0.0008	0.00008	0.0008	NSF action level External peer review date: 10/21/2015	—
3-oxazolidine ethanol	20073-50-1	0.003	0.0003	0.01	TOE	—
3-(3,5-di-tert-butyl-4- hydroxyphenyl) propionic acid	20170-32-5	0.02 (total)	0.002 (total)	0.1 (total)	NSF action level External peer review date: 04/20/2004	Detections shall be summed with the following chemicals: CAS# 6386-38-5
hexen-2-one, 3-, 3,4-dimethyl-	20685-46-5	0.003	0.0003	0.01	TOE	—
4-formylbenzophenone	20912-50-9	0.01	0.01	0.01	NSF action level External peer review date: 04/18/2013	—

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pentachlorobenzonitrile	20925-85-3	0.003	0.0003	0.01	TOE	—
3,5-pyridinedicarboxylic acid, 1,4-dihydro-4-methyl-2,6-diphenyl diethyl ester	20970-65-4	0.003	0.0003	0.01	TOE	—
metribuzin	21087-64-9	0.08	0.008	—	Health Canada MAC Issue date: 02/86	—
tonalid	21145-77-7	0.003	0.0003	0.01	TOE	—
2-propanol, 1-(2-propenyloxy)-	21460-36-6	0.003	0.0003	0.01	TOE	—
2-(thiocyanomethylthio)benzothiazole	21564-17-0	0.003	0.0003	0.01	TOE	—
hedycaryl	21657-90-9	0.003	0.0003	0.01	TOE	—
cyanazine	21725-46-2	0.01	0.001	—	Health Canada MAC Issue date: 02/86	—
3,3-dimethoxy-2-butanone	21983-72-2	0.003	0.0003	0.01	TOE	—
ethanone, 1-[4-(methoxymethyl)phenyl]-	22072-50-0	0.003	0.0003	0.01	TOE	—
methyl-1-bicyclo[4.2.0]octa-1,3,5-triene, 3-	22250-74-4	0.003	0.0003	0.01	TOE	—
tetradecanoic acid, eicosylester	22413-00-9	0.003	0.0003	0.01	TOE	—
octadien-3-ol, 2,6-dimethyl-1,7-	22460-59-9	0.003	0.0003	0.01	TOE	—
trans-2,4-Diphenyl-4-methyl-2-pentene	22768-22-5	0.003	0.0003	0.01	TOE	—
bendiocarb	22781-23-3	0.04	0.004	—	Health Canada MAC Issue date: 02/86	—

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methyl mercury	22967-92-6	0.0007	0.00007	—	Derived from the oral RfD on the USEPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 06/19/2001	—
oxamyl (vydate)	23135-22-0	0.2	0.02	—	40 CFR §141.60, 40 CFR §141.61	—
hydroxy (hydroxymethyl)ethyl hexadecanoate	23470-00-0	0.003	0.0003	0.01	TOE	—
pyridine, 1,2,3,6-tetrahydro-1,2,4,6-tetramethyl-, cis-	23513-16-8	0.003	0.0003	0.01	TOE	—
alpha-amorphene	23515-88-0	0.003	0.0003	0.01	TOE	—
cyanovaleric acid	23886-52-4	0.003	0.0003	0.01	TOE	—
1,1-(3,3-dimethyl-1-butenylidene)bisbenzene	23586-64-3	0.003	0.0003	0.01	TOE	—
ethyl 4-ethoxybenzoate	23676-09-7	0.05	0.05	—	NSF action level Issue date: 11/17/99	—
5-methyl-6,7-dihydro-(5H)-cyclopentapyrazine	23747-48-0	0.003	0.0003	0.01	TOE	—
pentaohexadecanol	23778-52-1	0.003	0.0003	0.01	TOE	—
ethanediamide, N-(2-ethoxyphenyl)-N'-(2-ethylphenyl)-	23949-66-8	0.003	0.0003	0.01	TOE	—
cyclopentanol, 2-methyl-	24070-77-7	0.003	0.0003	0.01	TOE	—
pyrido(3,2-d)pyrimidin-4(3d)-one	24410-22-8	0.003	0.0003	0.01	TOE	—
aniline, 2-ethyl-6-methyl-	24549-06-2	0.003	0.0003	0.01	TOE	—
4-methyl-1-indanone	24644-78-8	0.003	0.0003	0.01	TOE	—

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acetophenone, 2,2-dimethoxy-2-phenyl-	24650-42-8	0.003	0.0003	0.01	TOE	—
cis-3,3,5-Trimethylcyclohexyl acetate	24691-16-5	0.003	0.0003	0.01	TOE	—
bromide	24959-67-9	10 (total)	1 (total)	10 (total)	NSF action level External peer review date: 09/21/2011	Detections shall be summed with the following chemicals: CAS# 7726-95-6
styrene, methyl- (mixed isomers)	25013-15-4	0.003	0.0003	0.01	TOE	—
methyl nadic anhydride	25134-21-8	0.05 (total)	0.05 (total)	0.05 (total)	NSF action level External peer review date: 10/17/2012	Detections shall be summed with the following chemicals: CAS# 85-42-7, CAS# 85-43-8, CAS# 11070- 44-3 and CAS# 25550- 51-0
decadien-1-al, trans,trans-2,4-	25152-84-5	0.003	0.0003	0.01	TOE	—
nonyl phenol (mixed isomers)	25154-52-3	0.07 (total)	0.007 (total)	0.3 (total)	NSF action level External peer review date: 05/05/2015	The listed criteria are applicable to all isomers of nonyl phenol. Due to the significant number of CAS#s associated with potential isomers, only

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						CAS# 25154-52-3 and CAS# 84852-15-3 are included in this table. All isomer detections shall be summed and compared to the listed criteria
2,2,4-trimethyl-1,3-pentanediol monoisobutyrate	25265-77-4	0.4 (total)	0.04 (total)	5 (total)	NSF action level External peer review date: 05/10/2011	Detections shall be summed with the following chemicals: CAS# 77-68-9, CAS# 144-19-4, CAS# 6846-50-0, CAS# 74367-33-2 and CAS# 74367-34-3
methylhexahydrophthalic anhydride	25550-51-0	0.05 (total)	0.05 (total)	0.05 (total)	NSF action level External peer review date: 10/17/2012	Detections shall be summed with the following chemicals: CAS# 85-42-7, CAS# 85-43-8, CAS# 11070-44-3 and CAS# 25134-21-8
benzofuran, methyl-	25586-38-3	0.003	0.0003	0.01	TOE	—

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poly(dimethyl diallyl ammonium chloride) (polyDADMAC)	26062-79-3	5	2	5	NSF action level External peer review date: 10/06/2010	—
tris(3-chloropropyl) phosphate	26248-87-3	0.003	0.0003	0.01	TOE	—
ethan-1-one, 1-(methylphenyl)-	26444-19-9	0.003	0.0003	0.01	TOE	—
toluene diisocyanate	26471-62-5	0.008	0.0008	—	NSF action level Issue date: 06/99	Pass/fail criteria only for specified mixture containing 80% 2,4- toluene diisocyanate (CAS# 584-84-9) and 20% 2,6-toluene diisocyanate (CAS# 91- 08-7)
trichlorotrifluoroethane	26523-64-8	0.003	0.0003	0.01	TOE	—
2H,8H-benzo[1,2-b:5,4-b']dipyran- 10-propanol, 5-methoxy-2,2,8,8- tetramethyl-	26535-37-5	0.003	0.0003	0.01	TOE	—
dioctyldiphenylamine	26603-23-6	0.003	0.0003	0.01	TOE	—
isooctanol	26952-21-6	0.003	0.0003	0.01	TOE	—
benzenemethanol, 3,5-dimethyl	27129-87-9	0.003	0.0003	0.01	TOE	—
naphthalene, ethyl	27138-19-8	0.003	0.0003	0.01	TOE	—
dipropylene glycol dibenzoate	27138-31-4	0.003	0.0003	0.01	TOE	—
phenol, (1,1,3,3-tetramethylbutyl)	27193-28-8	0.003	0.0003	0.01	TOE	—
propenoic acid, 2-methyl-2-, polymer with octadecyl-2-methyl-2- propenoate	27401-06-5	0.003	0.0003	0.01	TOE	—
Cyclohexenecarbonitrile	27456-25-3	0.003	0.0003	0.01	TOE	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
diethylene glycol monomethacrylate homopolymer	27598-43-2	0.003	0.0003	0.01	TOE	—
ammonium chloride, octadecyldimethyl(3- (trimethoxysilyl)propyl)	27668-52-6	0.003	0.0003	0.01	TOE	—
(5 α ,9 α ,10 β)-kauran-16-ol	27898-42-6	0.003	0.0003	0.01	TOE	—
1-ethyl-3-(phenylmethyl)-benzene	28122-24-9	0.003	0.0003	0.01	TOE	—
2,6-dimethyl-1-(phenylmethyl)- benzene	28122-29-4	0.003	0.0003	0.01	TOE	—
benzothiazole, ethylamino-	28291-69-2	0.003	0.0003	0.01	TOE	—
benzothiazole, 2- (cyclohexylamino)-	28291-75-0	0.003	0.0003	0.01	TOE	—
diisononyl phthalate	28553-12-0	0.8	0.08	—	IAPMO action level JPRSC consensus date: 10/29/2013	—
cyclohexanone, 2-(1- hydroxycyclohexyl)-	28746-99-8	0.003	0.0003	0.01	TOE	—
naphthalene, dimethyl-	28804-88-8	0.003	0.0003	0.01	TOE	—
formylmethylenetriphenylphosphor ane	28900-91-6	0.003	0.0003	0.01	TOE	—
methylindene	29036-25-7	0.003	0.0003	0.01	TOE	—
2-methyl-5-propylpyrazine	29461-03-8	0.003	0.0003	0.01	TOE	—
cyclooctadiene, dichloro-	29480-42-0	0.003	0.0003	0.01	TOE	—
pyridine, trimethyl-	29611-84-5	0.003	0.0003	0.01	TOE	—
cadina-1,4-diene	29837-12-5	0.003	0.0003	0.01	TOE	—

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di-propylene glycol n-butyl ether	29911-28-2	2	0.2	30	NSF action level External peer review date: 10/03/2002	—
dioxolane-1,3,4-ethyl	29921-38-8	0.003	0.0003	0.01	TOE	—
cyclopentane, trimethyl	30498-64-7	0.003	0.0003	0.01	TOE	—
phenylcyclohexene	31017-40-0	0.003	0.0003	0.01	TOE	—
dodecane, 2,6,11-trimethyl-	31295-56-4	0.003	0.0003	0.01	TOE	—
cyclohexylurea, dimethyl-	31468-12-9	0.003	0.0003	0.01	TOE	—
binaphthyl sulfone	32390-26-4	0.003	0.0003	0.01	TOE	—
bromophenol	32762-51-9	0.003	0.0003	0.01	TOE	—
octadecanoic acid, (2,2-dimethyl- 1,3-dioxolan-4-yl) methyl ester	32852-69-0	0.003	0.0003	0.01	TOE	—
ethane, 1-(3-hydroxyphenyl)-2- phenyl-	33675-75-1	0.003	0.0003	0.01	TOE	—
benzenediamine, 5-chloro-1,3-	33786-89-9	0.003	0.0003	0.01	TOE	—
4-butoxy-1-butene	34061-76-2	0.003	0.0003	0.01	TOE	—
dihydrofuran, 4-methyl-2,3-	34314-83-5	0.003	0.0003	0.01	TOE	—
valeronitrile, 2,4-dimethyl-	34372-09-3	0.003	0.0003	0.01	TOE	—
5,6,7,8-tetrahydrochinoxaline	34413-35-9	0.003	0.0003	0.01	TOE	—
3,5-dichlorophenyl isocyanate	34893-92-0	0.003	0.0003	0.01	TOE	—
methylothioacetoneitrile	35120-10-6	0.003	0.0003	0.01	TOE	—
bicyclo[4.2.0]octa-1,3,5-trien-7-ol	35447-99-5	0.003	0.0003	0.01	TOE	—
1,2,3,4,6,7,8-hepta-chlorodibenzo- p-dioxin	35822-46-9	0.000003	0.0000003	—	USEPA Toxic Equivalency Factor: 0.01	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
benzoic acid, mixed isomers (2,4- or 2,5-dichloro-)	35915-19-6	0.003	0.0003	0.01	TOE	—
aminopiperidine, 4-, 2,2,6,6- tetramethyl-	36768-62-4	0.003	0.0003	0.01	TOE	—
phenol, 2,4-dibromo-, acetate	36914-79-1	0.003	0.0003	0.01	TOE	—
bioban P-1487	37304-88-4	0.4	0.04	2	NSF action level External peer review date: 10/30/2013	—
bisphenol A bis(polypropylene glycol) ether	37353-75-6	0.003	0.0003	0.01	TOE	—
oxamide, di-tert-butyl-	37486-48-9	0.003	0.0003	0.01	TOE	—
octylphenoxy pentaethoxyethanol, tert-	37809-81-7	0.003	0.0003	0.01	TOE	—
4-ethyl-1-oxide-quinazoline	37920-75-5	0.003	0.0003	0.01	TOE	—
butanetricarboxylic acid, 2- phosphono-, 1,2,4-	37971-36-1	0.003	0.0003	0.01	TOE	—
octaphenyl pentaethylene glycol ether, tert-	38621-31-7	0.003	0.0003	0.01	TOE	—
1,2,3,4,6,7,8,9- octachlorodibenzofuran	39001-02-0	0.0003	0.00003	—	USEPA Toxic Equivalency Factor: 0.0004	—
1,2,3,4,7,8-hexachloro-dibenzo-p- dioxin	39227-28-6	0.0000003	0.00000003	—	USEPA Toxic Equivalency Factor: 0.1	—
lanthanum hydroxide	39377-54-3	0.003	0.0003	0.01	TOE	—
1,3-dichloro-2-isocyanatobenzene	39920-37-1	0.003	0.0003	0.01	TOE	—

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methyl, 4-acetyl-3-methoxybenzoate	39971-36-3	0.003	0.0003	0.01	TOE	—
1,2,3,7,8-penta-chlorodibenzo-p-dioxin	40321-76-4	0.00000003	0.000000003	—	USEPA Toxic Equivalency Factor: 1	—
n-ethyl-3-methoxyaniline	41115-30-4	0.003	0.0003	0.01	TOE	—
1,2-dichloro-3-isocyanatobenzene	41195-90-8	0.003	0.0003	0.01	TOE	—
phenoxypropanol, 1- (or 2-)	41593-38-8	0.003	0.0003	0.01	TOE	—
propane, 1,1-dimethoxy-2-methyl	41632-89-7	0.003	0.0003	0.01	TOE	—
dihydrodicyclopentadienol	42554-02-9	0.003	0.0003	0.01	TOE	—
tripropylene glycol diacrylate	42978-66-5	0.08	0.008	4	NSF action level External peer review date: 05/06/2015	—
2-propene-1-amine, n,n-(1-methylethyl)-	44898-60-4	0.003	0.0003	0.01	TOE	—
propanaminium chloride, N,N,N-trimethyl-3-((1-oxo-2-propenyl)amino)-1-	45021-77-0	0.003	0.0003	0.01	TOE	—
3,3,4-trimethyldecane	49622-18-6	0.003	0.0003	0.01	TOE	—
ethanol, 2-[2-[2-[2[(1,1,3,3-tetramethylbutyl)phenoxy]ethoxy]ethoxy]-	49796-75-0	0.003	0.0003	0.01	TOE	—
tetrahydrofuran, diphenyl-	50637-09-7	0.003	0.0003	0.01	TOE	—
trimethylcyclohexanone	50874-76-5	0.003	0.0003	0.01	TOE	—
2,3,7,8-tetrachlorodibenzofuran	51207-31-9	0.0000003	0.00000003	—	USEPA Toxic Equivalency Factor: 0.1	—

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metolachlor	51218-45-2	0.05	0.005	—	Health Canada MAC Issue date: 02/86	—
diclofop-methyl	51338-27-3	0.009	0.0009	—	Health Canada MAC Issue date: 03/87	—
1-tert-butoxy-2-ethoxyethane	51422-54-9	0.003	0.0003	0.01	TOE	—
phenol, (phenylethyl)-	51937-33-8	0.003	0.0003	0.01	TOE	—
octadecenoic acid, 6-, methyl ester	52355-31-4	0.003	0.0003	0.01	TOE	—
decanedioic acid, bis(2,2,6,6-tetramethyl-4-piperidiny)-	52829-07-9	0.003	0.0003	0.01	TOE	—
hexen-2-one, 4-, 3,4-dimethyl-	53252-21-4	0.003	0.0003	0.01	TOE	—
di(2-propylheptyl)-phthalate	53306-54-0	0.4	0.04	2	NSF action level External peer review date: 10/10/2006	—
alkyl (C12-C18) dimethylbenzyl ammonium chloride	53516-76-0	3 (total)	0.3 (total)	5 (total)	NSF action level External peer review date: 10/21/2014	Detections shall be summed with the following chemicals: CAS# 139-08-2, CAS# 8001-54-5, CAS# 61789-71-7, CAS# 63449-41-2, CAS# 68391-01-5, CAS# 68424-85-1 and CAS# 85409-22-9
n-(2,2-dimethylpropyl)-n-methyl-benzenamine	53927-61-0	0.003	0.0003	0.01	TOE	—
2,5-dimethylbenzyl alcohol	53957-33-8	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
2H-pyranmethanol, tetrahydro-2,5-dimethyl	54004-46-5	0.003	0.0003	0.01	TOE	—
benzene, ethyl-1,2,4-trimethyl-	54120-62-6	0.003	0.0003	0.01	TOE	—
1-(1-methoxyethoxy)-3-hexene	54340-97-5	0.05	0.005	—	WQA action level JPRSC consensus date: 02/10/2016	—
1-(2-methyl-1-pyrrolo(2,1,5-Cd)-indolizinylo)ethanone	54398-68-4	0.003	0.0003	0.01	TOE	—
4,6,8-trimethyl-1-nonene	54410-98-9	0.003	0.0003	0.01	TOE	—
ethanone, 1-(4-(1-hydroxy-1-methylethyl)phenyl)-	54549-72-3	0.003	0.0003	0.01	TOE	—
ethanol, 2-(4-(1-methylethyl)phenoxy)-	54576-35-1	0.003	0.0003	0.01	TOE	—
methylcarbamate, methyl N-butyl-N-	54644-60-9	0.003	0.0003	0.01	TOE	—
2-furanmethanol, tetrahydro-5-methyl, trans-	54774-28-6	0.003	0.0003	0.01	TOE	—
2H-pyrano[2,3f]isoquinolin-2-one	54852-71-0	0.003	0.0003	0.01	TOE	—
1,1'-(1,2-dimethyl-1,2-ethanediyl)bis-cyclohexane	54889-87-1	0.003	0.0003	0.01	TOE	—
benzeneacetic acid, .alpha.-(acetyloxy)-.alpha.-methyl-ester	55012-78-7	0.003	0.0003	0.01	TOE	—
3,5-dicyclohexyl-4-hydroxy-benzoic acid methyl ester	55125-23-0	0.003	0.0003	0.01	TOE	—
1,5-pentanediol, monobenzoate	55162-82-8	0.003	0.0003	0.01	TOE	—
pyrrolidinone, 1-decyl-2-	55257-88-0	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
1,4 dimethyl-2-octadecyl- cyclohexane	55282-02-5	0.003	0.0003	0.01	TOE	—
1-hexadecyl-2,3-dihydro-1H-indene	55334-29-7	0.003	0.0003	0.01	TOE	—
bicyclo[4.2.0]octa-1,3,5-triene, 7- methyl-	55337-80-9	0.003	0.0003	0.01	TOE	—
1H-Indene-4-methanol, 2,3- dihydro-1,1-dimethyl-	55591-09-8	0.003	0.0003	0.01	TOE	—
1,2,3,4,7,8,9-hepta- chlorodibenzofuran	55673-89-7	0.000003	0.0000003	—	USEPA Toxic Equivalency Factor: 0.01	—
6,7-diethyl-1,2,3,4-tetrahydro- 1,2,3,4-tetramethyl-	55741-10-1	0.003	0.0003	0.01	TOE	—
n-(3-butenyl)dimethylamine	55831-89-5	0.003	0.0003	0.01	TOE	—
2-propanol, 1-[1-methyl-2-(2- propenyloxy)ethoxy]-	55956-25-7	0.003	0.0003	0.01	TOE	—
3-ethyl-4-phenyl-2(3H)- thiazolethione	55976-02-8	0.003	0.0003	0.01	TOE	—
1,3-dimethoxy-5,7- dihydrobenz[e,e]oxepine	56008-53-8	0.003	0.0003	0.01	TOE	—
benzene, 1,1'-[(1- propenylthio)methylene]bis-, (E)-	56195-65-4	0.003	0.0003	0.01	TOE	—
benzene, 1,1'-[(1- propenylthio)methylene]bis-, (Z)-	56195-66-5	0.003	0.0003	0.01	TOE	—
2-(2-(2-mercaptoethoxy)ethoxy)- ethanol	56282-36-1	0.003	0.0003	0.01	TOE	—
diazacyclotetradecane-2,9-dione, 1,8-	56403-09-9	0.003	0.0003	0.01	TOE	—
isoindole, 2H-, 4,7-dione	56460-94-7	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
(2-phenyl-1,3-dioxolan-4-yl) methyl ester octadecanoic acid	56599-43-0	0.003	0.0003	0.01	TOE	—
4,4,5-trimethyl-2-pentadecyl-1,3-dioxolane	56599-79-2	0.003	0.0003	0.01	TOE	—
1,6,11,16,21-Pentaoxacyclopentacosane	56890-57-4	3 (total)	0.4 (total)	3 (total)	NSF action level External peer review date: 10/04/2002	Detections shall be summed with the following chemicals: CAS# 295-63-6, CAS# 17043-02-6, and CAS# 64001-05-4
2,3,4,7,8-penta-chlorodibenzofuran	57117-31-4	0.00000006	0.000000006	—	USEPA Toxic Equivalency Factor: 0.05	—
1,2,3,7,8-penta-chlorodibenzofuran	57117-41-6	0.00000006	0.000000006	—	USEPA Toxic Equivalency Factor: 0.05	—
1,2,3,6,7,8-hexachloro-dibenzofuran	57117-44-9	0.00000003	0.000000003	—	USEPA Toxic Equivalency Factor: 0.1	—
6-oxabicyclo[3.2.1]octan-7-one, 1,5-dimethyl-8-[2-[3-(1-methylethyl)phenyl]ethyl], (1R-syn)-	57119-17-2	0.003	0.0003	0.01	TOE	—
n-ethyl-n,4-dimethylbenzenesulfonamide	57186-68-2	0.003	0.0003	0.01	TOE	—
octadecenoic acid, 7-, methyl ester	57396-98-2	0.003	0.0003	—	TOE	—
1,2,3,6,7,8-hexachloro-dibenzo-p-dioxin	57653-85-7	0.00000003	0.000000003	—	USEPA Toxic Equivalency Factor: 0.1	—
cresol, alpha-ethoxy-p-	57726-26-8	0.003	0.0003	0.01	TOE	—

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2,2-dimethyl-bis(1-methylpropyl)ester butanedioic acid	57923-28-5	0.003	0.0003	0.01	TOE	—
(ethoxymethoxy)-cyclododecane	58567-11-6	0.05 (total)	0.05 (total)	4 (total)	NSF action level External peer review date: 04/22/2014	Detections shall be summed with the following chemicals: CAS# 830-13-7 and CAS# 1724-39-6
ethanol, 2-[2-[(1,1,3,3-tetramethylbutyl)phenoxy]ethoxy]ethoxy]-	58705-51-4	0.003	0.0003	0.01	TOE	—
1-methoxy-2- <i>t</i> -butyl-6-methylbenzene	60772-80-7	0.003	0.0003	0.01	TOE	—
2,3,4,6,7,8-hexachloro-dibenzofuran	60851-34-5	0.0000003	0.00000003	—	USEPA Toxic Equivalency Factor: 0.1	—
3-butene-1-amine, <i>n</i> -ethyl- <i>n</i> -methyl-	61308-10-9	0.003	0.0003	0.01	TOE	—
castor oil, hydrogenated, ethoxylated	61788-85-0	0.003	0.0003	0.01	TOE	—
alkyl dimethylbenzyl ammonium chloride	61789-71-7	3 (total)	0.3 (total)	5 (total)	NSF action level External peer review date: 10/21/2014	Detections shall be summed with the following chemicals: CAS# 139-08-2, CAS# 8001-54-5, CAS# 53516-76-0, CAS# 63449-41-2, CAS# 68391-01-5, CAS# 68424-85-1 and CAS# 85409-22-9

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
quaternary ammonium, ditallow dimethyl chloride	61789-80-8	0.003	0.0003	0.01	TOE	—
soya alkylamines, ethoxylated	61791-24-0	0.003	0.0003	0.01	TOE	—
a-methyl-a-(1-methyl-2-propenyl)-benzenemethanol	61967-11-1	0.003	0.0003	0.01	TOE	—
octane, 2,2,6-trimethyl	62016-28-8	0.003	0.0003	0.01	TOE	—
2,6,7-trimethyl decane	62108-25-2	0.003	0.0003	0.01	TOE	—
2,4,6-trimethyl decane	62108-27-4	0.003	0.0003	0.01	TOE	—
phenyl (1-phenyl-2-propyl) thioether	62252-49-7	0.003	0.0003	0.01	TOE	—
quinoline, 3,4-dihydro-2,4,4-trimethyl-	63177-93-5	0.003	0.0003	0.01	TOE	—
benzothiazole, 2-methoxy-	63321-86-8	0.003	0.0003	0.01	TOE	—
alkyl (C8-C18) dimethylbenzyl ammonium chloride	63449-41-2	3 (total)	0.3 (total)	5 (total)	NSF action level External peer review date: 10/21/2014	Detections shall be summed with the following chemicals: CAS# 139-08-2, CAS# 8001-54-5, CAS# 53516-76-0, CAS# 61789-71-7, CAS# 68391-01-5, CAS# 68424-85-1 and CAS# 85409-22-9
pyridine, 1,2,3,4-tetrahydro-1,2,2,6-tetramethyl-	63867-76-5	0.003	0.0003	0.01	TOE	—

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1,6,11,16,21,26- Hexaoxacyclotriacontane	64001-05-4	3 (total)	0.4 (total)	3 (total)	NSF action level External peer review date: 10/04/2002	Detections shall be summed with the following chemicals: CAS# 295-63-6, CAS# 17043-02-6, and CAS# 56890-57-4
3-methyl-3-(2-methyl-3- benzofuranyl)phthalide	64042-54-2	0.003	0.0003	0.01	TOE	—
diphenylamine, 4- (diisopropylamino)	64092-29-1	0.003	0.0003	0.01	TOE	—
3-methyl-pyrrolo (1,2-A) pyrazine	64608-61-3	0.003	0.0003	0.01	TOE	—
high flash aromatic naphtha	64742-95-6	0.2 (total)	0.02 (total)	4 (total)	NSF action level External peer review date: 10/27/2016	Class-Based Evaluation Level in which all detected C8- C10 aromatic hydrocarbons should be summed.
acetamidoacetaldehyde	64790-08-5	0.003	0.0003	0.01	TOE	—
benzalazine	64896-26-0	0.003	0.0003	0.01	TOE	—
benzene, (2-methoxy-1- methylethyl)-	65738-46-7	0.003	0.0003	0.01	TOE	—
benzoic acid, 2,4,6-tris(1,1- dimethylethyl)-	66415-27-8	0.003	0.0003	0.01	TOE	—
benzaldehyde, tert-butylmethyl-	66949-23-3	0.003	0.0003	0.01	TOE	—
1,2,3,4,6,7,8-hepta- chlorodibenzofuran	67562-39-4	0.000003	0.0000003	—	USEPA Toxic Equivalency Factor: 0.01	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
N-alkyl (C12-C18) dimethylbenzyl ammonium chloride	68391-01-5	3 (total)	0.3 (total)	5 (total)	NSF action level External peer review date: 10/21/2014	Detections shall be summed with the following chemicals: CAS# 139-08-2, CAS# 8001-54-5, CAS# 53516-76-0, CAS# 61789-71-7, CAS# 63449-41-2, CAS# 68424-85-1 and CAS# 85409-22-9
alkyl (C12-C16) dimethylbenzyl ammonium chloride	68424-85-1	3 (total)	0.3 (total)	5 (total)	NSF action level External peer review date: 10/21/2014	Detections shall be summed with the following chemicals: CAS# 139-08-2, CAS# 8001-54-5, CAS# 53516-76-0, CAS# 61789-71-7, CAS# 63449-41-2, CAS# 68391-01-5 and CAS# 85409-22-9
diethyltoluenediamine, mixed isomers	68479-98-1	0.0006 (total)	0.00006 (total)	0.0006 (total)	NSF action level External peer review date: 10/06/2010	Detections shall be summed with the following chemicals: CAS# 75389-89-8
alkenes, C6-10, hydroformylation products, high boiling	68526-82-9	0.003	0.0003	0.01	TOE	—
alcohols, C12-C15, ethoxylated propoxylated	68551-13-3	0.003	0.0003	0.01	TOE	—

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
dimethyl ditallow ammonium chloride	68783-78-8	0.003	0.0003	0.01	TOE	—
1,3,7,7-tetramethyl-2,11-dioxo-3,5-bicyclo(4.4.1)undecadien-10-one	70412-52-1	0.003	0.0003	0.01	TOE	—
1,2,3,4,7,8-hexachloro-dibenzofuran	70648-26-9	0.0000003	0.00000003	—	USEPA Toxic Equivalency Factor: 0.1	—
potassium peroxymonosulfate sulfate	70693-62-8	5	5	20	NSF action level External peer review date: 05/06/2015	—
benzenedicarboxylic acid, 1,2-, bis(2-propylpentyl) ester	70910-37-1	0.003	0.0003	0.01	TOE	—
3-isopropoxy-1,1,1,7,7,7-hexamethyl-3,5,5-tris(trimethylsiloxy)tetrasiloxane	71579-69-6	0.003	0.0003	0.01	TOE	—
hexen-2-one, 3-methyl-4-	72189-24-3	0.003	0.0003	0.01	TOE	—
1,2,3,7,8,9-hexachloro-dibenzofuran	72918-21-9	0.0000003	0.00000003	—	USEPA Toxic Equivalency Factor: 0.1	—
poly(oxy-1,2-ethanediyl), a-isotridecyl w hydroxy-, phosphate	73038-25-2	0.003	0.0003	0.01	TOE	—
4,4-dimethyl-13.alpha.-androst-5-ene	73495-94-0	0.003	0.0003	0.01	TOE	—
oxononan-1-ol, 4-	74327-29-0	0.003	0.0003	0.01	TOE	—
propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy-1-methylethyl)propyl ester	74367-33-2	0.4 (total)	0.04 (total)	5 (total)	NSF action level External peer review date: 05/10/2011	Detections shall be summed with the following chemicals: CAS# 77-68-9, CAS# 144-19-4, CAS# 6846- 50-0, CAS# 25265-77-

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Table D.1 – NSF / ANSI 61 drinking water criteria

Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
						4 and CAS# 74367-34-3
propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester	74367-34-3	0.4 (total)	0.04 (total)	5 (total)	NSF action level External peer review date: 05/10/2011	Detections shall be summed with the following chemicals: CAS# 77-68-9, CAS# 144-19-4, CAS# 6846-50-0, CAS# 25265-77-4 and CAS# 74367-33-2
propanoic acid, 2-methyl-, 1-(1,1-dimethylethyl)-2-methyl-1,3-propanediyl ester	74381-40-1	0.003	0.0003	0.01	TOE	—
3,3-dimethyl-1-octene	74511-51-6	0.003	0.0003	0.01	TOE	—
nonylcyclopropane	74663-85-7	0.003	0.0003	0.01	TOE	—
diethyltoluenediamine, mixed isomers	75389-89-8	0.0006 (total)	0.00006 (total)	0.0006 (total)	NSF action level External peer review date: 10/06/2010	Detections shall be summed with the following chemicals: CAS# 68479-98-1
benzyltriphenylphosphonium, salt with 4,4'-(2,2,2-trifluoro-1-(trifluoromethyl)ethylidene)bis(phenol) (1:1)	75768-65-9	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
bis(1-chloropropan-2-yl) 2-chloropropyl phosphate	76025-08-6	0.4 (total)	0.04 (total)	2 (total)	NSF action level External peer review date: 04/19/2017	Detections shall be summed with the following chemicals: CAS# 13674-84-5, CAS# 76649-15-5, CAS# 6145-73-9, CAS# 137888-35-8 and CAS# 137909-40-1
1-phenyl-4,5-dimorpholine-4,5-dihydroimidazole	76458-32-7	0.003	0.0003	0.01	TOE	—
1-chloropropan-2-yl bis(2-chloropropyl) phosphate	76649-15-5	0.4 (total)	0.04 (total)	2 (total)	NSF action level External peer review date: 04/19/2017	Detections shall be summed with the following chemicals: CAS# 13674-84-5, CAS# 76025-08-6, CAS# 6145-73-9, CAS# 137888-35-8 and CAS# 137909-40-1
decane, 1-methyl-3,5,7-triaza-1-azoniatricyclo(3.3.1.1(3,7))	76902-90-4	0.003	0.0003	0.01	TOE	—
3,5-di-tert-butylchlorobenzene	80438-67-1	0.003	0.0003	0.01	TOE	—
1,2-diphenyl 1,2-hexanediol	80475-19-0	0.003	0.0003	0.01	TOE	—
carbamothioic acid dimethyl OO'-11'-biphenyl-22'diyl ester	81056-07-7	0.003	0.0003	0.01	TOE	—
oxaspirodecadienedione, di-(t-butyl)	82304-66-3	0.003	0.0003	0.01	TOE	—
2-chloro-4,6-dimethoxybenzamine	82485-84-5	0.003	0.0003	0.01	TOE	—
propanedial, 2-(phenylmethylene)-	82700-43-4	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
nonyl phenol (mixed isomers)	84852-15-3	0.07 (total)	0.007 (total)	0.3 (total)	NSF action level External peer review date: 05/05/2015	The listed criteria are applicable to all isomers of nonyl phenol. Due to the significant number of CAS#s associated with potential isomers, only CAS# 25154-52-3 and CAS# 84852-15-3 are included in this table. All isomer detections shall be summed and compared to the listed criteria
n-benzoyl-3-methylpiperidine	85237-73-6	0.003	0.0003	0.01	TOE	—
alkyl (C12-C14) dimethylbenzyl ammonium chloride	85409-22-9	3 (total)	0.3 (total)	5 (total)	NSF action level External peer review date: 10/21/2014	Detections shall be summed with the following chemicals: CAS# 139-08-2, CAS# 8001-54-5, CAS# 53516-76-0, CAS# 61789-71-7, CAS# 63449-41-2, CAS# 68391-01-5 and CAS# 68424-85-1
methylene bis(n-iso-butylbenzenamine)	88990-59-4	0.003	0.0003	0.01	TOE	—
isoalkanes, C9-C12	90622-57-4	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
pyridine, 1,2,3,6-tetrahydro-1,2,3,4-tetramethyl-	90949-18-1	0.003	0.0003	0.01	TOE	—
pyridine, 1,2,3,6-tetrahydro-1,2,4,5-tetramethyl-	90949-19-2	0.003	0.0003	0.01	TOE	—
pyridine, 1,2,3,6-tetrahydro-1,4,5,6-tetramethyl-	90949-20-5	0.003	0.0003	0.01	TOE	—
1-ethoxy-2-phenylmethyl benzene	91404-27-2	0.003	0.0003	0.01	TOE	—
ethanone, 1-[4-(ethoxymethyl)phenyl]-	93205-94-8	0.003	0.0003	0.01	TOE	—
tetrathiacyclooctadecane, 1,3,10,12-tetraoxa-6,7,15,16-	99634-55-6	0.003	0.0003	0.01	TOE	—
benzo(b)fluorenone	99707-95-6	0.003	0.0003	0.01	TOE	—
phenanthrene-1,2-dicarboxylic acid	100578-69-6	0.003	0.0003	0.01	TOE	—
cyanobacterial toxin (microcystin-LR)	101043-37-2	0.0015	0.00015	—	Health Canada MAC Issue date: 04/02	—
1,2,3,4-tetrahydro-9-propyl anthracene	101580-33-0	0.003	0.0003	0.01	TOE	—
7,8-dihydro-2,4,8,8-tetramethyl-6H-cyclohepta[b]pyrrole	102635-63-2	0.003	0.0003	0.01	TOE	—
3,6-heptanooxepin-4,5-dicarbonyl dimethylester	102652-08-4	0.003	0.0003	0.01	TOE	—
2H-benz[f]isoindole-1-carbonitrile, 8-(dimethylamino)-2-(1,1-dimethylethyl)-	103836-41-5	0.003	0.0003	0.01	TOE	—

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4H-benzo[a]quinolizine-1-carboxylic acid, 6,7-dihydro-4-oxo-3-phenyl-, methyl ester	104628-87-7	0.003	0.0003	0.01	TOE	—
benzaldehyde, hydroxymethoxy-	106799-60-4	0.003	0.0003	0.01	TOE	—
(E)-2-hydroxy-4'-methoxystilbene	110598-56-6	0.003	0.0003	0.01	TOE	—
ethanone, 1-[3-(methoxymethyl)phenyl]-	112766-37-7	0.003	0.0003	0.01	TOE	—
2-phenylcyclohexanecarboxylic acid	113215-84-2	0.003	0.0003	0.01	TOE	—
3-(2-benzoylpropanoyl)-2-oxazolidinone	116782-24-2	0.003	0.0003	0.01	TOE	—
1-methylbicyclo[3,2,1]octane	119972-41-7	0.003	0.0003	0.01	TOE	—
3,3a,5,11-b-tetrahydro-5-hydroxy-7-methoxy-5-methyl-2H-furo[3,2-b]naphtho[2,3-d]pyran-2,6,11-trione	121638-14-0	0.003	0.0003	0.01	TOE	—
pyridine, 1,2,3,6-tetrahydro-1,3,3,6-tetramethyl-	122913-54-6	0.003	0.0003	0.01	TOE	—
6-(p-t-butylphenoxy)-1,3-dihydro-1,3-diiminoisoindole	125023-52-4	0.003	0.0003	0.01	TOE	—
1H-pyrrolo[1,2-a]benzimidazole, 2,3-dihydro-2-methyl-	134856-49-8	0.003	0.0003	0.01	TOE	—
ethyl 6,8-di-t-butyl-2-oxo-2H-chromene-4-carboxylate	136106-29-4	0.003	0.0003	0.01	TOE	—

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Substance	CAS #	MCL/MAC or TAC (mg/L)	SPAC (mg/L)	STEL (mg/L)	Source of supporting documentation 1, 2, 3, 4, 5, 6, 7	Additional information
phosphoric acid, 2-chloro-1-methylethyl bis(3-chloropropyl) ester	137888-35-8	0.4 (total)	0.04 (total)	2 (total)	NSF action level External peer review date: 04/19/2017	Detections shall be summed with the following chemicals: CAS# 13674-84-5, CAS# 76649-15-5, CAS# 76649-15-5, CAS# 6145-73-9 and CAS# 137909-40-1
phosphoric acid, bis(2-chloro-1-methylethyl) 3-chloropropyl ester	137909-40-1	0.4 (total)	0.04 (total)	2 (total)	NSF action level External peer review date: 04/19/2017	Detections shall be summed with the following chemicals: CAS# 13674-84-5, CAS# 76649-15-5, CAS# 76649-15-5, CAS# 6145-73-9 and CAS# 137888-35-8
propenamide, 3-(2-methylphenyl)-2-	146669-23-9	0.003	0.0003	0.01	TOE	—
pyridine, 1,2,5,6-tetrahydro-2,2,5,5-tetramethyl-	155904-89-5	0.003	0.0003	0.01	TOE	—
1H-indole, 1,3-dimethyl-5,6-dimethoxy-(2-(4-methoxyphenyl))-	156785-73-8	0.003	0.0003	0.01	TOE	—
1,2-cyclohexane dicarboxylic acid, di-isononyl ester (DINCH)	166412-78-8	5	0.5	5	NSF action level External peer review date: 10/15/2008	—
fatty acids, C12-21 and C18-unsaturated, 2,2,6,6-tetramethyl-4-piperidinyl esters	167078-06-9	0.05	0.05	0.05	NSF action level External peer review date: 05/06/2010	—

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pyridine, 2,3,4,5-tetrahydro-2,2,4,6-tetramethyl-	200561-41-7	0.003	0.0003	0.01	TOE	—
3-methyl-4-phenyl-1-hexen-4-ol	344308-86-7	0.003	0.0003	0.01	TOE	—
1,2-cyclohexane dicarboxylic acid, di-isononyl ester (DINCH)	474919-59-0	5	0.5	5	NSF action level External peer review date: 10/15/2008	—
pentanoic acid, 2,2,4-trimethyl-3-carboxyisopropyl, isobutyl ester	1000140-77-5	0.003	0.0003	0.01	TOE	—
butyltin compounds (mono- and di- only)	Multiple Chemicals	0.02 (total)	0.004 (total)	—	NSF action level Issue date: 12/19/94	—
methyltin compounds (mono- and di- only)	Multiple Chemicals	0.03 (total)	0.006 (total)	—	NSF action level Issue date: 12/19/94	—
phenol, 3,5-dibenzyl-2,4,6-trimethyl-	Unavailable	0.003	0.0003	0.01	TOE	—
tri(1,2-propyleneglycol) monoethylether	Unavailable	0.003	0.0003	0.01	TOE	—
2-methyl-6,7-(methylenedioxy)-2-phenyl-2H-1-benzopyran	Unavailable	0.003	0.0003	0.01	TOE	—
2-methyl-3-(2-hydroxyphenyl)-3,4-dihydro-1(2H)-isoquinoline-4-carboxylate	Unavailable	0.003	0.0003	0.01	TOE	—
tetraethylene glycol monobutyl monomethyl ether	Unavailable	0.003	0.0003	0.01	TOE	—
BHT aldehyde	Unavailable	0.003	0.0003	0.01	TOE	—
4,4'-bis(tetrahydrothiopyran)	Unavailable	0.003	0.0003	0.01	TOE	—
2,4-dipropyl-5-ethyl-1,3-dioxane	Unavailable	0.003	0.0003	0.01	TOE	—

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bicyclo[5.3.0]decane, 2-methylene-5-(1-methylvinyl)-8-methyl-	Unavailable	0.003	0.0003	0.01	TOE	—
5-hydroxy-1,3,4-trimethoxy-7-methyl-6-proparagynaphthalene	Unavailable	0.003	0.0003	0.01	TOE	—
(3H)indazole, 3,3-dimethyl-	Unavailable	0.003	0.0003	0.01	TOE	—
<p>¹ The references for criteria based on U. S. primary drinking water regulations are from the U. S. Code of Federal Regulations, Title 40 (Protection of Environment), revised as of July 1, 2011. This document is available on-line at <http://www.gpo.gov/fdsys/browse/collectionCfr.action?collectionCode=CFR>. Issue dates are given for criteria based on Health Canada guidelines. Additional information on the guidelines for these chemicals is available at <http://hc-sc.gc.ca/ewh-scmt/pubs/water-eau/index-eng.php#tech_doc></p> <p>² NSF action levels have been derived according to the requirements of NSF/ANSI 60 – Annex A or NSF/ANSI 61 – Annex A.</p> <p>³ Criteria are derived from the oral RfD on the USEPA IRIS database as follows: Oral RfD (mg /kg-d) x (70 kg /2 L/d) x relative source contribution factor = TAC (mg/L) where: — 70 kg = assumed adult body weight — 2 L/d = assumed adult water consumption — relative source contribution factor = percentage of daily exposure to the substance represented by drinking water — (default value is 20%) Other criteria have been used directly, unless otherwise noted.</p> <p>⁴ The IRIS verification date represents the date the oral RfD or the cancer risk assessment was peer reviewed by the USEPA. Refer to the online IRIS database for the complete update and revision history of the IRIS files: <www.epa.gov/IRIS>.</p> <p>⁵ Toxic Equivalency Factors (TEFs) have been established as a means to compare the potency of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) to individual congeners of polychlorinated dibenzo-p-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs), and polychlorinated biphenyls (PCBs). The USEPA uses an approach to dioxin risk assessment methodology in which levels of dioxins and furans are analytically determined, the concentration of each congener is multiplied by its respective TEF value, and all the products are totaled to a single 2,3,7,8-TCDD equivalent.</p> <p>Van den Berg et al. 1998. Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife. Environmental Health Perspectives 106(12):775:792.</p> <p>U.S. Environmental Protection Agency. 2000. Chapter 9: Toxic Equivalency Factors (TEFs) for Dioxin and Related Compounds. From Exposure and Human Health Risk Assessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds. Part II: Health Assessment for 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) and Related Compounds. NCEA-I-0386. September 2000. SAB Review Draft. <www.epa.gov/ncea/pdfs/dioxin/part2/fm-chap9.pdf></p>						

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<p>⁶ For the chemicals listed in this table under the Threshold of Evaluation (TOE), the evaluation criteria are 0.003 mg/L under static conditions, and 0.0003 mg/L under flowing conditions. If any of these chemicals are detected at concentrations exceeding the threshold of evaluation, toxicity data shall be reviewed to determine whether specific TAC and SPAC values can be established, prior to using threshold of evaluation to determine compliance with the Standard.</p> <p>⁷ Effective April 17, 2013, CSA Group, NSF International, IAPMO R&T, UL, and the Water Quality Association use harmonized procedures outlined in Annex A of NSF/ANSI Standards 60 and 60 to develop action levels for unregulated drinking water contaminants. The Joint Peer Review Steering Committee (JPRSC) was established by the aforementioned certifying agencies to consolidate current pass/fail criteria and to harmonize the external peer review process for future risk assessments. As part of the consolidation process, pass/fail criteria may be adopted following consensus approval of the members of the JPRSC. Sources of the pass/fail criteria approved by the JPRSC may include risk assessments submitted by each certifying agency as well as assessments based upon authoritative agencies (i.e. U.S. EPA, Health Canada).</p> <p>⁸ TT = treatment technique. For Standard 61 only, the lead and copper rule requirement that defines corrosion control optimization for large systems is based on the difference between the 90th percentile lead level and the source water lead concentration being less than the practical quantitation level of 5 ppb (Code of Federal Regulations 40 CFR – Part 141.81(b)(3)).</p> <p>⁹ For Standard 61, section 9 products other than supply stops, flexible plumbing connectors, and miscellaneous components, a Q statistic value of 5 µg lead for a 1 L (0.26 gal) draw is used as the evaluation criteria. For supply stops, flexible plumbing connectors, and miscellaneous section 9 devices, a Q statistic value of 3 µg lead for a 1-L (0.26-gal) draw is used as the evaluation criterion.</p>						