Regulatory Analysis Form

(Completed by Promulgating Agency)

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INDEPENDENT REGULATORY REVIEW COMMISSION

RECEIVED
AUG 17 2021
Independent Regulatory
Review Commission

IRRC Number: **3251**

(1) Agency:

Environmental Protection

(2) Agency Number: 7

Identification Number: 552

(3) PA Code Cite:

25 Pa. Code Chapter 250

(4) Short Title:

Administration of the Land Recycling Program

(5) Agency Contacts (List Telephone Number and Email Address):

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(6) Type of Rulemaking (check applicable box):

☐ Proposed Regulation
☒ Final Regulation
☐ Final Omitted Regulation

☐ Emergency Certification Regulation;
  ☐ Certification by the Governor
  ☐ Certification by the Attorney General

(7) Briefly explain the regulation in clear and nontechnical language. (100 words or less)

This rulemaking amends 25 Pa. Code Chapter 250 (relating to administration of the land recycling program) by updating Statewide health standard medium-specific concentrations (MSCs) pertaining to cleanup of soil and groundwater contamination for many contaminants. The Department of Environmental Protection (DEP or Department) recommended these updates as part of its three-year review. This rulemaking also adds MSCs for three new contaminants, namely Perfluorooctanoic Acid (PFOA), Perfluorooctance Sulfonate (PFOS), and Perfluorobutane Sulfonate (PFBS). These contaminants are within the Per- and Poly-fluoroalkyl Acid (PFAS) family of compounds for which the U.S. Environmental Protection Agency (EPA) has published toxicological data. The rulemaking also clarifies administrative elements of Chapter 250.

(8) State the statutory authority for the regulation. Include specific statutory citation.

This rulemaking is authorized under sections 104(a) and 303(a) of the Land Recycling and Environmental Remediation Standards Act (Act 2) (35 P.S. §§ 6026.104(a) and 6026.303(a)), which direct the Environmental Quality Board (EQB) to adopt and amend periodically by regulation Statewide health standards for regulated substances for each environmental medium, including any health-based standards adopted by the Federal government by regulation or statute, and health advisory levels (HAL), and which direct the EQB to promulgate appropriate mathematically valid statistical tests to define compliance with Act 2, and other regulations as necessary to implement the provisions of Act 2; and section 1920-A of The Administrative Code of 1929 (71 P.S. § 510-20), which authorizes the EQB to formulate, adopt and promulgate rules and regulations that are necessary for the proper work of the Department.

(9) Is the regulation mandated by any federal or state law or court order, or federal regulation? Are there any relevant state or federal court decisions? If yes, cite the specific law, case or regulation as well as, any deadlines for action.

This rulemaking is not mandated under Federal law. Federal law, however, encourages states to develop programs for voluntary clean-up of contaminated sites. See 42 U.S.C. § 9628 (relating to State response programs). On April 21, 2004, the U.S. Environmental Protection Agency (EPA) and the Department signed the One Cleanup Program Memorandum of Understanding (One Cleanup Program) under the agencies' authority under the Federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. § 9601—9675) and Act 2 (35 P.S. 6026.101—6026.908), respectively, that requires DEP to ensure, among other things, that voluntary responses conducted under Act 2 are protective of human health and the environment, and that DEP review every report relating to the investigation, assessment and clean-up of a site submitted by a remediator. The One Cleanup Program encourages DEP to regularly review the efficacy of Chapter 250.

State law requires the promulgation of this rulemaking. Section 303(a) of Act 2, 35 P.S. § 6026.303(a), mandates that "[t]he Environmental Quality Board shall promulgate Statewide health standards for regulated substances for each environmental medium," and that "[t]he standards shall include any existing numerical residential and nonresidential health-based standards adopted by the Department and by the Federal Government by regulation or statute, and health advisory levels [HAL]." The term "HAL" is defined in section 103 of Act 2 (35 P.S. § 6026.103) as "[t]he health advisory levels published by the United States Environmental Protection Agency for particular substances." When section 303(a) and this definition of HALs are read in context, they require the EQB to adopt, as an MSC, a HAL once published by EPA. In 2016, EPA published HALs for PFOS and PFOA. For both substances, the EQB has included in this rulemaking the standards from those HALs as Act 2 groundwater standards and has used the underlying data from those HALs to develop soil standards. For PFBS, the EQB has used both groundwater and soil MSCs that incorporate data for its calculations from an EPA Provisional Peer-Reviewed Toxicity Value (PPRTV) study, which EPA published in April 2021. For PFBS, PFOS, and PFOA, Section 250.306 (relating to ingestion numeric values) provides the applicable formulas under which the Department calculates the soil and groundwater MSCs.

This rulemaking is also required under 25 Pa. Code § 250.11 (relating to periodic review of MSCs), which requires DEP to regularly review new scientific information that relates to the basis of the MSCs and to propose appropriate regulations to the EQB whenever necessary, but not later than 36 months from the effective date of the most recently promulgated regulations. The most recent of these rulemakings took effect on August 26, 2016. See 46 Pa.B. 5655 (August 26, 2016).

(10) State why the regulation is needed. Explain the compelling public interest that justifies the regulation. Describe who will benefit from the regulation. Quantify the benefits as completely as possible and approximate the number of people who will benefit.

This rulemaking is needed to comply with the Department's obligation under 25 Pa. Code § 250.11 to review scientific information that serves as the basis for Act 2 MSCs and to propose appropriate changes to the EQB, when necessary. This rulemaking is also necessary to incorporate the HALs published by EPA regarding PFOS and PFOA. Finally, this rulemaking is needed to clarify a variety of administrative components related to different reports necessary to comply with Chapter 250 site remediation requirements.

There are several public interests justifying the need for this rulemaking.

First, the public benefits from having groundwater and soil MSCs that reflect up-to-date science and toxicological information. The changes in the MSCs in this rulemaking serve both the public and the regulated community because they provide MSCs based on the most up-to-date health and scientific information for substances that cause cancer or have other toxic effects on human health. The EQB first published Chapter 250 regulations in 1997. See 27 Pa.B. 4181 (August 16, 1997). Section 104(a) of Act 2, 35 P.S. § 6026.104(a), recognizes that these standards must be updated over time as better science becomes available and as the need for clarification or enhancement of the program becomes apparent.

Potential contamination of soil and groundwater from accidental spills and unlawful disposal can impact almost any resident of this Commonwealth. Many of the chemical substances addressed in this rulemaking are systemic toxicants or carcinogens as defined under Act 2 and, in some cases, are widespread in use. Examples of substances that contain toxic or carcinogenic properties include gasoline and petroleum products, solvents, elements used in the manufacture of metals and alloys, pesticides, herbicides, and some dielectric fluids previously contained in transformers and capacitors. Releases of regulated substances not only pose a threat to the environment, but also could affect the health of the general public if inhaled or ingested. New research on many of these substances is frequently developed and provides the basis for protection of the residents of this Commonwealth through site cleanup requirements.

Although most of the changes to soil numeric values in this rulemaking decrease, 17% of the values increase. Increases in values reflect updated information related to exposure limitations to the substances and acknowledge that a higher standard is better representative of those substances' exposure thresholds.

Second, the public benefits from the promulgation of soil and groundwater MSCs for PFOS, PFOA and PFBS because the MSCs allow remediators to address groundwater and soil contamination; thereby, reducing public exposure to the contaminants. These remediators tend to be owners, operators or purchasers – or their contractors – of properties and facilities including, or located in the vicinity of, military bases, municipalities, and other locations that used or stored fire-fighting foam. EPA reports that contamination from these chemicals has also been associated with manufacturing textiles, food packaging, personal care products, and other materials such as cookware that are resistant to water, grease and stains. See Fact Sheet, EPA, PFOA & PFOS Drinking Water Health Advisories (November 2016) (available at https://www.epa.gov/sites/production/files/2016-06/documents/drinkingwaterhealthadvisories_pfoa_pfos_updated_5.31.16.pdf).

Third, remediators benefit from the amendments that clarify administrative elements of Act 2, making for a more efficient and streamlined remediation process.

The benefits of this rulemaking are difficult to quantify because, unlike other statutory or permitting schemes, Act 2 does not prevent contamination but instead provides remediators with a variety of options to address sites that have existing contamination. In that sense, this rulemaking, consistent with Act 2, benefits the public because it allows for more efficient and more expedient remediation and reuse of contaminated areas.

(11) Are there any provisions that are more stringent than federal standards? If yes, identify the specific provisions and the compelling Pennsylvania interest that demands stronger regulations.

No provisions in this rulemaking are more stringent than Federal cleanup standards. In fact, Act 2 prohibits any standards that are more stringent than Federal standards. Act 2 states that "[t]he department shall not establish procedures for determining attainment of remediation standards where maximum contaminant levels and health advisory levels have already been established for regulated substances." See 35 P.S. § 6026.301(c) (related to determining attainment). Act 2 further states that "standards adopted under this section [Section 303 Statewide health standard] shall be no more stringent than those standards adopted by the Federal Government." See 35 P.S. § 6026.303(a) (relating to Statewide Health Standard). Federal standards typically are MCLs promulgated by EPA to address drinking water under the Federal Safe Drinking Water Act.

(12) How does this regulation compare with those of the other states? How will this affect Pennsylvania's ability to compete with other states?

The updates to Chapter 250 do not affect Pennsylvania's ability to compete with other states.

The existing Chapter 250 regulations provide a uniform Statewide health standard that is not available in many other states. In comparison, the Federal government and many states do not have similar generic cleanup values and instead require a site-specific risk analysis at every site to establish a numeric value that is then used to determine the completion of soil and groundwater cleanup. Act 2 provides for a Statewide health standard that can be used as an efficient way to clean up sites, particularly where small spills and releases contaminate soil. This does not negate the opportunity to conduct a risk analysis. Act 2 also provides the ability to conduct a risk analysis to establish a cleanup value on an individual-site basis through the site-specific cleanup standard.

The existing regulations and this rulemaking promote and facilitate the remediation and redevelopment of idle and underutilized commercial and industrial sites while protecting the public health and the environment.

(13) Will the regulation affect any other regulations of the promulgating agency or other state agencies? If yes, explain and provide specific citations.

The rulemaking does not directly affect any of the Department's existing regulations or any regulations promulgated by other state agencies. While some Department regulations incorporate elements of Chapter 250 by reference, this rulemaking does not require the Department to update any other regulations separate from Chapter 250. For example, Chapter 245 regulations (relating to Administration of Storage Tank and Spill Prevention Program) require that various components of storage tank spill corrective actions comport with site investigation or remediation requirements within Chapter 250.

(14) Describe the communications with and solicitation of input from the public, any advisory council/group, small businesses and groups representing small businesses in the development and drafting of the regulation. List the specific persons and/or groups who were involved. ("Small business" is defined in Section 3 of the Regulatory Review Act, Act 76 of 2012.)

The Department worked with the Cleanup Standards Scientific Advisory Board (CSSAB) during the development of this rulemaking. CSSAB, established by Section 105 of Act 2 (35 P.S. § 6026.105), consists of persons representing a cross-section of experience, including engineering, biology, hydrogeology, statistics, medicine, chemistry, toxicology and other related fields. The purpose of the CSSAB is to assist the Department and the EQB in developing Statewide health standards, to determine the appropriate statistically and scientifically valid procedures and risk factors to be used, and to provide other technical advice as needed to implement Act 2. During CSSAB meetings on August 1, 2018, February 13, 2019, June 12, 2019, and October 29, 2019, CSSAB members were given the opportunity to review and provide feedback on draft regulatory amendments to Chapter 250. CSSAB members were also given the opportunity to review and provide feedback on the final rulemaking at the July 30, 2020 and December 16, 2020 meetings. The Department also worked with the CSSAB to resolve concerns and agreed to evaluate additional suggestions during the next review cycle for this rulemaking. Following the presentations and discussions in 2018 and 2019, the CSSAB issued a letter related to the regulatory amendments included in the rulemaking. Specifically, the CSSAB noted concern related to the MSCs for vanadium.

A listing of CSSAB members and minutes of CSSAB meetings are available on the Department's website at www.dep.pa.gov (select "Public Participation," then "Advisory Committees," then "Cleanup and Brownfields Advisory Committees," then "Cleanup Standards Scientific Advisory Board").

(15) Identify the types and number of persons, businesses, small businesses (as defined in Section 3 of the Regulatory Review Act, Act 76 of 2012) and organizations which will be affected by the regulation. How are they affected?

The amendments to Chapter 250 affect owners of contaminated sites, operators of commercial and industrial facilities where hazardous substances are spilled onto soil or are released into groundwater, and purchasers of historically contaminated brownfield sites that are intended for redevelopment. A brownfield site is a property that's current or future use is impaired by a real or perceived contamination. This rulemaking also protects public health by minimizing exposure to substances released into the shared environment.

Overall, no particular category of person, business or organization is expected to be substantially or adversely affected by the updates to Chapter 250. A majority of the small businesses that DEP can identify as potentially being affected by this proposal are owners of small gasoline stations. For many of the impacted businesses, the costs are absorbed through insurance policies because many of these businesses are required under section 704(a)(1) of the Storage Tanks and Spill Prevention Act (35 P.S. § 6021.704(a)(1) (relating to establishment of fund)) to participate in the Underground Storage Tank Indemnification Fund. This fund provides insurance coverage for the costs to clean up releases from underground storage tanks, regardless of the MSC value used at the site.

In addition to gasoline stations, fuel distribution facilities, commercial facilities that use toxic or carcinogenic chemicals, manufacturing operations, and redevelopers of brownfield sites may be affected by this rulemaking.

There are approximately 12,000 facilities in this Commonwealth that contain regulated underground and above ground storage tanks, including gasoline stations, and fuel distribution and storage facilities. Of those 12,000 facilities, a portion includes small gasoline station owners. Small businesses also make up some of the commercial facilities that use toxic or carcinogenic substances. Because of the broad potential reach of this rulemaking, DEP cannot reasonably identify further specifics on the number of small businesses that would potentially be affected by property contamination. The number of completed remediations vary each year. On average, remediators apply the Act 2 remediation standard to approximately 800 contaminated properties across the Commonwealth. Generally, any cost related to a given site remediation depends in large part on which regulated substances are being remediated and what the specific soil and groundwater conditions are at the site.

The changes to Chapter 250 are not expected to increase costs nor provide any significant savings for the regulated community. Chapter 250 contains MSCs for 400 regulated substances. The MSCs are divided into two environmental media: groundwater and soil. See, for example, §§ 250.304 and 250.305 (relating to MSCs for groundwater; and MSCs for soil.) The same regulated substance – for example, Trichloroethylene (TCE) – may have standards in both soil and groundwater. The soil MSCs provide standards for direct contact with, and ingestion of, soil. The groundwater MSCs provide standards related to human consumption of groundwater or the inhalation of volatile substances in groundwater.

Under this rulemaking, the MSC values for many regulated substances are being changed for a variety of reasons. The two most common reasons for the changes are Federal agency (including EPA and U.S. Department of Health Agency for Toxic Substances and Disease Registry) changes in toxicity values that are used in calculating MSC values, and a change in the EPA's underlying assumption of a person's average daily consumption of water from 2 liters a day (L/day) to 2.4 L/day. The soil numeric values represent a decrease for approximately 83% of the values and an increase for 17% of the values. For groundwater, the changes reflect a decrease for approximately 92% of the values and an increase in approximately 8% of the values. Lowering the values may indicate that a more stringent cleanup is required at a site and increasing the values may indicate that a less stringent cleanup is required at a site.

The financial impact on a given site remediation depends on the regulated substances being remediated and the soil and groundwater conditions at a particular site. For example, a site with a tight clay soil profile might not allow contaminants to spread horizontally or vertically, in which case the amount of soil to be excavated would not significantly change to meet a lower or higher MSC value.

In addition to the changes in MSCs, this rulemaking includes amendments to provide clarity to the administrative requirements and to ensure that references to various guidance and other sources are appropriate and consistent. These amendments streamline the remediation process for the Department and for developers.

Accordingly, the Department believes that there would be little if any adverse impact to any particular category of person, business (including small businesses) or organization. Please also see the response to item (10), above, regarding benefits; and to item (24), below, for more information regarding small businesses.

(16) List the persons, groups or entities, including small businesses that will be required to comply with the regulation. Approximate the number that will be required to comply.

This amendment to Chapter 250 impacts any person addressing a release of a regulated substance at a property, whether voluntarily or as a result of an order by the Department but does not impact any particular category of person with additional or new regulatory obligations. Under Act 2, a remediator may voluntarily select the standard to which to remediate. To complete a remediation, a person must then comply with all relevant remediation standards and administrative requirements. This rulemaking does not affect the voluntary nature of Act 2.

The types of businesses that may need to comply with the regulations include gasoline stations, fuel distribution facilities, commercial facilities that use toxic or carcinogenic chemicals, manufacturing operations and redevelopers of brownfield sites. There are about 12,000 facilities in this Commonwealth that contain regulated underground and aboveground storage tanks, including gasoline stations and fuel distribution and storage facilities. Some of these facilities would include small gasoline station owners. Small businesses would also make up some of the commercial facilities that use toxic or carcinogenic substances. Not all of these facilities have releases or accidental spills that result in a cleanup obligation.

The number of completed remediations vary each year. On average, remediators apply the Act 2 remediation standard to approximately 800 contaminated properties across the Commonwealth. The Department does not expect that the amendments would impact the number of remediations voluntarily completed or those that must be completed as a result of Department enforcement actions.

As noted above in the response to Question 15, while these amendments would not likely impact a specific category of person or company, the amendments would still affect many types of responsible parties who need to address contamination under Chapter 250. The Department expects the impact of these updates to Chapter 250 to be insignificant on persons and businesses that are attempting to complete the remediation process under Chapter 250.

Please also see the response to Question 15.

(17) Identify the financial, economic and social impact of the regulation on individuals, small businesses, businesses and labor communities and other public and private organizations. Evaluate the benefits expected as a result of the regulation.

The amendments to the Statewide health MSCs reflect the latest toxicological data on health effects on humans exposed to hazardous and toxic chemicals. Updating the MSCs in this manner helps to assure potentially affected residents of this Commonwealth and persons, including businesses, small businesses and other organizations, interested in buying and redeveloping contaminated sites, that the MSCs are protective of human health.

Financially and economically, the Department expects the amendments to Chapter 250 to result in insignificant costs increases and insignificant cost savings for the regulated community. Generally, investigation and cleanup costs vary greatly based on the severity of the contamination, the size of the site, the complexity of the remediation strategy, and the cleanup standard selected. Thus, accurate costs and savings cannot be determined at this time because such cost analysis must be based on site-specific considerations evaluated on case-by-case bases.

Under this rulemaking, the MSC values for many regulated substances are being changed for a variety of reasons. The two most common reasons for the changes are Federal agency (including EPA and U.S. Department of Health Agency for Toxic Substances and Disease Registry) changes in toxicity values that are used in calculating MSC values and a change in the EPA's underlying assumption of a person's average daily consumption of water from 2 L/day to 2.4 L/day. The soil numeric values represent a decrease for approximately 83% of the values and an increase for 17% of the values. For groundwater, the changes reflect a decrease for approximately 92% of the values and an increase in approximately 8% of the values. Lowering the values may indicate that a more stringent cleanup is required at a site and increasing the values may indicate that a less stringent cleanup is required at a site. The number of completed remediations vary each year. On average, remediators apply the Act 2 remediation standard to approximately 800 contaminated properties across the Commonwealth. The Department does not expect the amendments would impact the number of remediations voluntarily completed or the number of remediations that must be completed because of Department enforcement actions.

Further, the updates to Statewide health standard MSCs do not affect a remediator's ability to choose one or a combination of cleanup standards.

The Department believes that any potential impacts to the regulated community would be insignificant.

This rulemaking will benefit all citizens of the Commonwealth. The amendments to the Statewide health MSCs reflect the latest toxicological data on human health effects that can occur when humans are exposed to hazardous and toxic chemicals. Updating the MSCs, based on the latest toxicological data, helps to assure potentially affected residents of this Commonwealth and persons, including businesses, small businesses and other organizations, interested in buying and redeveloping contaminated sites, that the MSCs are protective of human health.

Not only does this rulemaking update existing MSCs, but it also adds groundwater standards for PFOS and PFOA from the HALs EPA published in 2016 and soil standards for PFOS and PFOA using the underlying data from the EPA HALs, as well as the groundwater and soil PFBS MSCs generated using EPA's PPRTV data. Having these new MSCs allows remediators to address PFOS, PFOA and PFBS groundwater and soil contamination. This benefits the public by lessening public exposure to these contaminants. This also benefits remediators wishing to remediate contaminated sites, who tend to be owners, operators or purchasers – or their contractors – of properties and facilities include, or are at or near, military bases, municipalities, and other locations that used or stored fire-fighting foam.

Remediators benefit from the amendments that clarify many of the administrative elements of Act 2, making for more efficient and streamlined Act 2 remediations.

Please also see the response to Question 10.

(18) Explain how the benefits of the regulation outweigh any cost and adverse effects.

As described more fully in the responses to Questions 10 and 17, there are important benefits to this rulemaking. They include protecting the public with updated MSCs reflecting the latest toxicological data, adding new MSCs for 3 chemical compounds (PFOS, PFOA and PFBS), exposure to which, according to EPA, could cause adverse effects in humans, including developmental effects to a fetus during pregnancy or to infants during breastfeeding, cancer (e.g., testicular, kidney), liver effects (e.g., tissue damage), immune effects (e.g., antibody production), thyroid effects, and others (e.g., cholesterol). The amendments will also streamline Act 2 remediations.

These benefits outweigh any costs of the rulemaking, which the Department expects to be insignificant. The amendments to the Statewide health MSCs reflect the latest toxicological data on human health effects that can occur when humans are exposed to hazardous and toxic chemicals. Updating the MSCs in this manner helps to assure potentially affected residents of this Commonwealth and persons, including businesses, small businesses and other organizations, interested in buying and redeveloping contaminated sites, that the MSCs are protective of human health. In particular, the rulemaking allows remediators to address PFOS and PFOA groundwater and soil contamination.

The Department anticipates little if any cost or adverse effects from this rulemaking. The soil numeric values represent a decrease for approximately 83% of the values and an increase for 17% of the values. For groundwater, the changes reflect a decrease for approximately 92% of the values and an increase in approximately 8% of the values. Lowering the values may indicate a more stringent cleanup is required at a site and increasing the values may indicate a less stringent cleanup is required at a site. The number of completed remediations vary each year. On average, remediators apply the Act 2 remediation standard to approximately 800 contaminated properties across the Commonwealth.

The cost impact on a given site remediation would depend on the regulated substances being remediated and the soil and groundwater conditions at the site. For example, a site with a tight clay soil profile might not allow contaminants to spread horizontally or vertically, in which case the amount of soil to be excavated would not significantly change to meet a lower or higher MSC value.

Please also see the responses to Questions 10 and 17.

(19) Provide a specific estimate of the costs and/or savings to the **regulated community** associated with compliance, including any legal, accounting or consulting procedures which may be required. Explain how the dollar estimates were derived.

The Department anticipates little, if any, expenses or savings from this rulemaking. The soil numeric values represent a decrease for approximately 83% of the values and an increase for 17% of the values. For groundwater, the changes reflect a decrease for approximately 92% of the values and an increase in approximately 8% of the values. Lowering the values may indicate a more stringent cleanup is required at a site and increasing the values may indicate a less stringent cleanup is required at a site. The number of completed remediations vary each year. On average, remediators apply the Act 2 remediation standard to approximately 800 contaminated properties across the Commonwealth. The cost impact on a given site remediation would depend on the regulated substances being remediated and the soil and groundwater conditions at the site. For example, a site with a tight clay soil profile might not allow contaminants to spread horizontally or vertically, in which case the amount of soil to be excavated would not significantly change to meet a lower or higher MSC value.

The rulemaking does not require any new legal, accounting or consulting procedures.

(20) Provide a specific estimate of the costs and/or savings to the **local governments** associated with compliance, including any legal, accounting or consulting procedures which may be required. Explain how the dollar estimates were derived.

The amendments are not expected to impact costs or savings for local governments. Although, in some instances, local governments are remediators; however, as with all other types of remediators, this rulemaking is not expected to increase costs or result in significant savings.

Please also see the response to Question 19 above.

(21) Provide a specific estimate of the costs and/or savings to the **state government** associated with the implementation of the regulation, including any legal, accounting, or consulting procedures which may be required. Explain how the dollar estimates were derived.

The amendments are not expected to impact costs or savings for state government agencies. Although, in some instances, state government agencies are remediators; however, as with all other types of remediators, this rulemaking is not expected to increase costs or result in significant savings.

Please also see the response to Question 19.

(22) For each of the groups and entities identified in items (19)-(21) above, submit a statement of legal, accounting or consulting procedures and additional reporting, recordkeeping or other paperwork, including copies of forms or reports, which will be required for implementation of the regulation and an explanation of measures which have been taken to minimize these requirements.

The amendments to Chapter 250 do not require any additional recordkeeping or paperwork. No new or revised forms or reports are required.

(22a) Are forms required for implementation of the regulation?

No new or revised forms or reports are required.

(22b) If forms are required for implementation of the regulation, **attach copies of the forms here.** If your agency uses electronic forms, provide links to each form or a detailed description of the information required to be reported. **Failure to attach forms, provide links, or provide a detailed description of the information to be reported will constitute a faulty delivery of the regulation.**

No new or revised forms or reports are required.

(23) In the table below, provide an estimate of the fiscal savings and costs associated with implementation and compliance for the regulated community, local government, and state government for the current year and five subsequent years.

This amendment is not expected to impact costs or savings.

	Current FY Year	FY +1 Year	FY +2 Year	FY +3 Year	FY +4 Year	FY +5 Year
SAVINGS:	**$**	**$**	**$**	**$**	**$**	**$**
Regulated Community	$0	$0	$0	$0	$0	$0
Local Government	$0	$0	$0	$0	$0	$0
State Government	$0	$0	$0	$0	$0	$0
Total Savings	$0	$0	$0	$0	$0	$0
COSTS:	$0	$0	$0	$0	$0	$0
Regulated Community	$0	$0	$0	$0	$0	$0
Local Government	$0	$0	$0	$0	$0	$0
State Government	$0	$0	$0	$0	$0	$0
Total Costs	$0	$0	$0	$0	$0	$0
REVENUE LOSSES:	$0	$0	$0	$0	$0	$0
Regulated Community	$0	$0	$0	$0	$0	$0
Local Government	$0	$0	$0	$0	$0	$0
State Government	$0	$0	$0	$0	$0	$0
Total Revenue Losses	$0	$0	$0	$0	$0	$0

(23a) Provide the past three-year expenditure history for programs affected by the regulation.

Program	FY -3 2017-18	FY -2 2018-19	FY -1 2019-20	Current FY 2020-21
Environmental Protection Operations 160-10381	$89,215,000	$93,190,000	$84,023,000	$94,202,000
Environmental Program Management 161-10382	$29,413,000	$30,932,000	$27,920,000	$32,041,000
Industrial Land Recycling Fund 689-60080	$289,000	$263,000	$273,000	$352,000
Hazardous Sites Cleanup Fund 202-20070	$23,750,000	$22,738,000	$24,000,000	$24,000,000
Storage Tank Fund 210-20073	$4,886,000	$4,484,000	$3,563,000	$3,878,000

(24) For any regulation that may have an adverse impact on small businesses (as defined in Section 3 of the Regulatory Review Act, Act 76 of 2012), provide an economic impact statement that includes the following:

(a) An identification and estimate of the number of small businesses subject to the regulation.

A majority of the small businesses that DEP can identify as potentially being affected by this proposal are owners of small gasoline stations. In addition to gasoline stations, fuel distribution facilities, commercial facilities that use toxic or carcinogenic chemicals, manufacturing operations, and redevelopers of brownfield sites may be affected by this rulemaking. There are about approximately 12,000 facilities in this Commonwealth that contain regulated underground and above ground storage tanks, including gasoline stations, and fuel distribution and storage facilities. Of those 12,000 facilities, some would include small gasoline station owners. Small businesses would also make up some of the commercial facilities that use toxic or carcinogenic substances. Chapter 250, and this rulemaking, have the potential to impact a broad universe of businesses, persons and organizations, any of which could need to address contamination at any given time. Because of the breadth of reach of Chapter 250, DEP cannot identify further specifics on the types and numbers of small businesses that would potentially be affected by property contamination. Act 2 and Chapter 250 are unique from other statutes and regulations because they do not create permitting or corrective action obligations. Instead, Act 2 and Chapter 250 provide remediators options to address contamination and any associated liability that arises under other statutes. For example, adding PFOS to the Chapter 250 Appendix does not create any liability or obligation related to PFOS. Instead, a person's liability arises under the Clean Stream Law while Act 2 and Chapter 250 provide that person the means to resolve their Clean Streams law liability and to address the contamination. In this way, Act 2 and Chapter 250 do not create new obligations that will impact a particular category of person like a new permitting obligation or corrective action regulation would.

(b) The projected reporting, recordkeeping and other administrative costs required for compliance with the proposed regulation, including the type of professional skills necessary for preparation of the report or record.

The amendments to the Chapter 250 regulations do not add any new procedures, recordkeeping or compliance efforts. The rulemaking clarifies in Section 250.12 (relating to professional seal) that reports submitted as part of the Act 2 process that contain information or analysis that constitutes professional geologic or engineering work under the Engineer, Land Surveyor, and Geologist Registration Law must be sealed by a professional geologist or engineer. Existing sections 250.204(a), 250.312(a) and 250.408(a) (relating to final report; final report; and remedial investigation report) require that "[i]nterpretations of geologic and hydrogeologic data shall be *prepared* by a professional geologist licensed in this Commonwealth." (emphasis added). The amendment in section 250.12 would moot any concern over what it means to "prepare" one of these reports.

(c) A statement of probable effect on impacted small businesses.

The amendments to the Chapter 250 regulations are not expected to increase costs or provide any significant savings for small businesses. As noted above in response to Question 15, many of the small businesses that may be impacted by this rulemaking are gasoline stations, and for many of these businesses, the costs would be covered by insurance because many of these businesses are required by

Section 704(a)(1) of the Storage Tanks and Spill Prevention Act to participate in the Underground Storage Tank Indemnification Fund. This fund provides insurance coverage for the costs to clean up releases from underground storage tanks, regardless of the MSC value used at the site.

Small businesses that handle hazardous substances can use pollution prevention techniques available through various assistance programs to prevent spills that would result in contamination of soil and groundwater. In addition, background and site-specific cleanup standards are available and not affected by the updates to the Statewide health MSCs.

In addition to the Underground Storage Tank Indemnification Fund coverage, the Pennsylvania Department of Community and Economic Development (DCED), primarily through its Industrial Sites Reuse Program, offers many entities that are eligible for brownfield financial assistance, which includes small business, potential grants or loans for the assessment and remediation of soil and groundwater contamination at eligible properties.

(d) A description of any less intrusive or less costly alternative methods of achieving the purpose of the proposed regulation.

The Department is unaware of any less intrusive or less costly alternative methods of achieving the purpose of the rulemaking, which is to update various MSCs based on current scientific information. Background and site-specific cleanup standards are available alternatives to the regulated community and would not be affected by the updates to the Statewide health MSCs in this rulemaking. As discussed above in the responses to Questions 9, 10, and 14, Act 2 requires that the EQB and DEP evaluate data related to current MSCs and promulgate new standards, where necessary. Further, Act 2 requires DEP to incorporate applicable Federal standards, such as EPA's PFOS and PFOA standards (published in 2016), and EPA's HALs.

(25) List any special provisions which have been developed to meet the particular needs of affected groups or persons including, but not limited to, minorities, the elderly, small businesses, and farmers.

The amendments to Chapter 250 do not include special provisions to meet the needs of the groups listed because the amendments are not expected to adversely affect any listed group. Please see the responses to Questions 15, 17, and 24 regarding expected impacts of this rulemaking.

(26) Include a description of any alternative regulatory provisions which have been considered and rejected and a statement that the least burdensome acceptable alternative has been selected.

No alternative regulatory provisions were considered and rejected. The least burdensome acceptable alternatives – which is required by statute and regulation – have been selected. The amendments in this rulemaking are required under Act 2 and the existing Chapter 250 regulations, which require the periodic update of the Statewide health standard. Alternatives to meeting MSCs in Act 2 remediations already exist. They are the background and site-specific cleanup standards in Chapter 250, and would not be affected by the updates to the Statewide health MSCs in this rulemaking.

(27) In conducting a regulatory flexibility analysis, explain whether regulatory methods were considered that will minimize any adverse impact on small businesses (as defined in Section 3 of the Regulatory Review Act, Act 76 of 2012), including:

a) The establishment of less stringent compliance or reporting requirements for small businesses;

b) The establishment of less stringent schedules or deadlines for compliance or reporting requirements for small businesses;

c) The consolidation or simplification of compliance or reporting requirements for small businesses;

d) The establishment of performing standards for small businesses to replace design or operational standards required in the regulation; and

e) The exemption of small businesses from all or any part of the requirements contained in the regulation.

The amendments are not expected to have a significant impact on small businesses; therefore, no regulatory methods were considered to minimize adverse impacts.

(a) This rulemaking does not affect any Act 2 compliance requirements. Under Act 2, a remediator may voluntarily select the standard to which to remediate. To complete a remediation, a person must then comply with all relevant technical and administrative requirements. Act 2 establishes the schedules related to reports necessary to comply with those remediation standards. See, for example, the notice and review provisions in sections 302(e), 303(h) and 304(n) of Act 2 (relating to background standard; Statewide health standard; and sight-specific standard). See 35 P.S. §§ 6026.302(e), 6026.303(h), and 6026.304(n). As a result, the Department and the EQB have limited ability to alter schedules, deadlines and reporting requirements. In addition, reporting obligations under Act 2 generally apply only to the Department (i.e., the Department must review and approve a submitted report within a particular timeframe) and not to other parties.

(b) Please see the response to Question 24(a).

(c) Please see the response to Question 24(a).

(d) Chapter 250 does not have design or operation standards. Act 2 does not authorize relaxing MSC values for particular categories of remediators.

(e) Small businesses, small organizations and small governmental jurisdictions were considered but are not exempt from any provisions of the regulations. Chapter 250 does not take into account the size or nature of a particular entity that may own a contaminated site and the need to address it under Act 2.

(28) If data is the basis for this regulation, please provide a description of the data; explain in detail how the data was obtained, and how it meets the acceptability standard for empirical, replicable and testable data that is supported by documentation, statistics, reports, studies or research. Please submit data or supporting materials with the regulatory package. If the material exceeds 50 pages, please provide it in a searchable electronic format or provide a list of citations and internet links that, where possible, can be accessed in a searchable format in lieu of the actual material. If other data was considered but not used, please explain why that data was determined not to be acceptable.

Act 2 and the Chapter 250 regulations require the periodic evaluation of the MSCs. The Department bases this evaluation on nationally recognized, peer-reviewed toxicological data, including cancer slope and unit risk factors, reference dose values and reference concentrations published under the Integrated Risk Information System (IRIS), the National Center for Environmental Assessment, EPA's PPRTV data, the Health Effects Assessment Summary Tables, Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profiles, and California EPA Cancer Potency Factors and Chronic Reference Exposure Levels.

This information is published by the EPA (https://cfpub.epa.gov/ncea/iris_drafts/atoz.cfm?list_type=alpha) and (https://hhpprtv.ornl.gov/), the United States Centers for Disease Control (https://www.atsdr.cdc.gov/mrls/mrllist.asp), and the California Office of Environmental Health Hazard Assessment (https://oehha.ca.gov/chemicals) and is used by all state environmental and health departments in the country for conducting risk assessments for potential exposure to contaminants in soil and groundwater.

Additional information can be accessed at:
EPA's 2018 Drinking Water Standards and Advisory Tables (for PFOA and PFOS toxicity values)
EPA's Provisional Peer Reviewed Toxicity Values (PPRTV) Database (for PFBS toxicity values)

(29) Include a schedule for review of the regulation including:

A. The length of the public comment period: 75 days

B. The date or dates on which any public meetings or hearings will be held: None held

C. The expected date of delivery of the final-form regulation: Quarter 2, 2021

D. The expected effective date of the final-form regulation: Upon publication in the *Pennsylvania Bulletin*

E. The expected date by which compliance with the final-form regulation will be required: Upon publication in the *Pennsylvania Bulletin*

F. The expected date by which required permits, licenses or other approvals must be obtained: N/A

(30) Describe the plan developed for evaluating the continuing effectiveness of the regulations after its implementation.

The Department regularly evaluates the continuing effectiveness of Chapter 250 because 25 Pa. Code § 250.11 requires the Department to regularly review new scientific information that relates to the basis of the MSCs; and, that the Department propose appropriate regulations to the EQB, whenever necessary, but not later than 36 months from the effective date of the most recently promulgated regulations. DEP's efforts in this regard include ongoing tracking of remediations completed under the program and annual preparation of a program report.

CDL-1

FACE SHEET FOR FILING DOCUMENTS WITH THE LEGISLATIVE REFERENCE BUREAU

(Pursuant to Commonwealth Documents Law)

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AUG 17 2021

Independent Regulatory Review Commission

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Copy below is hereby approved as to form and legality. Attorney General

By:

(Deputy Attorney General)

DATE OF APPROVAL

☐ Check if applicable
Copy not approved. Objections attached.

Copy below is hereby certified to be true and correct copy of a document issued, prescribed or promulgated by:

DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL QUALITY BOARD

(AGENCY)

DOCUMENT/FISCAL NOTE NO. 7-552

DATE OF ADOPTION June 15, 2021

BY

TITLE PATRICK MCDONNELL
CHAIRPERSON

EXECUTIVE OFFICER CHAIRPERSON OR SECRETARY

Copy below is hereby approved as to form and legality Executive or Independent Agencies

BY Marisa G. Z. Lehr

July 6, 2021
DATE OF APPROVAL

(Deputy General Counsel)
(Chief Counsel - Independent Agency)
(Strike inapplicable title)

☐ Check if applicable. No Attorney General Approval or objection within 30 days after submission.

NOTICE OF FINAL RULEMAKING

DEPARTMENT OF ENVIRONMENTAL PROTECTION ENVIRONMENTAL QUALITY BOARD

Administration of the Land Recycling Program

25 Pa. Code Chapter 250

FINAL-FORM RULEMAKING
ENVIRONMENTAL QUALITY BOARD
[25 Pa. Code Chapter 250]

Administration of Land Recycling Program

The Environmental Quality Board (Board) by this order amends 25 Pa. Code, Chapter 250 (relating to administration of Land Recycling Program) to read as set forth in Annex A. This final-form rulemaking is required by 25 Pa. Code § 250.11 (relating to periodic review of MSCs), which directs the Department of Environmental Protection (Department) to review new scientific information that relates to the basis of the Statewide health standard medium-specific concentrations (MSCs) at least 36 months after the effective date of the most recently promulgated MSCs and to propose to the Board any changes to the MSCs as necessary. In addition to updating the existing MSCs, this rulemaking adds MSCs for three new contaminants, namely Perfluorooctanoic Acid (PFOA), Perfluorooctane Sulfonate (PFOS) and Perfluorobutane Sulfonate (PFBS). These contaminants are within the Per-fluoroalkyl and Poly-fluoroalkyl Acid (PFAS) family of compounds for which the United States Environmental Protection Agency (EPA) has published toxicological data. This rulemaking also clarifies several other regulatory requirements.

This final-form rulemaking was adopted by the Board at its meeting of June 16, 2021.

A. *Effective Date*

This final-form rulemaking will be effective upon publication in the *Pennsylvania Bulletin*.

B. *Contact Persons*

For further information contact Michael Maddigan, Environmental Group Manager, Land Recycling Program, P.O. Box 8471, Rachel Carson State Office Building, Harrisburg, PA 17105-8471, (717) 772-3609; or Nikolina Smith, Assistant Counsel, Bureau of Regulatory Counsel, Rachel Carson State Office Building, P.O. Box 8464, Harrisburg, PA 17105-8464, (717) 783-8501. This final-form rulemaking is available on the Department's web site at www.dep.pa.gov (select "Public Participation," then "Environmental Quality Board (EQB)").

C. *Statutory Authority*

This final-form rulemaking is authorized under sections 104(a) and 303(a) of the Land Recycling and Environmental Remediation Standards Act (Act 2) (35 P.S. §§ 6026.104(a) and 6026.303(a)), which direct the Board to adopt and amend periodically by regulation Statewide health standards for regulated substances for each environmental medium, including any health-based standards adopted by the Federal government by regulation or statute, and health advisory levels (HAL), and which direct the Board to promulgate appropriate mathematically valid statistical tests to define compliance with Act 2, and other regulations as necessary to implement the provisions of Act 2; and section 1920-A of The Administrative Code of 1929 (71 P.S. § 510-

20), which authorizes the Board to formulate, adopt and promulgate rules and regulations that are necessary for the proper work of the Department.

D. *Background and Purpose*

Section 250.11 requires that the Department review new scientific information that is used to calculate MSCs under the Statewide health standard and propose appropriate changes at least every 36 months following the effective date of the most recently promulgated MSCs. The Board's most recently promulgated MSCs became effective upon publication in the *Pennsylvania Bulletin* at 46 Pa.B. 5655 (August 27, 2016). These changes, based on new information, will protect public health and the environment, and will provide the regulated community with clear information regarding the requirements of Act 2 and Chapter 250 related to the remediation of contaminated sites.

In addition to updating Chapter 250 MSCs, this rulemaking includes changes that add groundwater and soil MSCs for three compounds in the PFAS family—PFBS, PFOS and PFOA. The standards for the three PFAS chemicals are based on data in toxicological studies published by the EPA. Under Act 2, the Department has directly incorporated the EPA's 2016 HALs regarding PFOS and PFOA as groundwater MSCs and has used the data developed by the EPA for those HALs to calculate soil MSCs for both compounds. With respect to PFBS, the Department has established soil and groundwater standards based on a 2014 EPA Provisional Peer-Reviewed Toxicity Value (PPRTV).

Finally, this rulemaking clarifies several procedural issues related to the administrative requirements of Act 2. In particular, this rulemaking clarifies requirements for remediators and municipalities regarding public participation and public involvement plans, updates requirements for acceptable "practical quantitation limits" related to the precision of laboratory testing, updates requirements for professional seals from professional geologists or engineers, provides resources to calculate MSCs, and clarifies the proper submission of various reports related to the Act 2 Site-Specific Standard.

This rulemaking impacts any person addressing a release of a regulated substance at a property, whether voluntarily or because of an order by the Department. This rulemaking does not impact one particular category of person with additional or new regulatory obligations. Under Act 2, a remediator may select the standard to which to remediate. To complete a remediation, the remediator must then comply with all relevant remediation and administrative standards.

As noted previously, this rulemaking does not singularly affect one specific industry or person. This rulemaking does impact the owners and operators of storage tank facilities that have had a release of a petroleum or hazardous substance. There are approximately 12,000 storage facilities in this Commonwealth. Some of these facilities are owned or operated, or both, by small businesses. Because of the broad potential reach of this rulemaking, it is not possible to identify specifics on the types and numbers of small businesses that could potentially be affected by property contamination. In addition, Act 2 and Chapter 250 are unique from other statutes and regulations because they do not create permitting or corrective action obligations. Instead, Act 2 and Chapter 250 provide remediators with options to address contamination and any associated liability that arises under other statutes. For example, adding PFOS to the Chapter 250 Appendix does not create any liability or obligation related to PFOS. Instead, a person's liability arises under The Clean Streams Law (35 P.S. §§ 691.1—691.1001) while Act 2 and Chapter 250 provide that person the means to resolve their Clean Streams Law liability and to address the contamination. In this way, Act 2 and Chapter 250 do not create new obligations that will impact a particular category of person like a new permitting obligation or corrective action regulation would.

The soil numeric values represent a decrease for approximately 83% of the values and an increase for 17% of the values. For groundwater, the changes reflect a decrease for approximately 92% of the values and an increase in approximately 8% of the values. Lowering the values may indicate a more stringent cleanup is required at a site and increasing the values may indicate a less stringent cleanup is required at a site. These changes reflect updated information related to exposure limitations to these substances and recognize that a higher or lower standard is better representative of those substances' exposure thresholds.

The number of completed remediations vary each year. On average, remediators apply the Act 2 remediation standard to approximately 800 contaminated properties across this Commonwealth. Generally, investigation and cleanup costs vary greatly based on the severity of the contamination, the size of the site, the complexity of the remediation strategy, and the cleanup standard selected. Thus, accurate costs and savings cannot be determined at this time because such cost analysis must be based on site-specific considerations evaluated on case-by-case bases.

The Department worked with the Cleanup Standards Scientific Advisory Board (CSSAB) during the development of this rulemaking. The CSSAB, which was established by section 105 of Act 2 (35 P.S. § 6026.105), consists of persons representing a cross-section of experience, including engineering, biology, hydrogeology, statistics, medicine, chemistry, toxicology, and other related fields. The purpose of the CSSAB is to assist the Department and the Board in developing Statewide health standards, determining the appropriate statistically and scientifically valid procedures and risk factors to be used, and providing other technical advice as needed to implement Act 2. During CSSAB meetings on August 1, 2018, February 13, 2019, June 12, 2019, and October 29, 2019, CSSAB members were given the opportunity to review and provide feedback on draft regulatory amendments to Chapter 250. CSSAB members were also given the opportunity to review and provide feedback on the final-form rulemaking at the July 30, 2020, and the December 16, 2020 meetings. The Department worked with the CSSAB to resolve concerns and agreed to evaluate additional suggestions during the next review cycle for this rulemaking. Following the presentations and discussions in 2018 and 2019, the CSSAB issued a letter related to the regulatory amendments included in the rulemaking. Specifically, the CSSAB noted concern related to the MSCs for vanadium.

A listing of CSSAB members and minutes of CSSAB meetings are available on the Department's web site at www.dep.pa.gov (select "Public Participation," then "Advisory Committees," then "Cleanup and Brownfields Advisory Committees," then "Cleanup Standards Scientific Advisory Board").

E. *Summary of Final-Form Rulemaking and Changes from Proposed to Final-Form Rulemaking*

§ 250.1. Definitions

This final-form rulemaking adds a definition for the term "MDL—Method detection limit" because both "method detection limit" and "MDL" are used in Chapter 250 but are not defined. This definition is consistent with the EPA's definition in (U.S. EPA Office of Water Publication EPA 821-R-16-006, 2016).

This final-form rulemaking amends the definition of "volatile compound" to match the description in Section IV, Appendix IV-A.1 of the Department's Land Recycling Program Technical Guidance Manual (TGM) and to match the EPA's definition in their *OSWER* (Office of Solid Waste and Emergency Response) *Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* (OSWER Publication 9200.2-154, 2015). The previous definition excluded naphthalene as well as several other semi-volatiles that are considered volatiles in the vapor intrusion section of the TGM. The Department's TGM is available at https://www.dep.pa.gov/Business/Land/LandRecycling/Standards-Guidance-Procedures/Guidance-Technical-Tools/Pages/Technical-Guidance-Manual.aspx.

§ 250.4. Limits related to PQLs

Amendments to this section update the procedures for determining the practical quantitation limit (PQL), provide for a wider range of sources for PQLs and estimated quantitation limits (EQLs), and remove confusing and outdated language. Improvements in laboratory instrument technology and the removal of PQLs and EQLs from revised laboratory methods resulted in the need to update this section. This change also allows for the use of EPA analytical method manuals that may contain PQLs or EQLs other than the EPA RCRA Manual for SW-846.

§ 250.6. Public participation

The amendments to § 250.6(c) clarify that if a public involvement plan (PIP) has been initiated, the public has a right to be involved in the development and review of the remedial investigation report, risk assessment report, cleanup plan and final report consistent with section 304(o) of Act 2 (35 P.S. § 6026.304(o)), regarding community involvement, and outlines the necessary measures to involve the public.

The amendments to § 250.6(d) help to ensure that the Department and the municipality requesting the PIP are notified of the submission of the PIP and receive copies of the PIP. These amendments necessitate the removal of § 250.6(d)(1) and (2) because it no longer makes sense to include them in subsection (d). These subsections were also removed because they are already discussed in Chapter 250 in the final report requirements section for the site-specific standard in § 250.411(e) (relating to final report) and remediation requirements section for special industrial area (SIA) sites in § 250.503(f) (relating to remediation requirements). Finally, these two subsections were removed because the current Chapter 250 regulations require that the public involvement plan be submitted with the remedial investigation report or baseline environmental report. The change is necessary because the Department needs notice of PIPs in advance of receipt of those reports.

§ 250.10. Measurement of regulated substances in media

The amendments to § 250.10(d) change the references from the Groundwater Monitoring Guidance Manual to reference the most current version of Appendix A of the TGM or an alternative method that appropriately measures regulated substances in groundwater. Specific alternative methods are not provided in the rulemaking to allow for the use of various acceptable methods that may be developed after the publication of this final-form rulemaking. Laboratories are best suited to determine the appropriate analytical methods for their individual capabilities and to accommodate the variability of the samples submitted by their clients. The language in § 250.10(d) allows the flexibility remediators and laboratories need to determine the best method for a site. If DEP staff question the methods chosen by a laboratory or remediator when reviewing data submitted with Act 2 reports, those questions will be addressed directly with the laboratory or remediator on a case-by-case basis.

§ 250.12. Professional seal

This new section mirrors language from § 245.314 (relating to professional seals) of the storage tank regulations, requiring that reports submitted to the Department which include professional geologic or engineering work be sealed by a professional geologist or engineer.

§ 250.304. MSCs for groundwater

Under subsection (c), the EPA publication number has been revised.

Under subsection (g), this final-form rulemaking lists additional sources of aqueous solubility information to support the new compounds to be added to the MSC tables in this rulemaking. The following aqueous solubility sources were added to subsection (g):

19. ATSDR (Agency for Toxic Substances and Disease Registry). 2015. *Toxicological Profile for Perfluoroalkyls. Draft for Public Comment*. Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA. Accessed May 2016. http://www.atsdr.cdc.gov/ToxProfiles/tp200.pdf.

20. Hekster, F.M., R.W. Laane, and P. de Voogt. 2003. *Environmental and toxicity effects of perfluoroalkylated substances. Reviews of Environmental Contamination and Toxicology* 179:99—121.

21. HSDB (Hazardous Substances Data Bank). 2012. U.S. National Library of Medicine, Bethesda, MD. Accessed May 2016. http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB.

22. Kauck, E.A., and A.R. Diesslin. 1951. *Some properties of perfluorocarboxylic acids. Industrial & Engineering Chemistry Research* 43(10):2332—2334.

23. SRC (Syracuse Research Corporation). 2016. PHYSPROP Database. Accessed May 2016. http://www.srcinc.com/what-we-do/environmental/scientific-data bases.html.

24. OECD (Organisation for Economic Co-operation and Development). 2002. *Hazard Assessment of Per- fluorooctane Sulfonate (PFOS) and its Salts*. ENV/JM/RD (2002) 17/FINAL. Report of the Environment Directorate, Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology, Co-operation on Existing Chemicals, Paris, November 21, 2002.

§ 250.305. MSCs for soil

Under subsection (c), a minor correction was made to a cross-reference.

The amendments to § 250.305(g) alleviate confusion as to the need to evaluate the soil-to-groundwater pathway for compounds that have secondary maximum contaminant levels (SMCL) and either a primary Maximum Containment Level (MCL) or a HAL. These changes also allow for the determination of soil MSC values for substances with SMCLs but no toxicological information in Appendix A, Table 5B, of Chapter 250. This determination is based on the physical capacity of the soil to contain a regulated substance as described in § 250.305(b). This change, along with other changes to subsection (g), result in the ability of remediators to determine soil MSCs for chloride and sulfate that also incorporate impacts to ecological receptors as described in § 250.311(a)—(f) (relating to evaluation of ecological receptors).

§ 250.306. Ingestion numeric values

Due to new information published by the EPA in Exposure Factors Handbook 2011 Edition, EPA/600/R-090/052F, the residential groundwater ingestion rate has increased from 2 liters a day (L/day) to 2.4 L/day. This amendment results in additional changes to other exposure factors listed in the table and footnotes in § 250.306(d). Formatting errors in the table footnotes in this section have also been corrected. Some equations in the footnotes contained brackets that should not be confused with brackets used to delineate changes in the rulemaking. Bolded text within bolded brackets represents text that was deleted while unbolded brackets encompass existing text not removed.

Proposed amendments to § 250.306(e) would have updated the models used to calculate blood lead levels that are applied to the corresponding lead numeric value calculations. The new model references would also have been updated in this subsection. As discussed further in Section F of this preamble, this final-form rulemaking rescinds the proposed changes to the lead models and will leave the existing regulation in place. The Department intends to propose a separate rulemaking addressing the calculation of the ingestion numeric values for lead in soil to ensure the Department is using the most current science regarding lead toxicity. This will allow the public the opportunity to comment on these changes.

§ 250.307. Inhalation numeric values

An amendment to the equation in § 250.307(g)(1) adds a "× 24 hr/day" multiplier to the numerator. This component was inadvertently omitted from this equation in the previous rulemaking.

§ 250.308. Soil to groundwater pathway numeric values

In section § 250.308(a)(2)(ii), the word "standard" was replaced with "generic numeric value" to avoid the implication that the 1/10th value is always the soil MSC for saturated soil and to avoid the implication that the comparison process should be bypassed.

§ 250.311. Evaluation of ecological receptors

Amendments to § 250.311(b) directly reference the changes to § 250.305(g) and reference the physical capacity of the soil to contain a regulated substance as described in § 250.305(b).

§ 250.402. Human health and environmental protection goals

Amendments to § 250.402(d) resolve confusion and ensure the correct application of § 250.311(e) to protect ecological receptors under the site-specific standard. An amendment to § 250.402(d)(3) corrects and replaces the reference to § 230.311(f) with § 250.311(f).

§ 250.404. Pathway identification and elimination

Under subsection (a), added the words "Department or" to allow for the use of Department guidance in identifying exposure pathways.

§ 250.409. Risk assessment report

An amendment to § 250.409(1) clarifies that an approved remedial investigation report is needed in advance of submitting an approvable risk assessment report when the reports are submitted separately. This amendment is part of a clarification regarding the appropriate sequence of reports submitted under Subchapter D (relating to the site-specific standard), including a new section for "combined reports," in § 250.412 (relating to combined reports), described as follows.

§ 250.410. Cleanup plan

The new subsection (d) removes any ambiguity regarding the need for a cleanup plan in situations in which a remedy is already present. The previous language in subsection (d) was moved into a newly created subsection (e).

§ 250.412. Combined reports

This new section explains that prior approval of a remedial investigation report is not necessary when combined with either a risk assessment report or a cleanup plan. This section is necessary because of the changes made to § 250.410 (relating to cleanup plan).

§ 250.503. Remediation requirements

The amendments to § 250.503(e) clarify that a revised baseline environmental report, not just a new remediation plan, may need to be submitted when land use changes from nonresidential to residential at a SIA site.

§ 250.603. Exposure factors for site-specific standards

The amendment to § 250.603(a) updates the citation of the 1992 version of the EPA's Final Guidelines for Exposure Assessment to EPA's 2011 Exposure Factors Handbook.

§ 250.605. Sources of toxicity information

The updates to § 250.605(a)(3) add the EPA's Office of Pesticide Programs Human Health Benchmarks for Pesticides and the EPA's PPRTV Appendix databases to the toxicity value source hierarchy.

§ 250.707. Statistical tests

The term "Statewide health standard" was changed to "MSC" in the amendment to § 250.707(b)(1)(ii) for clarification.

A new clause (D) was added to § 250.707(b)(1)(iii) clarifying when or whether a vapor intrusion analysis is necessary for sites with small petroleum releases where full site characterization is not performed.

Appendix A, Tables 1—7

Amendments to the "Medium-Specific Concentrations" tables update the MSCs for certain regulated substances. Updates to footnotes were necessary to help explain some of the changes to the MSCs. Numeric values were calculated for several new substances, including PFOS, PFOA and PFBS in groundwater and soil, and total polychlorinated biphenyls in soil. Ingestion-based numeric values all decreased slightly due to the increase in water ingestion rate under § 250.306(d) from 2 L/day to 2.4 L/day. Other numeric value changes were mostly be attributed to updates in toxicity values in Tables 5A and 5B. However, corrections to the numeric value calculation process also caused some numeric values to change.

The update to the definition of a "volatile compound" caused some of the values to change because the new definition includes the consideration of Henry's law constant and molecular weight. Additionally, some of the numeric values changes were due to rounding adjustments.

When the Department calculates the numeric MSC values for inclusion in Chapter 250, some values are rounded during one of the early calculation steps instead of at the end of the calculation. To be consistent, the rounding procedure was updated so that all rounding occurs at the final value calculation step. Elimination of the rounding of transfer factors has also cause changes to the numeric values. Transfer factors used for the calculation of inhalation numeric values from soil are calculated and listed in Table 5A. The transfer factors previously in Table 5A were rounded inconsistently. To be consistent with the other rounding corrections, these values are no longer rounded because they are calculated and used in the early stages of the numeric value calculation process.

In the amendments, information was updated on the "Threshold of Regulation Compounds" table (Table 6) by the removal of compounds that now have numeric values calculated on other tables.

In the proposed rulemaking, amendments to the "Default Values for Calculating MSCs for Lead" table (Table 7) would have updated the input parameters for use in the Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children for residential exposure. Amendments for nonresidential exposure updated the model input parameters for the Adult Lead Model. References for both models were also updated. These amendments resulted in proposed updates to the lead residential and nonresidential direct contact values provided in Table 4A. However, as discussed in the summary for § 250.306 and further in Section F of this preamble, this final-form rulemaking is rescinding the proposed changes to the lead models and will leave the existing regulation in place. Accordingly, this final-form rulemaking is rescinding the proposed changes to Table 7 and the proposed updates to the lead residential and nonresidential direct contact values in Table 4A and will leave the existing values in place. The Department intends to propose a separate rulemaking addressing the calculation of the ingestion numeric values for lead in soil to ensure the Department is using the most current science regarding lead toxicity. This will allow the public the opportunity to comment on these changes.

For the final-form rulemaking, an error was identified in Table 3B regarding use of the footnote "NA" for the generic values for PFAS chemicals. This footnote refers to the soil buffer distance option which is not related to the PFAS values. To correct this, the footnote symbol for the PFOS, PFOA and PFBS generic values was changed from "NA" to "N/A" and described it as "SOIL TO GROUNDWATER VALUES CANNOT BE CALCULATED FOR THESE COMPOUNDS."

Several changes were made to Table 5A for the final-form rulemaking. First, five Aroclors were inadvertently proposed to be removed from Table 5A. This error has been corrected. Secondly, it was noted that although surrogate toxicity values are noted in Table 5A, the chemical used as the surrogate was not identified. The names of the surrogates used in Table 5A have been added as footnotes. Additionally, after the publication of the proposed rulemaking, the Department noted that EPA removed the MERPHOS OXIDE oral reference dose (RfDo) from its IRIS toxicity value database. Consequentially, the Department replaced the MERPHOS OXIDE IRIS value in Table 5A with the toxicity value from ATSDR. This resulted in changes to the MERPHOS OXIDE numeric values in Tables 1, 3A, and 3B. Lastly, EPA announced the publication of a new toxicity assessment for PFBS on April 8, 2021, which included an updated toxicity value that differed from what was used in the proposed rulemaking. Consequently, the

PFBS toxicity value has been amended in the final rulemaking to use the most current and accurate science to calculate the newly proposed MSC values, as required by § 250.11. This change substantially lowered the proposed MSCs for PFBS between the proposed and final rulemakings. This change in toxicity values in Table 5A follows the established hierarchy and process the Department uses for selecting toxicity values described in § 250.605. This change in Table 5A resulted in the MSCs for PFBS in Tables 1, 3A, and 3B to decrease between the proposed and final rulemakings.

It was noted that in Table 5B, a surrogate footnote was provided even though no surrogates are used in this table. Therefore, the surrogate footnote was removed from Table 5B for the final-form rulemaking.

F. *Summary of Comments and Responses on the Proposed Rulemaking*

Notice of the Chapter 250 proposed rulemaking, and the accompanying public comment period, was published in the *Pennsylvania Bulletin* on February 15, 2020 (50 Pa.B. 1011, 1016). The Board's public comment period opened on February 15, 2020 and closed on April 30, 2020.

During the public comment period, the Board received 140 comment documents from 128 individuals/organizations including the Independent Regulatory Review Commission (IRRC) which submitted comments on June 1, 2020. Ninety-seven percent of the commentators expressed concern with the proposed increase in the non-residential numeric value for lead in surface soil in Table 4A. This increase was a result of the proposed amendments to § 250.306(e) which updated the models used to calculate blood lead levels that are applied to the corresponding lead numeric value calculations and updates to the model input parameters in Table 7. Commentators provided various reasons for their concerns, but the main theme of their concerns was that the Department was using outdated science to calculate the soil lead numeric values, specifically the use of a target blood lead level (TBLL) of 10 μg/dL. Many of the commentators recommended changing the TBLL from 10 μg/dL to 5 μg/dL.

While the Department agrees that a TBLL of 5 μg/dL represents the most current science regarding lead toxicity, changing the value from 10 μg/dL to 5 μg/dL in the final-form rulemaking without having presented this change in the proposed rulemaking denies the public the necessary opportunity to provide comment on this change. However, in recognition of the recent scientific research indicating the potential for significant adverse health effects of a blood lead level of 10 μg/dL, the Board has rescinded the proposed changes to the lead models and the resulting changes in the residential and non-residential direct contact numeric values for lead and plans to recalculate these numeric values using a target blood lead level of 5 μg/dL in a separate proposed rulemaking. This recalculation will bring the direct contact numeric values more in line with the current lead toxicity science and with other state and federal public health agencies. Providing this change in a separate proposed rulemaking will allow for the necessary public comment process required by the Commonwealth Documents Law (45 P.S. §§ 1102—1208).

Other comments regarding the MSC table values were provided to the Department including concerns with increasing numeric values, concerns with decreasing numeric values, potential impacts to plants and wildlife, concerns with the minimum threshold MSCs, potential increases in the cost of cleanups, concerns with the current vanadium soil numeric values, and concerns with transparency in the MSC calculation process. The Department's responses to these comments explain the various reasons why MSC values can increase or decrease during rulemakings and how the Department makes a concerted effort to make the MSC calculation process as clear and transparent as possible. Other concerns from commentators are discussed in detail in the Comment and Response Document that accompanies this rulemaking.

Several commentators expressed concerns with the addition of the PFAS numeric values for groundwater and soil. The general consensus was that it will be difficult for remediators to address PFAS contamination when there is so much uncertainty with the current science of these contaminants and a lack of consensus among states and the Federal agencies as to the appropriate accurate cleanup standard or standards. Although the science is still evolving, the Department believes these new MSCs will provide remediators a means of addressing PFOS, PFOA and PFBS groundwater and soil contamination in this Commonwealth. This change benefits the public by reducing exposure to these harmful contaminants. This change also benefits remediators because it provides flexible options for them to navigate through the Act 2 cleanup process.

Detailed responses to all the public comments are provided in the Comment and Response Document that accompanies this final-form rulemaking.

H. *Benefits, Costs and Compliance*

Benefits

In enacting Act 2, the General Assembly found and declared among its policy goals that "[p]ublic health and environmental hazards cannot be eliminated without clear, predictable environmental remediation standards and a process for developing those standards," that "[a]ny remediation standards adopted by this Commonwealth must provide for the protection of public health and the environment," and that "[c]leanup plans should be based on actual risk that contamination on the site may pose to public health and the environment, taking into account its current and future use and the degree to which contamination can spread offsite and expose the public or the environment to risk." See 35 P.S. § 6026.102 regarding declaration of policy.

To effectuate this, the General Assembly authorized the Board and the Department to develop standards and methods to effectuate those goals. 35 P.S. §§ 6026.104 and 6026.303. The Department's regulatory structure, as authorized under Act 2 and as implemented by Chapter 250, provides those important benefits articulated in the General Assembly's declaration of policy.

The amendments to the MSCs in this final-form rulemaking serve both the public and the regulated community because they provide MSCs based on the most up-to-date health and scientific information for substances that cause cancer or have other toxic effects on human health. The Board first published Chapter 250 regulations in 1997 at 27 Pa.B. 4181 (August 16, 1997). The General Assembly recognized, in section 104(a) of Act 2 (35 P.S. § 6026.104(a)), that these standards must be updated over time as better science becomes available and as the need for clarification or enhancement of the program becomes apparent.

Potential contamination of soil and groundwater from accidental spills and unlawful disposal can impact almost any resident of this Commonwealth. Many of the chemical substances addressed in this rulemaking are systemic toxicants or carcinogens as defined under Act 2 and, in some cases, are widespread in use. Examples of substances that contain toxic or carcinogenic properties include gasoline and other petroleum products, solvents, elements used in the manufacture of metals and alloys, pesticides, and some dielectric fluids previously contained in transformers and capacitors. Releases of regulated substances not only pose a threat to the environment, but also could affect the health of the general public if inhaled or ingested. New research on many of these substances is ongoing and provides the basis for protection of the residents of this Commonwealth through site cleanup requirements.

Although most of the changes to soil numeric values in this final-form rulemaking decrease the numeric values, 17% of the values have increased. Increases in values reflect updated information related to exposure limitations to the substances and acknowledge that a higher standard is better representative of those substances' exposure threshold.

An additional benefit of this rulemaking is the promulgation of soil and groundwater MSCs for PFOS, PFOA and PFBS. Establishing these MSCs allows remediators to address groundwater and soil contamination and thereby lessen public exposure to the contaminants. This also benefits remediators wishing to remediate contaminated sites, who tend to be owners, operators or purchasers—or their contractors—of properties and facilities including, or at or near, military bases, municipalities and other locations that used or stored fire-fighting foam. The EPA reports that contamination from these chemicals has also been associated with manufacturing textiles, food packaging, personal care products, and other materials such as cookware that are resistant to water, grease and stains. See Fact Sheet, EPA, PFOA & PFOS Drinking Water Health Advisories (November 2016) (available at https://www.epa.gov/sites/production/files/2016-06/documents/drinkingwaterhealthadvisories_pfoa_pfos_updated_5.31.16.pdf).

Finally, remediators will benefit from the amendments that clarify many of the administrative elements of Act 2, making for a more efficient and streamlined Act 2 remediation process.

The benefits of this rulemaking are difficult to quantify because, unlike other statutory or permitting schemes, Act 2 does not prevent contamination but instead provides remediators with a variety of options to address sites that have already been contaminated. In that sense, this rulemaking, consistent with Act 2, benefits the public because it can lead to more efficient and more expedient remediation and reuse of contaminated areas.

Compliance costs

Financially and economically, the Department believes that any potential impact to the regulated community would be insignificant. Under this final-form rulemaking, the MSC values for many regulated substances were amended for a variety of reasons. The two most common reasons for amendments are Federal agency (including the EPA and United States Department of Health

Agency for Toxic Substances and Disease Registry) changes in toxicity values that are used in calculating MSC and a change in the EPA's underlying assumption of a person's average daily consumption of water from 2 L/day to 2.4 L/day. The soil numeric values represent a decrease for approximately 83% of the values and an increase for 17% of the values. For groundwater, the changes reflect a decrease for approximately 92% of the values and an increase in approximately 8% of the values. Lowering the values may indicate a more stringent cleanup is required at a site and increasing the values may indicate a less stringent cleanup is required at a site. The number of completed remediations vary each year. On average, remediators apply the Act 2 remediation standard to approximately 800 contaminated properties across this Commonwealth. The Department does not expect that these amendments will impact the number of remediations voluntarily completed or the number that must be completed as a result of Department enforcement actions.

The amendments to Statewide health standard MSCs will not affect the cleanup options available to remediators under other cleanup standards. Persons conducting remediation under Act 2 may choose from three different cleanup standards: background, Statewide health or site-specific.

The Department does not expect that this rulemaking, as it relates to new MSCs for PFOA, PFOS and PFBS, will create any additional costs. Act 2 does not create liability for, or the obligation to, address contamination for these and other chemicals. Instead, that obligation comes from other environmental statutes, including The Clean Streams Law (35 P.S. §§ 691.1—691.1001) and the Solid Waste Management Act (35 P.S. §§ 6018.101—6018.1003). Act 2 provides remediators with options to remediate contamination. Having these new MSCs will allow remediators to address PFOS, PFOA and PFBS groundwater and soil contamination. This will benefit the public by lessening their exposure to these contaminants.

Compliance assistance plan

The Land Recycling Program will disseminate information concerning these updates using the Department web site and e-mails to environmental consultants involved in the program.

Paperwork requirements

This rulemaking will not result in any additional forms or reports, beyond those that are already required by Act 2 and Chapter 250.

I. *Pollution Prevention*

The Federal Pollution Prevention Act of 1990 (42 U.S.C.A. §§ 13101—13109) established a National policy that promotes pollution prevention as the preferred means for achieving state environmental protection goals. The Department encourages pollution prevention, which is the reduction or elimination of pollution at its source, through the substitution of environmentally friendly materials, more efficient use of raw materials and the incorporation of energy efficiency strategies. Pollution prevention practices can provide greater environmental protection with greater efficiency because they can result in significant cost savings to facilities that permanently achieve or move beyond compliance.

Act 2 encourages cleanup plans that have as a goal remedies which treat, destroy or remove regulated substances whenever technically and economically feasible. This rulemaking will provide the necessary Statewide health standard MSCs for remediators to remove contamination or eliminate exposure, where appropriate. This rulemaking reflects the most up-to-date science, especially as it relates to the characterization and removal of contamination that exceeds Act 2 MSCs. During the remediation of a contaminated site, potential sources of pollution are often removed to attain the Act 2 standards, eliminating or minimizing the potential for continued migration of the sources of pollution to other areas.

J. *Sunset Review*

The Board is not establishing a sunset date for this rulemaking because it is needed for the Department to carry out its statutory authority.

K. *Regulatory Review*

Under section 5(a) of the Regulatory Review Act (71 P.S. § 745.5(a)), on January 27, 2020, the Department submitted a copy of the notice of proposed rulemaking, published at 50 Pa.B. 1011, to the Independent Regulatory Review Commission (IRRC) and the Chairpersons of the House and Senate Environmental Resources and Energy Committees for review and comment.

Under section 5(c) of the Regulatory Review Act, IRRC and the Committees were provided with copies of the comments received during the public comment period, as well as other documents when requested. In preparing the final-form rulemaking, the Department has considered all comments from IRRC, the House and Senate Committees and the public.

Under section 5.1(j.2) of the Regulatory Review Act, on ___(DATE)___, the final-form rulemaking was deemed approved by the House and Senate Committees. Under section 5.1(e) of the Regulatory Review Act, IRRC met on ____(DATE)____ and approved the final-form rulemaking.

L. *Findings of the Board*

The Board finds that:

(1) Public notice of the proposed rulemaking was given under sections 201 and 202 of the act of July 31, 1968 (P.L. 769, No. 240) (45 P.S. §§ 1201 and 1202) and regulations promulgated thereunder at 1 Pa. Code §§ 7.1 and 7.2.

(2) A public comment period was provided as required by law, and all comments were considered.

(3) This final-form rulemaking does not enlarge the purpose of the proposed rulemaking published at 50 *Pennsylvania Bulletin* 1011 (February 15, 2020).

(4) These regulations are necessary and appropriate for the administration and enforcement of the authorizing acts identified in Section C of this order.

M. *Order of the Board*

The Board, acting under the authorizing statutes, orders that:

(a) The regulations of the Department of Environmental Protection, 25 Pa. Code Chapter 250, are amended to read as set forth in Annex A.

(b) The Chairperson of the Board shall submit this final-form regulation to the Office of General Counsel and the Office of Attorney General for review and approval as to legality and form, as required by law.

(c) The Chairperson of the Board shall submit this final-form regulation to the Independent Regulatory Review Commission and the Senate and House Environmental Resources, and Energy Committees as required by the Regulatory Review Act.

(d) The Chairperson of the Board shall certify this final-form regulation and deposit it with the Legislative Reference Bureau, as required by law.

(e) This final-form regulation shall take effect immediately upon publication in the *Pennsylvania Bulletin.*

PATRICK McDONNELL,
Chairperson

pennsylvania
DEPARTMENT OF ENVIRONMENTAL
PROTECTION

Bureau of Environmental Cleanup and Brownfields

COMMENT AND RESPONSE DOCUMENT

ADMINISTRATION OF THE LAND RECYCLING PROGRAM

25 Pa. Code Chapter 250
50 Pa.B. 1011 (February 15, 2020)
Environmental Quality Board Regulation # 7-552
(Independent Regulatory Review Commission # 3251)

INTRODUCTION

On February 15, 2020, the Environmental Quality Board (Board or EQB) published a notice of public comment period for a proposed rulemaking concerning revisions to 25 Pa. Code Chapter 250 (relating to administration of the Land Recycling Program). This rulemaking is proposed under 25 Pa. Code § 250.11 (relating to the periodic review of MSCs), which requires that the Department of Environmental Protection (DEP or Department) review new scientific information that relates to the basis of the Statewide health standard medium-specific concentrations (MSCs) at least 36 months after the effective date of the most recently promulgated MSCs and to propose to the Board any changes to the MSCs as necessary. In addition to updating the existing MSCs, the proposed rulemaking will add MSCs for three new contaminants, namely Perfluorooctanoic Acid (PFOA), Perfluorooctane Sulfonate (PFOS), and Perfluorobutane Sulfonate (PFBS). These contaminants are within the Per- and Poly-fluoroalkyl Acid (PFAS) family of compounds for which EPA has published toxicological data. This rulemaking will also clarify several other regulatory requirements.

The rulemaking will be effective upon publication in the *Pennsylvania Bulletin* as a final-form regulation.

PUBLIC COMMENT PERIOD

Notice of the public comment period on the proposed Chapter 250 rulemaking was published in the *Pennsylvania Bulletin* on February 15, 2020 (50 Pa.B. 1011, 1016). The EQB's public comment period opened on February 15, 2020 and closed on April 30, 2020.

During the public comment period, the Board received 140 comment documents from 128 individuals/organizations including the Independent Regulatory Review Commission (IRRC), which submitted comments on June 1, 2020. The following table lists these commentators.

In assembling this document, the Board has addressed all pertinent and relative comments associated with this package. For the purposes of this document, comments of similar subject material have been grouped together and responded to accordingly.

All comments received by the Board are posted on the Department's e-Comment website at https://www.ahs.dep.pa.gov/eComment/. Additionally, copies of all comments are available on IRRC's website at http://www.irrc.state.pa.us by searching for Regulation # 7-552 or IRRC # 3251.

Commentators Requesting a Copy of the Final-Form Rulemaking

Rachel Kaminski
Get the Lead OUT- Riverwards Philadelphia
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List of Commentators

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26. Anne Jackson
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27. James Castellan
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28. Crystal Gornati
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29. Wesley Merkle
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30. Reverend Sandra Mackie
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31. Michael Lombardi
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32. Jean Plough
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35. Kay Reinfried
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36. Linda Hilf
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37. Fayten El-Dehaibi
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38. Cecelia Hard
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47. Sandra Foehl
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48. Lila Cornell
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49. Duane Burtner
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50. Russ and Linda Allen
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51. Alex Bomstein
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66. Joanne Darken
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67. James Ross
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68. Susan Hardin
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69. Ann Kuter
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71. Joseph Smith
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Acronyms used in this Comment and Response Document	
ALM	USEPA's Adult Lead Model
ATSDR	Agency for Toxic Substances and Disease Registry
CalEPA	California Environmental Protection Agency
CDC	Centers for Disease Control and Prevention
CSSAB	Cleanup Standards Scientific Advisory Board
DEP or PA DEP	Pennsylvania Department of Environmental Protection
EPA or USEPA	U.S. Environmental Protection Agency
EQB	Environmental Quality Board
GAC	Granular Activated Carbon
HAL	Health Advisory Level
HFPO	Hexafluoropropylene Oxide
IDW	Investigation Derived Waste
IRIS	EPA's Integrated Risk Information System
IRRC	Independent Regulatory Review Commission
ITRC	Interstate Technology and Regulatory Council
LRP	Land Recycling Program
MCL	Maximum Contaminant Level
MCLGs	Maximum Contaminant Level Goals
MSC	Medium-Specific Concentration
NDAA	National Defense Authorization Act
NIR	Notice of Intent to Remediate
OSRTI	EPA's Office of Superfund Remediation and Technology Innovation
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PFAS	Per- and Poly-fluoroalkyl Acid substances
PFBS	Perfluorobutane Sulfonate
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
PIP	Public Involvement Plan
PPM	Parts Per Million
PPRTV	EPA's Provisional Peer-Reviewed Toxicity Values
PQL	Practical Quantitation Limit
ROL	Relief of Liability

RRA	Regulatory Review Act
RSL	EPA Regional Screening Level
SDWA	Safe Drinking Water Act
SEGH	Society for Environmental Geochemistry and Health
SHS	Statewide health standard
SPLP	Synthetic Precipitation Leaching Procedure
SWMA	Solid Waste Management Act
TBD	To Be Determined
TF	Transport Factor
USDA	United States Department of Agriculture
USFDA	United States Food and Drug Administration
USGS	United States Geological Survey

Appendix A, Tables 4A and 7 – Non-Residential Numeric Value for Lead in Surface Soil and Associated Model Default Input Parameters

Many commentators expressed concern with the proposed increase in the non-residential numeric value for lead in surface soil in Table 4A. This increase was a result of the proposed amendments to § 250.306(e) which would update the models used to calculate blood lead levels that are applied to the corresponding lead numeric value calculations. For the non-residential numeric value calculation, the Society for Environmental Geochemistry and Health (SEGH) Task Force Approach to the Assessment of Lead in Soil was proposed to be replaced with USEPA's Adult Lead Model (ALM). Updates to the model input parameters Table 7 were also proposed.

Commentators provided various reasons for their concerns but there was also a significant amount of overlap in the reasoning for opposition to this proposed increase. The comments and associated responses below represent summaries of each the reasonings for opposition to the proposed increase.

1) Comment: As noted by IRRC, most commentators expressed concern with the proposed 150% increase in the in the non-residential numeric value for lead in surface soil in Table 4A. Lead is prevalent in many areas throughout Pennsylvania, due in part to the historical legacy of industrial facilities, the burning of leaded gasoline, and the use of lead paint. The "nonresidential" designation applies not only to industrial properties, but also to commercial and business properties that could be used by at-risk populations. The EQB's newly proposed cleanup standard of 2,500 ppm for lead in non-residential surface soil is two-and-a-half times the current standard of 1,000 ppm. The commentators believe the proposal is flawed scientifically because it does not include updated information on the target blood concentration for lead from the Centers for Disease Control and Prevention (CDC). The proposed cleanup standard is based on a target blood concentration of 10 μg/dL for lead, even though the CDC has been using 5 μg/dL for case management since 2012.

Response: The commentators assert that the "non-residential" designation in Act 2 is broad and can include a wide variety of potential receptors. While this may be true, the ALM uses widely accepted exposure assumptions and its abundant use throughout the environmental assessment community helps to promote consistency in assessments of adult lead exposure risk. The commentators also state that the proposed increase in the non-residential direct contact numeric value is scientifically flawed because it does not include updated information on the target blood concentration for lead from the CDC pointing out that the CDC's target blood lead level is 5 μg/dL. The Land Recycling Program (LRP) typically relies on information from EPA's Superfund Program, specifically the Office of Superfund Remediation and Technology Innovation (OSRTI), for guidance due to the similarity of the two environmental cleanup programs. EPA acknowledges that OSRTI is developing a new soil lead policy to address this new information but has not yet definitively stated that a target blood lead level of 5 μg/dL should be used in blood lead level modeling including the ALM. Therefore, the LRP decided to use the current default blood lead level of 10 μg/dL in the proposed rulemaking lead numeric value calculations.

However, EPA also acknowledges that recent scientific evidence has demonstrated adverse health effects at blood lead concentrations below 10 μg/dL down to 5 μg/dL. These acknowledgements from EPA indicate that they may change the default blood lead level in the ALM from 10 μg/dL to 5 μg/dL at some point in the future. In addition to the CDC, other national public health organizations such as the National Capital Poison Center, American Academy of Pediatrics, The American College of Obstetricians and Gynecologists, and the U.S. Department of Housing and Urban Development acknowledge adverse health effects at blood lead levels below 10 μg/dL. Also, other Pennsylvanian public health organizations such as Allegheny Department of Health and the City of Philadelphia use 5 μg/dL as a threshold value. Additionally, Pennsylvania's Department of Health currently use 5 μg/dL in their Childhood Lead Poisoning Prevention Program as a threshold of "elevated blood lead level." Although most of these health organizations and agencies focus on blood lead levels in children, the ALM is designed to predict the impacts of exposure of a pregnant female worker to lead in soil while working so the target receptor is not necessarily the adult but the fetus which is a more sensitive receptor. By predicting the impact to the expectant mother, the model also predicts impacts to the fetus. This would suggest that the thresholds developed for children by the above-mentioned public health agencies would also be applicable to adults (with a pregnant female worker being the most sensitive; and therefore, the default adult receptor) in a non-residential exposure scenario.

While the Department agrees that a target blood lead level of 5 μg/dL represents the most current science regarding lead toxicity, changing the value from 10 μg/dL to 5 μg/dL in the final-form rulemaking without having presented this change in the proposed rulemaking denies the public the necessary opportunity to provide comment on this change. However, in recognition of the recent scientific research indicating the potential for significant adverse health effects of a blood lead level of 10 μg/dL, the Department has rescinded the proposed changes to the lead models and the resulting changes in the residential and non-residential direct contact numeric values for lead and plans to recalculate these numeric values using a target blood lead level of 5 μg/dL in a separate proposed rulemaking. This recalculation will bring the direct contact numeric values consistent with the current lead toxicity science and with other public health agencies in Pennsylvania. Providing this change in a new proposed rulemaking will allow for the necessary public comment process required by the Commonwealth Documents Law (45 P.S. §§ 1102—1208).

2) **Comment:** As noted by IRRC, several commentators emphasized that the non-residential lead soil cleanup level is intended to be protective of the fetus of a pregnant worker at the site. The commentators feel that DEP made a flawed assumption about the acceptable blood lead concentration in a fetus and that this proposal would not be protective of public health. They think the state should be using more current science to set cleanup levels. The commentators believe that PADEP considers this proposed cleanup level to be irrelevant because a soil-to-groundwater numeric value will apply instead. The commentators point out that the regulations only make the soil-to-groundwater numeric value applicable if specific requirements are met. However, the commentators feel that PADEP's claim is flawed because the soil-to-groundwater numeric value would only apply if the lead concentration in the soil is less than that soil-to-groundwater numeric value. If the lead concentration is higher, a property owner would have an incentive to develop a site-specific standard, which it would be allowed to select under the law. They point out that this happened at the Philadelphia oil refinery in 2015, when the PADEP approved a standard of 2,240 ppm. The commentators explain that lead is a highly toxic chemical that causes harm to the central nervous system and request that PADEP does not increase this threat to public health for Pennsylvania residents. One commentator also is concerned that the new proposal is not protective to the reproductive rights of women and will result in discriminatory hiring practices against them, especially for those pregnant or seeking to become pregnant. Moreover, there is increased potential for life-long birth defects for the developing child that will certainly be open to liability suits for any company engaged in lead surface cleanup. IRRC also questioned why Appendix A, Table 7 includes two instances of "TBD" in the value columns.

Response: DEP agrees that the proposed increase in the non-residential direct contact value for lead in soil can impact sites being remediated under the Statewide health standard and use the Synthetic Precipitation Leaching Procedure (SPLP), soil buffer distance, or the equivalency demonstration to address the soil-to-groundwater pathway. However, many remediators evaluating sites under the Statewide health standard only consider the values in the Chapter 250 Appendix A tables to determine the soil MSC. In these cases, the soil-to-groundwater value will be the soil MSC and the proposed increase in the non-residential direct contact value for lead would have no impact. Regardless, DEP agrees that various national and state public health agencies have concerns about serious adverse health effects of blood lead levels of 10 µg/dL and below. As such, DEP will recalculate the residential and non-residential direct contact numeric values for lead using a target blood lead level of 5 µg/dL in a separate proposed rulemaking to allow for public comment. The instances of "TBD" listed in Table 7 were the result of a typographic error and will be corrected by rescinding the proposed changes to Table 7 in the final-form rulemaking.

3) **Comment:** IRRC and other commentators expressed concern about the proposed increase in the non-residential direct contact numeric value for lead as it relates to Act 2's definition of a non-residential property. While this proposal changes the standard cleanup for non-residential soil, there is no guarantee that a site will remain non-residential. In Philadelphia, developers build wherever there's space and will file for variances in order to do so. While this amendment may be for non-residential now, there is no telling what that land will be used for in the future. The "non-residential" designation applies not only to industrial properties, but also to

commercial and business properties that could be used by at-risk populations such as children 6 years of age and younger. The commentators point out that the CDC has stated the there is no safe amount of lead and even small amounts can be harmful to childhood development. They are concerned that the proposed amendment does not included updated information on the target blood concentration for lead from the CDC (target blood lead level of 5 µg/dL for case management) especially considering the CDC may be lowering it even further to 3.5 µg/dL. One commentator questioned if the potential for non-residential soil contaminated with lead to migrate to residential areas aligns with Section 102(6) of Act 2 (35 P.S. § 6026.102(6)) which requires that cleanup plans shall take "into account its current and future use and the degree to which contamination can spread offsite and expose the public or the environment to risk".

Response: "Nonresidential property" has a broad definition in Act 2. It includes all commercial, industrial, and manufacturing properties. Remediators must show that properties impacted by a release are truly nonresidential in use and any potential impacts to residential properties must be evaluated using residential values. Any potential off-site migration of contaminated media must be evaluated and appropriately addressed prior to final report approval. DEP agrees that various national and state public health agencies have shown significant adverse health effects of blood lead levels of 10 µg/dL and below. As such, DEP plans to recalculate the residential and non-residential direct contact numeric values for lead using a target blood lead level of 5 µg/dL in a separate proposed rulemaking to allow for public comment.

4) Comment: The commentator states that lead contamination in human beings is unsafe regardless of the amount. They request that PADEP does not relax lead contamination standards. Businesses profited from lead, so businesses need to be held accountable for its clean-up and proper disposal regardless of the cost.

Response: DEP agrees that lead is toxic in humans and will recalculate the residential and non-residential direct contact numeric values for lead using a more scientifically accurate target blood lead level of 5 µg/dL in a separate proposed rulemaking to allow for public comment.

5) Comment: The commentator takes no position at this time on whether the increased MSC for lead in nonresidential soil is in fact scientifically justified. However, they believe that PADEP should more fully and clearly justify the change and should do so in a plain language fashion that the public will understand. They also questioned whether the higher lead in soil standard aligns with 35 P.S. § 6026.102 regarding the potential for offsite migration of lead in soil. The commentator also states that Annex A Sec. 250.306(e) refers to EPA documents in a de facto fashion and is too dense for general public understanding. The commentator adds that it appears in line 9 of that subsection that either a bracket is missing, was replaced with a parenthesis, or some other typographical error is present further confusing the matter.

Response: The Preamble explains that the Department has rescinded the proposed changes to the lead models and the resulting changes in the residential and non-residential direct contact numeric values for lead and plans to recalculate these numeric values using a target blood lead level of 5 µg/dL in a separate proposed rulemaking. Any potential off-site migration of contaminated media must be addressed prior to final report approval. Line 9 of § 250.306(e) is an equation that is being removed. The two brackets in the numerator of the equation are part of the equation and do not indicate text being removed. The lone bracket below the equations represents the end of the section of text, including the equation, that is proposed to be removed.

6) **Comment:** The commentator does not believe any relaxation of the lead benchmarks is appropriate because people will still work in these plants once they get re-sold and re-developed, and additional people will still live nearby. These people will continue to be exposed to lead that will present significant harm to them if it remains in elevated concentrations due to standards that do not comply with the most recent scientific understanding. The commentator questions why this is being done and for whose purposes as this document does not seem to suggest that the needs of PA's citizens are being considered at all. If they were, no relaxation of standards based on science research would ever be allowed. Further, the commentator believes this proposed change would benefit corporations and businesses who wish to clean up decades of contamination to a substandard level in order to sell or repurpose this contaminated land and thus fill their own coffers.

Response: In recognition of the recent scientific research indicating the potential for significant adverse health effects of a blood lead level of 10 µg/dL, the Department has rescinded the proposed changes to the lead models and the resulting changes in the residential and non-residential direct contact numeric values for lead and plans to recalculate these numeric values using a target blood lead level of 5 µg/dL in a separate proposed rulemaking. This recalculation will bring the direct contact numeric values more in line with the current lead toxicity science and with other state and federal public health agencies.

7) **Comment:** The commentator supports legislation and regulations that provide for lead testing and recognition of the health issues for especially young children. Industrial and residential sites must adhere to the highest standards the federal and state governments provide. However, the commentator requests that PADEP does not reduce residential standards due to family health issues that begin with children playing on and eating dirt.

Response: DEP recognizes that young children are especially susceptible to lead poisoning due to their sensitivity to lead and their propensity for higher amounts of incidental soil ingestion. Thus, in recognition of the recent scientific research indicating the potential for significant adverse health effects of a blood lead level of 10 µg/dL, the Department has rescinded the proposed changes to the lead models and the resulting changes in the residential and non-residential direct contact numeric values for lead and plans to recalculate these numeric values using a target blood lead level of 5 µg/dL in a separate proposed rulemaking. This recalculation will bring the direct contact numeric values more in line with the current lead toxicity science and with other state and federal public health agencies.

8) **Comment:** The commentator has great concern regarding the increase in the acceptable non-residential lead standard in soil from 1000 PPM to 2500 PPM. The commentator believes many non-residential sites do not have restricted access and children may find them particularly attractive playgrounds. The commentator also points out that the recommendation to increase lead soil levels in non-residential sites is also an environmental justice issue. Act 2 sites are often found in low income minority communities that are already over-burdened by lead and other toxicants. Increasing the potential exposure to residents in these communities to additional toxicants is unfair and not in keeping with the Commonwealth's law requiring that all Pennsylvanians have access to a healthy environment.

Response: DEP agrees that many Act 2 sites are located in environmental justice communities and these communities may bear a disproportionate amount of health risk due to adverse environmental conditions. Protecting human health and the environment, especially in disadvantaged areas, is a priority of the Act 2 and the Land Recycling Program. Thus, in recognition of the recent scientific research indicating the potential for significant adverse health effects of a blood lead level of 10 µg/dL, the Department has rescinded the proposed changes to the lead models and the resulting changes in the residential and non-residential direct contact numeric values for lead and plans to recalculate these numeric values using a target blood lead level of 5 µg/dL in a separate proposed rulemaking. This recalculation will bring the direct contact numeric values more in line with the current lead toxicity science and with other state and federal public health agencies.

Appendix A, Tables 1 through 7 – Various Concerns Regarding MSC Table Values

9) Comment: IRRC observed that PCB-1221 (Aroclor), PCB-1232 (Aroclor), PCB-1242 (Aroclor), PCB-1248 (Aroclor) and PCB-1260 (Aroclor) are not listed in Appendix A, Table 5A. However, these five regulated substances are contained in Appendix A, Tables 1, 3A and 3B. As described in § 250.301(a) (relating to scope), Appendix A, Table 5 contains "the toxicological and physical parameters used to calculate the medium-specific concentrations (MSC) in Appendix A, Tables 1 – 4." IRRC asks why the Board deleted these regulated substances from Appendix A, Table 5A. IRRC requests that the Board revise the final-form regulation so that Appendix A, Tables 1, 3A and 3B do not conflict with the regulations of the Department.

Response: The five Aroclors listed in IRRC's comment were inadvertently proposed to be removed from Table 5A. This error has been corrected in the final-form rulemaking.

10) Comment: The commentator believes there is a lack of consistency between prior environmental regulations and the current recycling program. Act 2 mandates that rules be promulgated to protect all the interests listed in the statute. They feel the spirit and purpose behind this regulation was to increase environmental protections for human safety but lessening some of the soil and water-based regulations goes directly against this purpose. Narrowly focused regulations fail to address this mandate in that they protect certain aspects of human health while ignoring other factors. The new soil and water toxicity levels are one such regulation.

Response: As described in the Preamble to this proposed rulemaking, § 250.11 requires DEP to periodically review new scientific information that relates to the basis of the MSCs as it becomes available and to propose appropriate changes for the consideration of the EQB. While the implementation of new scientific information often results in the lowering of the MSCs, sometimes the application of new scientific information results in an increase in the MSCs. Increases and decreases in MSC values can be due to a host of reasons including updates to toxicity information, exposure parameters, definitions of terms, and changes in calculation processes.

11) Comment: The commentator states that a specific shortcoming with the new decreased toxicity levels is that the study used to determine these toxicity levels seems to focus narrowly on the ways in which soil contamination and groundwater contamination affect humans only through either direct physical exposure or ingestion, but fails to consider how the toxicity levels to plants or wildlife may ultimately have undesired health consequences on humans.

Response: Act 2 explains that remediation standards developed by DEP must provide for the protection of public health and the environment. While Act 2 does not specify what encompasses "the environment," Chapter 250 specifies that this includes habitats and species of concern as defined in § 250.1. Part of demonstrating attainment of the Statewide health standard, as required by § 250.311, is an evaluation of ecological receptors, specifically habitats and species of concern. Act 2 does not provide a mechanism for incorporating the consideration of ecological impact into the calculation of the MSCs; however, an evaluation of ecological receptors is required when demonstrating attainment of the Statewide health standard.

12) Comment: The commentator contends that the minimum threshold MSCs, which may be used only when no toxicological data is available, is insufficient to protect human health and safety, especially with new and developmental stage chemicals that have not undergone rigorous testing to be included in the guidelines. Given the challenge of human interaction with hazardous chemicals, higher safeguards must be put into place. If anything, chemicals and substances that have questionable potential of being carcinogenic should have increased levels of precautions rather than waivers of liability.

Response: The Department is not proposing to alter the current Threshold of Regulation Compounds other than to remove two compounds from the list in Table 6. These contaminants are being removed from Table 6 because toxicity data is now available for these compounds resulting in the ability for MSCs to be calculated. The minimum threshold values are not arbitrarily determined, rather, they are calculated using conservative exposure assumptions and risk thresholds as established by USFDA's Threshold of Regulation Final Rule from July 17, 1995.

13) Comment: The commenter supports the approach in the regulations for addressing sulfate and chloride under the statewide health standard of Act 2. This will enable the regulated community to use the SHS and will conserve PADEP administrative resources by not requiring alternative complex and time-consuming site-specific standards to administer.

Response: The Department acknowledges this comment.

14) Comment: The commentator states that in the Regulatory Analysis Form presented to EQB, the DEP states that the proposed amendments to Chap. 250 are not expected to increase costs or provide any significant savings for the regulated community. According to the DEP, the proposed amendments to the soil numeric values represent a reduction in the cleanup thresholds for approximately 83% of the values. For groundwater, the proposed changes reflect a reduction in the cleanup thresholds for approximately 92% of the values. Lowering the threshold values will necessarily result in more stringent cleanup activities being required at sites in order to attain the SHS under Act 2. Moreover, sites that formerly could have been readily addressed under the SHS may now need to utilize alternative cleanup standards due to the lower thresholds. The commentator questions how the DEP concluded that these dynamics would not result in significant additional costs of compliance, given that reductions of cleanup standards will require the regulated community to perform additional sampling, analysis, earth-moving and remedial cleanup work to achieve these newly proposed standards. The Regulatory Review Act (RRA) clearly requires the promulgating agency to include "estimates of the direct and indirect costs...to the private sector." The commentator recommends that the DEP provide an analysis regarding the anticipated increase in the costs of compliance with Act 2 due to the proposed amendments to understand the impact on small businesses in the private sector, which is required under the RRA.

Response: Act 2 and the Chapter 250 regulations provide remediators with the flexibility of allowing remediators to choose the standard in which they would like to attain. The background standard and the site-specific standard are not inherently more costly to attain than the Statewide health standard. For example, attaining the site-specific standard can result in significant savings in cleanup costs by focusing limited resources on remediating the contaminants that are driving the risk at that specific site as opposed to needing to meet a generic statewide standard. Therefore, decreases in MSC values do not automatically translate to higher remediation costs. In response to the comment regarding cost compliance, investigation and cleanup costs vary greatly based on the severity of the contamination, the size of the site, the complexity of the remediation strategy, and the cleanup standard selected. Thus, accurate costs and savings cannot be determined at this time because such cost analysis must be based on site-specific considerations evaluated on case-by-case bases.

15) Comment: The commentator states that a study was recently presented at the 28th International Neurotoxicology Conference on Manganese. The study investigation was to answer the question, "Does Manganese affect cognitive development of children?" The conclusion was that "both low and high manganese concentrations in blood and hair were negatively associated with child IQ scores and deficits in behavior-based parental assessment of children's cognitive functions." Most of the cleanup at the industrial sites were around dust suppression which was ultimately achieved through an Environmental Protection Agency legal action. Manganese contaminated soil and dust can be dangerous in residential and nonresidential areas. Additionally, nonresidential sites can affect residential properties. These significant allowable increases do not lead to better health. The commentator urges these increased manganese MSCs to be deleted.

Response: The current manganese oral reference dose in Table 5B of 0.047 mg/kg-d is proposed to be changed to 0.14 mg/kg-d because the original value is out of date. The current manganese oral reference dose listed in IRIS is 0.14 mg/kg-d. The Department does not have a record for the origin or date of the 0.047 mg/kg-d value. The Department is proposing this change in an effort to use the most up to date and scientifically valid toxicity values from the sources listed in § 250.605(a).

16) Comment: The commentator suggests that in recent discussions with the CSSAB, DEP has expressed its desire to follow a transparent and objective process for developing the MSCs to justify its assumptions and methods to the public. However, in developing the MSCs now proposed for adoption, the commentator believes that DEP has not followed a transparent and objective process. DEP has advanced the position that in the absence of toxicity values for a particular regulated substance, it is inappropriate to use toxicity values from a surrogate regulated substance. The regulations implementing Act 2 place great emphasis on using toxicity values as inputs to the equations utilized to calculate MSCs that are chemical-specific. Surrogate values do not meet this test. Nevertheless, it is clear from a review of the toxicity values listed in both the current and proposed versions of 25 Pa. Code Chapter 250, Appendix, Table 5a that

DEP is relying widely on toxicity information from surrogate regulated substances. Instead of the transparent and objective process that DEP desires, the use of surrogate values is an ambiguous process that requires DEP to assume the toxicity of a chemical in the absence of valid scientific data. DEP's use of surrogate values in these situations, sourced from unidentified chemicals and used for unspecified reasons, is not scientifically valid, predictable, or understandable to the regulated community, as Section 303(c) of Act 2 requires. The process that DEP is using to develop MSCs is not a mechanical exercise. DEP is picking and choosing sources of toxicity information and other physical and chemical-specific information without being transparent as to basis for its decisions. Where DEP is selecting toxicity information that result in MSCs that are overly conservative or are not based on sound science, the underpinnings of the Land Recycling Program are eroded. There are very real consequences to the decisions DEP is making that are detrimental to the ability to transact business in Pennsylvania and return environmentally-impacted properties to productive use.

The commentator also states that while there is no prescribed hierarchy of sources of toxicity information presented in the regulations, DEP has indicated that it follows a hierarchy with the Integrated Risk Information System ("IRIS") serving as the "gold standard" followed by EPA's Provisional Peer-Reviewed Toxicity Values ("PPRTVs") followed by a collection of "other sources" listed in 25 Pa. Code 250.605(a)(3). The regulations do not differentiate among such "other sources" for purposes of calculating the MSCs pursuant to the statewide health standard (some of which are many years out of date and no longer updated), requiring DEP to pick and choose among such sources in developing MSCs. The commentator believes that if DEP wishes to follow a transparent and objective process that limits subjective decision-making, it would be helpful for the "other sources" to be appropriately weighted and the hierarchy to be disclosed to the regulated community and the public within the regulations implementing Act 2.

Response: The Department has indicated to the CSSAB that using a surrogate toxicity value for a substance when a toxicity value for that substance is currently available is unnecessary. Surrogate toxicity values are only needed when toxicity values for the original substance are unavailable. While the commentator feels that the overall use of surrogate values is appropriate, they feel that the Department's use of surrogate values is an ambiguous process that requires DEP to assume the toxicity of a chemical in the absence of valid scientific data. The Department does not "assume" the toxicity of a chemical. Instead, the technical professionals at DEP use their knowledge and experience as environmental chemists to determine if surrogate toxicity values are appropriate. The commentator believes the technical judgments and decision-making used to evaluate surrogates should be added to this rulemaking to be more transparent. The Department believes that transparency is important but including this level of decision making in regulation is impractical. The commentator also suggests that input from the CSSAB should be required for the Department's use of all surrogate toxicity values. The Department consults the CSSAB for technical advice as needed and will continue this practice in the future when appropriate.

When the Department encounters a chemical with no toxicity value from Tier 1 or Tier 2 sources but with values from multiple Tier 3 sources, Department staff use their technical expertise and professional judgment to determine the most appropriate value to use. These decisions are made by comparing how recently the values were published, the level of peer review the value received, and the scope of the study that the toxicity value came from. This process aligns with the mandate of § 250.11 which requires DEP to periodically review new scientific information in updating the MSCs.

17) Comment: The commentator states that Chapter 250 includes MSCs for acenaphthylene, benzo[g,h,i]perylene, 2-methylnaphthalene, and phenanthrene. It does not appear that toxicity values for these PAHs are included in the sources of toxicity information such as IRIS that DEP has identified as acceptable. Likewise, EPA has not developed RSLs for these PAHs, presumably because of the absence of toxicity information. What is clear from 25 Pa. Code Chapter 250, Appendix A, Table 5a is that DEP is using toxicity information associated with surrogate compounds as the basis for the MSCs for these PAHs. In the interests of transparency, it would be useful for DEP to identify which surrogate compounds are being used and the rationale that DEP is using to select those surrogate compounds. With respect to certain other PAHs that are classified as carcinogenic compounds, the commentator notes that DEP is using cancer slope factors (the basic toxicological input values) to calculate MSCs that are significantly at odds with the toxicity information that EPA is using to calculate RSLs for those same PAHs. Using higher cancer slope factors (i.e., greater cancer potency) drives the MSCs lower (there is an inverse correlation between cancer slope factors and MSCs). In researching the source of these differences, it becomes apparent that the cancer slope factors used by EPA for calculating the RSLs as well as the cancer slope factors developed by the California EPA ("CalEPA") for many PAH compounds are based on a relative potency to benzo[a]pyrene, because the toxicity of that compound has been studied much more extensively and is better understood than the toxicity of other PAHs. Both EPA and CalEPA have published technical guidance documents explaining the basis for the relative potency factors ascribed to each PAH compound as compared to benzo[a]pyrene, and this is further discussed in the referenced PPRTV Screening Value derivation for benzo[a]anthracene and the RSL user guide. Therefore, if an updated cancer slope factor becomes available for benzo[a]pyrene, as is now the case with the IRIS-sourced value that DEP proposes to incorporate, the cancer slope factors for the other PAHs should be appropriately scaled to that new value since their carcinogenicity has only been quantified relative to that of benzo[a]pyrene. This has not been done by DEP in the current revisions to the MSCs for these other PAHs. This is another example of a situation where simply looking up a toxicity value in a source database, without understanding the basis for that value, results in cleanup standards that are not scientifically valid, risk-based, or defensible. The groundwater MSCs for a third group of PAHs are being driven by theoretical solubility limits which produce MSCs that are significantly lower than the corresponding risk-based MSCs. There are several commonly-encountered factors that can increase the practical solubility of the foregoing compounds far beyond the theoretical solubility limits that form the basis of the current MSCs, including pH and temperature variations in groundwater as well as the presence of co-solvent and co-solute effects. Given the significant discrepancies between the risk-based standards and the MSCs based on theoretical solubility limits described above, we suggest that further evaluation is appropriate to determine how to appropriately address these discrepancies, particularly for benzo[g,h,i]perylene.

Response: The commentator believes the Department should make the following revisions to the process of calculating MSCs for certain PAHs: 1) identify which surrogate compounds are being used for certain PAHs and the rationale used to select those surrogate compounds, 2) scale the cancer slope factors for certain PAHs to benzo[a]pyrene, and 3) stop considering solubility limits for certain PAHs when calculating MSCs. The CSSAB presented each of these concepts to DEP at its October 29, 2019 meeting. However, these requests require additional time to undergo thorough research and consideration. As such, DEP commits to considering each of these PAH revision requests in a subsequent rulemaking package.

18) Comment: The commentator states that the proposed version of Chapter 250 includes modifications to the definition of a "volatile compound" to include criteria based on the Henry's law constant and molecular weight of particular regulated substances. The effect of this definitional change is that a wider range of regulated substances qualify as volatile compounds. In determining MSCs for volatile compounds, DEP evaluates both the ingestion and inhalation pathways. This does not mean that DEP should calculate MSCs based on both pathways where toxicological information is missing. Many of the other physical and chemical-specific inputs DEP is using to calculate inhalation-based numeric values are not transparent to the regulated community. For example, DEP is incorporating newly proposed transport factors (TFs) which are calculated using formulas set forth at 25 Pa. Code § 250.307. The derivation of PADEP's newly proposed TFs is not readily transparent as the reference information is not provided for several chemical-specific inputs that are used to derive the TFs for each relevant regulated substance. These chemical-specific inputs are not identified in the existing or proposed version of 25 Pa. Code Chapter 250, Appendix A, Table 5a. Furthermore, the current regulations addressing the calculation of the inhalation pathway numeric values reference outdated EPA documents that have since been updated and other source information that is not readily accessible to the regulated community. Similar to the discussions above, the use of these outdated methodologies results in the adoption of MSCs that are more stringent than standards in other states and guidance values calculated by EPA. In accordance with 25 Pa. Code § 250.11, DEP should review the methodology for calculating numeric values based on the inhalation pathway of exposure to ensure the scientific validity of that methodology considering the passage of time since the methodology was first proposed. DEP should also identify the sources of information used to derive newly proposed TFs.

Response: The commentator states that the derivation of DEP's newly proposed TFs is not readily transparent as the reference information is not provided for several chemical-specific inputs that are used to derive the TFs for each relevant regulated substance. In the final-form rulemaking, the Department has added the surrogate chemicals used in a footnote to Tables 5A and 5B where indicated in the tables.

The commentator also requests that DEP review the methodology for calculating numeric values based on the inhalation pathway of exposure to ensure the scientific validity of that methodology and should identify the sources of information used to derive newly proposed TF values. The Department agrees that a review of the methodology used for calculating numeric values based on the inhalation pathway is warranted. However, these requests require additional time to undergo thorough research and consideration. As such, DEP commits to considering this request in a subsequent rulemaking package.

Appendix A, Tables 1 through 5A – Concerns Relating to the Proposed Numeric Values for Per- and Poly-Fluoroalkyl Substances (PFAS) Compounds

19) Comment: The commentator finds it commendable that the PFAS compounds are being addressed in the proposed Chapter 250 rulemaking quicker than our Federal agencies have moved in relation to acknowledging and respond to the clear and present danger this family of chemicals clearly presents. However, the commentator feels that the voluntary nature of the Land Recycling Program along with the use of 70 ppm, an elevated figure that does not take into consideration the most recent science, is not acceptable. Our neighboring state of New Jersey had a level of 7 ppm; how does 70 compare? Again, it is nice that some action seems to be being taken, but if it is voluntary and if levels are set too high, then the reality is that no action will be taken that truly addresses the enormous need of the citizens of Pennsylvania, many of whom have suffered from exposure for decades now. The commentator questions why this is being done and for whose purposes as this document does not seem to suggest that the needs of our citizens are being considered at all. Therefore, we opposed the changes that would relax standards of lead and would apply a voluntary benchmark for the PFOS family that is in reality, meaningless. We cannot accept toothless regulations that will in effect, bless the efforts of profit-driven entities to shirk their responsibilities and so continue to poison our lives.

Response: The proposed residential and non-residential groundwater MSCs for PFOA/PFOS in used aquifers are 70 nanograms per liter (ng/L), or parts per trillion, not parts per million as stated by the commentator. The groundwater MSCs for PFOA/PFOS are based on the Health Advisory Levels (HALs) published in EPA's Drinking Water Standards and Advisory Tables as required by section 303(b)(3) of Act 2.

20) Comment: The commentator is concerned that sampling and testing procedures for PFAS are much different than other testing procedures used for more conventional substances. The commentator highly recommends that the DEP issue further technical guidance to ensure accurate and consistent sampling results are produced by any necessary investigation, characterization, and remediation efforts.

Response: The Chapter 250 regulations do not dictate sampling and analysis procedures. The recommendation from this commentator is outside the scope of this proposed rulemaking.

21) Comment: The commentator asserts that even though the PFAS contaminants are generally classified as emerging risks, current research strongly suggests that a broad variety of adverse health outcomes and possibly cancer may be linked to exposures from several pathways. While the addition of PFAS numeric values are commended, it is strongly suggested by the commentator that only through the development and implementation of Maximum Contaminant Limits consistent with the SDWA's MCL/MCLGs standards can the public be provided with a comprehensive risk reduction strategy.

Response: The commentator suggests that the development of MCLs are the only way the public can be protected from PFAS contamination. The Department agrees that the development of state or federal MCLs for PFAS compounds is important to reducing risk from exposure to PFAS values. However, Act 2 requires the establishment of MSCs when MCLs or Lifetime Health Advisory Levels are published by EPA. When a state or federal MCL is published, it will become the MSC as required by Act 2.

22) Comment: The commentator commends DEP and the EQB for the promulgation of soil and groundwater MSCs for PFOS, PFOA and PFBS.

Response: The Department acknowledges this comment.

23) Comment: The commentator opposes each state pursuing its own solution to PFAS regulation. Rather, there should be a uniform national approach across all 50 states. Many commentator members have interests in multiple states, and it is important to achieve uniformity and consistency among state standards, not just for business operations but for risk communication to the general public, as well. EPA is attempting to assert that federal leadership, and the commentator recommends that states, including Pennsylvania, contribute by assisting EPA establish standards and defer setting individualized state standards for compounds for which EPA has not yet developed federal levels. Recognizing that Pennsylvania is committed to its own standards, the State must acknowledge and evaluate the potential costs that may result from this proposed rulemaking. This proposal lays a foundation for additional remediation and permitting liability under other state environmental statutes, and it is disingenuous and inconsistent with a transparent rulemaking to dismiss the costs of this inevitable outcome. Indeed, a patchwork of 50 different state solutions is unworkable and contrary to how the US has previously addressed similar emerging-contaminant issues. While some limited variations related to groundwater, surface water, or soil cleanup levels may be expected and appropriate, the highly variable regulatory health advisories, action levels, and drinking water standards currently being developed or under consideration across the country create unnecessary confusion and complexity for the public and the regulated community. The commentator can foresee challenges to states that choose to develop their own unique and varying standards. Many jurisdictions have existing laws or rules that prohibit states from promulgating regulations that are more stringent than the federal rules. When EPA does promulgate national primary drinking water regulations, such states may be in conflict with their legislatures' clearly stated policies. States that promulgate their own standards ahead of EPA may be required to amend such state specific PFAS regulations when EPA completes its work in this regard. Anti-backsliding provisions may further limit states' abilities to change their standards to conform with federal rules.

Response: The groundwater MSCs for PFOA/PFOS are based on the Health Advisory Level (HAL) published in EPA's Drinking Water Standards and Advisory Tables as required by section 303(b)(3) of Act 2. The Land Recycling Program is required by Act 2 to adopt these values upon publication by EPA. The Department understands that a patchwork of various state cleanup values for PFAS compounds can be challenging, but in Pennsylvania, EPA's HALs or MCLs become the MSCs immediately upon publication by EPA, thus preventing any lag time or confusion between state and federal cleanup values.

On average, remediators apply the Act 2 remediation standard to approximately 800 contaminated properties across this Commonwealth. The investigation and cleanup costs vary greatly based on the severity of the contamination, the size of the site, the complexity of the remediation strategy, and the cleanup standard selected. Thus, it virtually impossible to estimate the potential monetary cost of adding these PFAS numeric values to the MSC tables. Having these new MSCs would allow remediators to address PFOS, PFOA and PFBS groundwater and soil contamination. This would benefit the public by reducing public exposure to these contaminants. This would also benefit remediators wishing to remediate contaminated sites, who tend to be owners, operators or purchasers, or their contractors, of properties and facilities include, or are at or near, military bases, municipalities, and other locations that used or stored fire-fighting foam.

24) Comment: The commentator believes that the scientific understanding of how PFAS impacts people and the environment is still developing and, for thousands of PFAS compounds, much remains unknown. The commentator urges the State to work with EPA to develop consistent standards. From a toxicological perspective, regulatory agencies must have adequate science for determining health-based values before promulgating individual-compound standards, limits, and related regulations. The most prevalent and available science regarding the incidence and potential health effects of PFAS is based on PFOA and PFOS, two compounds that are no longer manufactured in the United States due to voluntary phase outs. For replacement chemicals, industry has begun using shorter-chain PFAS that can have vastly different physical, chemical, and toxicological properties from the long-chain PFOA and PFOS. Toxicologists, whether they work for various state agencies, EPA, international standards-setting organizations, academia, or in private practice, have not yet established specific methodologies or resources, or even agreed on which of the hundreds of studies of PFAS compounds are the appropriate or critical studies that must or should support appropriate regulatory "standards." Different methodologies, levels of experience, procedural prerequisites to standards-setting, and even local political pressures are leading to consideration of very different standards in various states and at EPA. Accordingly, the commentator urges states to work with one another and with EPA to ensure that all use consistent, peer-reviewed and transparent scientific research and standards-setting methodologies, to help ensure that more consistent and reliable standards are established, whether in PA or elsewhere. Along these lines, the commentator supports the language at § 250.304(c) that sets the MSCs for groundwater at the MCL or the HAL if EPA has not yet established an MCL and also updates the MSCs if EPA promulgates new or revised MCLs or HALs. Additionally, the commentator requests that proposed language at §250.304(c) be revised to allow a "phase-in" for new criteria that would need to be used in a demonstration of attainment. The proposed language states that revised criteria "shall become effective immediately for any demonstration of attainment completed after the date the new or revised MCLs or HALs become effective." The commentator suggests a phase-in period of at least six months so that demonstrations of attainment that are nearly complete are not derailed at the last minute should the criteria change. In contrast, while the commentator respects PA's attempt to rely on EPA toxicological and related data, we are concerned that the State is seeking to set criteria for other media and pathways that few, if any, other states have attempted to regulate – namely soil direct contact and soil to groundwater. According to the ITRC, EPA has human health soil screening levels for PFOA and PFOS, but not for PFBS. The commentator was not able to identify any other state that has soil direct contact criteria for any PFAS compounds. Regarding PFBS, the commentator has identified only three other states with soil standards related to the protection of groundwater criteria for PFBS, and the ranges of these criteria vary greatly. The commentator recommends that the State defer setting individualized standards for PFBS until EPA develops a corresponding final federal standard for PFBS. This approach would promote national consistency and not contribute to an unnecessarily complex regulatory environment.

Response: Although the current scientific knowledge of PFAS compounds is limited, remediators need a means of demonstrating attainment of an Act 2 standard for PFAS compounds. EPA developed their HAL value for PFOS/PFOA based on the most current peer-reviewed science. When EPA published their HAL for PFOS/PFOA, it immediately became the groundwater MSC as required by Act 2. Thus, DEP is required by statute to publish these HAL-based MSCs in this rulemaking. Soil direct contact values for PFOS/PFOA are calculated using the same toxicity values that EPA used to calculate the HAL so there should be no question regarding its validity. These toxicity values are based on route of exposure, not on the media in which they occur which is why using toxicity values that were derived for a water quality standard can be applied to calculating soil cleanup values. DEP is not proposing MSC values for any PFAS compounds other than PFOS, PFOA, and PFBS which each have established, peer-reviewed toxicity values. Individual states have their own unique ways of calculating cleanup standards based on their unique statutory framework. Many states, including Pennsylvania, rely heavily on EPA to develop nationally accepted toxicity values and standards as the basis for the development of state cleanup values.

The March 2021 version of the Interstate Technology and Regulatory Council's (ITRC) "Residential Soil Standards and Guidance Values for PFAS" includes an EPA human health screening level for PFBS of 1,300 mg/kg. Additionally, this table shows 18 other states with direct contact soil screening levels for a variety of PFAS compounds. Three states have set soil-to-groundwater criteria for PFBS.

Act 2 does not allow for a "phased-in" approach to the effectiveness of promulgated cleanup standards. The values become effective upon final publication in the *Pennsylvania Bulletin.* Remediators that have already submitted final reports to the Department are not required to apply the new cleanup values retroactively.

25) Comment: The commentator supports the State's approach of relying on toxicity information from sources other than the Agency for Toxic Substances and Disease Registry (ATSDR), such as the EPA HALs and the 2014 EPA Provisional Peer-Reviewed Toxicity Value (PPRTV). The ATSDR, part of the federal Center for Disease Control, and many states have reviewed the toxicity information available for PFOA and PFOS and opined on appropriate dosages that reflect highly conservative assumptions designed to protect human health, including the most susceptible subpopulations. ATSDR values are derived through different methods than EPA's MCL (and Health Advisory) values and the two are not directly comparable. These variabilities in how various health recommendations are derived must be considered and addressed to ensure that any final standards are scientifically justified and corroborated. Moreover, ATSDR has only finalized the Toxicological Profile for two PFAS compounds, PFOA and PFOS. The profiles for two additional PFAS—Hexafluoropropylene Oxide (HFPO) Dimer Acid, more commonly referred to as the "GenX Chemicals;" and PFBS are still only in draft form. ATSDR made the Toxicological Profiles for these additional PFAS available for public comment in 2018, and the Profiles have not yet been finalized. Here, the State asserts it directly incorporated EPA's 2016 HALs regarding PFOS and PFOA into its groundwater MSCs and has used the data developed by EPA for those HALs to calculate soil MSCs for both compounds. With respect to PFBS, the State has proposed soil and groundwater standards based on the 2014 EPA PPRTV. The commentator supports this general approach, as opposed to approaches used by other states that have improperly used and relied on ATSDR data.

Response: The Department acknowledges this comment and appreciates the commentator's support. It should be noted that EPA announced the publication of a new toxicity assessment for PFBS on April 8, 2021. The updated toxicity assessment included a revised toxicity value that was used in the final rulemaking. This change in Table 5A resulted in the MSCs for PFBS in Tables 1, 3A, and 3B to decrease between the proposed and final rulemakings. This change was made in an effort to use the most current and accurate science to calculate these newly proposed PFBS MSC values as required by § 250.11.

26) **Comment:** The commentator believes the State should regulate only those PFAS compounds for which there are EPA-validated analytical test methods; currently, there are no such methods for soil or for groundwater. The commentator recommends that the proposed rulemaking recognize the limits of the available EPA validated test methods and choose a specific test method to be referenced by any standards being adopted. Limitations on test methods and the lack of any validated method by EPA for any medium except drinking water create major challenges for the State's efforts to regulate non-potable water or other media, including the soil and groundwater the State is proposing to regulate.

Response: EPA has validated SW-846 Method 8327 which is designed to measure a group of 24 PFAS compounds, including PFOS, PFOA, and PFBS, in groundwater, surface water, and wastewater samples using liquid chromatography/tandem mass spectrometry. While EPA is evaluating public comments, the method has been made available for public use. Additionally, EPA is working with the Department of Defense to validate a solid-phase extraction/isotope dilution method which will include solid matrices such as soil. (See EPA's Technical Brief at https://www.epa.gov/sites/production/files/2020-01/documents/pfas_methods-sampling_tech_brief_7jan2020-update.pdf). Although these methods have not yet been fully validated, they are still appropriate for use in Act 2 investigations. Act 2 does not prevent remediators from demonstrating attainment, and receiving liability relief, for a compound without an EPA-validated analytical test method.

27) **Comment:** The commentator urges the State to consider the capabilities and reliability of laboratories that test for PFAS. There is limited capacity nationally to perform all of the analytical laboratory work and limited reliability on any given sample result due to potential lab error, cross contamination, or other factor that could impact results in the very low parts per trillion levels being considered. There is little doubt that the closer the State sets a limit or standard to the detection limit, the less reliable the analytical sampling and related lab results become. For example, the commentator's members who have sent split samples to multiple labs report receiving highly variable results. Such anecdotal evidence demonstrates the potential difficulty and unreliability of performing testing at limits that approach the detection limit. Considering that the State can potentially impose fines, costly corrective action, or other penalties for failing to meet regulatory limits, the regulated community must have the ability to accurately measure PFAS to demonstrate compliance. Subjecting the regulated community to fines, corrective action, and other penalties based on potentially unreliable testing raises due process concerns. Accordingly, the commentator urges the State to consider the potential liability that may result under other state environmental statutes and evaluate the testing capability and reliability. Based on such consideration, the State should ensure that this proposed rulemaking lays the foundation for a regulatory program that accounts for the variability in and limits of current laboratory testing.

Response: While there may be limited lab capacity for PFAS analysis, laboratory capacity is unrelated to the promulgation of the Chapter 250 regulation and outside the scope of this rulemaking.

28) **Comment:** The commentator states that treatment technologies for PFAS are still being developed, and there is limited capacity for the disposal of byproducts from newly developed technologies. For example, absorption technologies such as granular activated carbon (GAC) are

being developed as potential response measures to achieve compliance with new drinking water standards for PFAS. The regulated community will need to safely dispose of the byproducts of such treatment technologies, like the spent carbon, used to treat PFAS groundwater. Moreover, there are no widely accepted or applied treatment technologies for PFAS in soil. Disposal or incineration of impacted soil has been used, but not without controversy and concerns for the need to further address PFAS. Again, this is another area where EPA is taking action. Congress, in the NDAA, mandated that EPA, not later than one year after enactment, "publish interim guidance on the destruction and disposal of perfluoroalkyl and polyfluoroalkyl substances and materials containing perfluoroalkyl and polyfluoroalkyl substances," which includes guidance on "spent filters, membranes, resins, granular carbon, and other waste from water treatment." Again, even though the proposed rulemaking does not directly impose liability itself, the State should consider the potential remediation obligations that may arise from this proposed rulemaking under other state environmental statutes. Because this proposed rulemaking lays the foundation for remedial obligations under other state environmental statutes, the proposed rulemaking should evaluate the availability of testing, treatment, and disposal to ensure that sufficient technology exists in the State to achieve the standards proposed. The State's proposal avoids having to address these issues by asserting that the rule itself does not create liabilities or associated cost impacts, which rings hollow in the way such standards ultimately are implemented.

Response: Regulating the disposal of IDW is not within the scope of the Chapter 250 regulations and therefore does not pertain to this rulemaking. Intentionally delaying the promulgation of cleanup standards for these PFAS compounds would adversely impact remediators and property owners who do have the ability to effectively manage IDW and would unreasonably prohibit them from demonstrating attainment of an Act 2 standard.

29) Comment: The commentator maintains that the State's assertion that it does not expect that this proposed rulemaking, as it relates to new MSCs for PFOA, PFOS and PFBS, will create any additional costs because it does not create liability for, or the obligation to, address contamination for these and other chemicals. The State asserts that, instead, such liability or obligation comes from other environmental statutes, including The Clean Streams Law and SWMA, but, the State fails to address how these statutes will impose obligations based on the proposed MSCs, what obligations they will impose and, importantly, the cost of such obligations. Furthermore, the State's rationale confuses liability with costs. Even if the liability is imposed by other statutes, the setting of MSCs for these three additional compounds at parts-per-trillion levels certainly imposes additional costs. The State's statement that "any potential impact to the regulated community would be insignificant" lacks practical credibility and logic. Moreover, the State also asserts that it "does not expect that the proposed amendments would impact the number of remediations voluntarily completed or the number that must be completed as a result of Department enforcement actions." Yet, just two paragraphs above this statement, the State claims that establishing the MSCs for these PFAS compounds has the additional benefit of allowing for the remediation of sites that used or stored fire-fighting foam. In other words, adding these MSCs will allow for the remediation of additional sites. The addition of soil and groundwater MSCs for PFOS, PFOA, and PFBS will add costs to existing remediation projects and subject additional sites to remediation. The proposed rulemaking's conclusion that it will not create any additional costs because it does not create any obligation to address contamination is disingenuous. The proposed rulemaking lays the foundation for remedial and permitting obligations under other state environmental statutes, and such obligations will have costs and impact additional sites. To promote transparency and a sound rulemaking process, the State must openly recognize and quantify those costs and the number of sites impacted. The State should provide additional information regarding how the MSCs will inform obligations and liability under other state statutes. If remedial obligations will result before there is more certainty regarding questions of treatment and disposal, then the State should conduct a more robust cost analysis to account for the potential costs, including remediation and the range of true disposal and ongoing operation and maintenance costs.

Response: The cost of obligations from other statutes is outside of the scope of the Chapter 250 regulation. The voluntary nature of Act 2 allows remediators the freedom to only seek relief of liability (ROL) for the regulated substances they choose to investigate. Therefore, the addition of PFAS soil and groundwater MSCs now allows responsible parties to seek ROL for those substances under the Statewide health standard whereas previously, ROL under the SHS was not an option.

30) Comment: The commentator believes that the widespread presence of PFOA and PFOS in soils as an anthropogenic background condition warrants further evaluation. Unlike many of the regulated substances covered by Act 2, studies are indicating that these compounds have a widespread, even global, background presence in soils. Sources of background concentrations of PFOA and PFOS include the land application of biosolids and atmospheric deposition. Based on the wide-spread evidence of atmospheric deposition of PFAS, it may be useful for PADEP to evaluate and publish anticipated background levels of PFAS due to atmospheric deposition that can be utilized during site investigations and remediations. Act 2 expressly provides for the use of a background standard in accordance with 25 Pa. Code § 250.201, including reliance on regional background conditions. Without the leadership of PADEP in establishing generalized background levels of PFAS based on atmospheric deposition, addressing PFAS in soils may become extremely challenging and result in a patchwork of individualized determinations that will sap the resources of both DEP and regulated community and that may be difficult to explain to the public.

Response: DEP agrees that Act 2 provides for the use of the background standard and encourages remediators to explore all options for demonstrating attainment of an Act 2 remediation standard. Act 2 and Chapter 250 currently describe the process remediators should follow for determining background standards which is no different for PFAS compounds or other compounds that may be the result of atmospheric deposition. The background standard may be pursued on a site-by-site basis.

Appendix A, Tables 4A and 5B - Soil MSCs for Vanadium

31) Comment: As IRRC notes, some commentators believe the MSCs for vanadium should be modified or removed as part of the revisions to Chapter 250 because the residential soil MSC for vanadium is below background levels and will have a significant detrimental impact on the clean fill program and this could trigger a remediation requirement that is not the result of contamination.

A commentator states that USGS datasets obtained to evaluate naturally occurring background concentrations of vanadium in soils in Pennsylvania clearly demonstrate that the residential soil

MSC and clean fill concentration limit for vanadium of 15 mg/kg is far below those naturally occurring background levels. The USGS datasets indicate that the naturally occurring vanadium content of soils in Pennsylvania is as high as 162 mg/kg. Of the 243 background samples in the combined USGS datasets, only two samples contained vanadium below the residential MSC of 15 mg/kg.

Response: The Department did not propose to alter the current residential direct contact MSC for vanadium. The Land Recycling Act and the regulations promulgated thereunder require the calculation of Statewide health standard MSCs based only on human health toxicity values and not on background soil levels. However, DEP recognizes that human health toxicity values may result in MSCs that are numerically less than the naturally occurring levels at specific sites in the Commonwealth. Therefore, persons may establish the background concentration at the site pursuant to the requirements of the Land Recycling Act and the regulations promulgated thereunder and are not required to remediate below that level.

The vanadium residential direct contact MSC is based on human health toxicity values that are published and peer-reviewed, according to sources approved under 25 Pa. Code § 250.605(a). The Land Recycling Act provides that if Statewide health standard numeric values are lower than the background standard, persons do not have to remediate beyond the background standard established for the site. Thus, the current vanadium residential direct contact MSC does not affect an inordinate number of persons nor does it lead to increased costs for the regulated community.

32) Comment: The commentator states that since the August 27, 2016, Chapter 250 final rulemaking was published, lowering the MSCs for vanadium has created significant implementation problems at sites being remediated in Pennsylvania under Act 2 and that those issues will continue if no changes to the vanadium MSCs are made. The commentator opposes the continued use of the current vanadium MSCs and provides the following reasons:

- The commentator believes the current vanadium MSCs are unworkable and are not supported by the Cleanup Standards Scientific Advisory Board (CSSAB);
- The commentator notes the Chapter 250 residential soil MSC is lower than several other states' vanadium soil cleanup values;
- The commentator feels that the use of the current PPRTV-based toxicity value makes use of the site-specific standard for sites with vanadium contamination impractical;
- The commentator believes that the current vanadium residential direct contact soil numeric value is difficult to apply to the Bureau of Waste Management's Management of Fill Policy;
- The commentator asserts that there is an inappropriate level of uncertainty associated with the currently used PPRTV toxicity value;
- The commentator contends that an alternative toxicity value is available from EPA's Regional Screening Levels (RSL) table which is based on the IRIS toxicity value for vanadium pentoxide.

The commentator urges DEP to recalculate the vanadium MSCs using the vanadium pentoxide-based toxicity value for vanadium presented in the RSL table, rather than the currently used PPRTV-based toxicity value for vanadium.

Additionally, IRRC noted that the CSSAB does not endorse the current MSCs for vanadium and "recommends revision or removal of the MSCs for vanadium that are included in the proposed regulations." IRRC recommended the Environmental Quality Board respond to the concerns of CSSAB and commentators in the Preamble of the final-form regulation by explaining why the MSCs for vanadium are reasonable, the appropriateness of the data used to determine the MSCs, and the fiscal impact to attain compliance with the MSCs for vanadium. Further, IRRC requested that the Environmental Quality Board consider revising the MSCs for vanadium as suggested by CSSAB.

Response: The commentator asserts that the current vanadium MSCs are unworkable and are not supported by the CSSAB. While DEP acknowledges that lowering the vanadium MSCs in the 2016 Chapter 250 final rulemaking has made attaining the Statewide health standard challenging at some sites, Act 2 requires the MSCs to be health-based values that eliminate any substantial present or probable future risk to human health and the environment. The current vanadium MSCs were developed under the clear and transparent framework of Chapter 250 and Act 2 and achieve this goal. DEP also recognizes and appreciates the significant amount of input the CSSAB has provided to DEP to address this issue. Moreover, the EQB did not propose to change the vanadium MSC in this rulemaking. Any changes at this juncture to the vanadium MSC in the final form rulemaking would run afoul of the Commonwealth Documents Law ("CDL"), (45 P.S. §§ 1102 *et seq.*,) which, among other things, prohibits the adoption of a regulation that enlarges the original purpose of a proposed rulemaking. Here, to change the vanadium MSC, which was not proposed to be changed, would result in an enlargement of the original proposal.

The commentator notes that the residential soil MSC is lower than several other states' vanadium soil cleanup values. While this may be true, each state has its own unique way of determining acceptable cleanup values in accordance with their state's laws and regulations. Thus, a comparison to other states' values is not necessarily an accurate method of determining the appropriateness of Pennsylvania's cleanup standards. DEP has calculated Pennsylvania's vanadium MSCs in accordance with Act 2 and the methods described in Chapter 250.

The commentator feels that the use of the current PPRTV-based toxicity value makes the use of other Act 2 standards, specifically the site-specific standard, for sites with vanadium contamination impractical. The Statewide health standard was never meant to be a one-size-fits-all cleanup standard which is why the Act 2 program provides the flexibility for remediators to choose one or a combination of any of three cleanup standards. Using the background standard for sites with vanadium releases may be a practical way of attaining liability relief under Act 2. Performing a risk assessment under the site-specific standard allows for the input of exposure parameters that are more congruent with the actual conditions at the site and may result in a cleanup value higher than the Statewide health standard MSCs. Performing the proper due diligence prior to sampling can help remediators focus their limited time and resources on the contaminants of concern associated with the activities at the site and not with potentially unrelated naturally occurring compounds.

The commentator believes the current vanadium residential direct contact soil numeric value is difficult to apply to the Bureau of Waste Management's Management of Fill Policy. The commentator acknowledges in their comment that the new Management of Fill Policy provides a process for developing alternative clean fill concentration limits based on background concentrations. While this process may be cumbersome, it still provides an alternative to using the Act 2 MSCs. Also, DEP believes that any concerns associated with the Management of Fill Policy should be addressed in future revisions to that policy rather than the Chapter 250 rulemaking process.

The commentator discouraged the use of the PPRTV-based toxicity value because they believe there is an inappropriate level of uncertainty associated with this toxicity value. Specifically, the commentator is concerned with the PPRTV for vanadium because EPA has applied an uncertainty factor of 3,000 which led to a "low confidence" rating for the PPRTV for vanadium. As an alternative, the commentator has suggested DEP use a toxicity value from EPA's RSL table which is based on the IRIS toxicity value for vanadium pentoxide. The vanadium toxicity value in the RSL table is the result of an adjustment made to the 1987 vanadium pentoxide IRIS value by the RSL Table Workgroup and their chemical managers. The RSL Table contains several previously peer reviewed toxicity values but, in a few cases, such as vanadium, a modification was performed. Using this value would deviate from DEP's current process for selecting toxicity values for use in MSC calculations. Regardless, DEP will evaluate the commentator's recommended vanadium toxicity value for possible future use.

Additionally, EPA determined during the development of the IRIS multi-year agenda (http://www.epa.gov/iris/iris-agenda) released in December 2015, that an evaluation of the potential toxicity of multiple vanadium-containing compounds, including vanadium pentoxide, was a cross-agency high priority need. The new assessment of vanadium-containing compounds will benefit from undergoing scoping and problem formulations steps, the application of systematic review methodology to assess human health hazards, and a peer review conducted through the standing Science Advisory Board's Chemical Assessment Advisory Committee. DEP plans to closely monitor the development of this assessment and will use the results of that assessment to inform further decisions on alternative toxicity values for calculating vanadium MSCs. Until then, DEP intends to continue to rely on the PPRTV-based value for the calculation of vanadium MSCs.

Other Comments

33) Comment: IRRC states that in § 250.4(a), practical quantitation limits (PQL) are selected from PQLs or estimated quantitation limits "specified by the [United States Environmental Protection Agency (EPA)] in the most current version of EPA's drinking water or solid waste analytical methods." The Board states in the Preamble to the proposed regulation that the amendments "update the references and procedures for determining" PQLs. However, the current reference to a specific EPA manual is replaced with general EPA analytical methods. IRRC requests that the Board clarify references to these methods in the final-form regulation or explain in the Preamble to the final-form regulation why it is unnecessary to do so.

Response: The specific EPA manual referenced in the regulation was outdated which is what prompted this change. Amendments to this section update the procedures for determining the practical quantitation limit (PQL), provide for a wider range of sources for PQLs and estimated quantitation limits (EQLs), and remove confusing and outdated language. Improvements in laboratory instrument technology and the removal of PQLs and EQLs from revised laboratory methods resulted in the need to update this section. Instead of requiring remediators to only use the EPA RCRA Manual for SW-846 to identify PQL and EQL values, the Department wanted to allow for a wider range of sources for these values. This change also allows for the use of EPA analytical method manuals that may contain PQLs or EQLs other than the EPA RCRA Manual for SW-846.

34) Comment: IRRC states that in § 250.10(d), samples of groundwater from monitored drinking water wells are required to be field acidified and unfiltered in accordance with a DEP technical guidance manual or "an alternative sampling method that accurately measures regulated substances in groundwater." What alternative sampling methods are acceptable? IRRC requests that the Board specifies sampling methods in the final-form regulation or explain in the Preamble to the final-form regulation why it is unnecessary to do so.

Response: Providing specific sample methods in regulations is very restrictive and does not allow for the use of various methods that may be developed after this rulemaking is published. Since various analytical methods can be used to evaluate samples of environmental media, laboratories are best equipped to determine the appropriate analytical methods for their individual capabilities and to accommodate the variability of the samples submitted by their clients. The language in § 250.10(d) intends to allow the flexibility remediators and laboratories need to use their professional expertise to determine the best method for a site. Sample preservation methods should be discussed with the laboratory performing the analyses. If DEP staff question the methods chosen by a laboratory or remediator when reviewing data submitted with Act 2 reports, they will address these questions with the laboratory or remediator on a case-by-case basis. This information is included in the Preamble to the final-form rulemaking.

35) Comment: The commentator is seeking more transparency in the scientific studies used to determine the toxicity levels and, most importantly, the sources of funding for these studies. Although the EPA and The United States Department of Health Agency for Toxic Substances and Disease Registry should serve as generally trustworthy sources, instances where protections regarding human health are being relaxed rather than strengthened should trigger an immediately higher level of research and discussion. This can only be done by thoroughly examining the funding sources of the studies used to make the stated conclusions regarding toxicity levels. Pennsylvania cannot afford to prioritize profits over human health, safety, or the protection of our beautiful natural environment.

Response: All of studies that EPA and other public health agencies use to establish their toxicity values are available to the public for review. DEP has a clear and transparent process for establishing the sources used to determine which toxicity values are used in establishing the MSCs and the sources with the highest level of peer review are at the top of the list.

36) Comment: The commentator feels that if PA chooses to adopt the Federal chart, it does so without the matching Federal precautions that accompany the lower toxicity levels. PA should, in accordance with the reduced Federal levels, have a similar required implementation of a mandatory environmental impact risk assessment to evaluate toxicity on a case by case basis. The public policy implications when considering the effects on human safety should outweigh any concerns of over-regulation. The Federal chart was intentionally left as a very basic guideline purposefully in accordance with the 1976 Resource Conservation and Recovery Act, which directs the EPA to delegate primary responsibility to individual states when it comes to implementing federal hazardous waste regulations to the individual states. States such as

Wisconsin have recently developed water standards that are stricter than Federal levels, showing that states with similar climate, industry, political persuasion, and USDA agricultural hardiness zoning to Pennsylvania can effectively increase safety for human consumers and the environment alike while keeping everyone's interests considered. The lessening in stringency regarding the 17% of soil-based substances and the 8% of water-based substances is not correctly modeled after the Federal system because there is no requirement for an independent risk assessment.

Response: This comment lacks the detail necessary to provide an adequate response. The commentator refers to "the Federal chart," "Federal precautions" and "Federal levels" but does not define these terms. The commentator also refers to a "mandatory environmental impact risk assessment" but does not provide detail or a citation for this term.

The commentator objects to the proposed increase in the MSCs for 17% of soil-based substances and the 8% of water-based substances that are changing. As described in the preamble to this proposed rulemaking, § 250.11 requires DEP to periodically review new scientific information that relates to the basis of the MSCs as it becomes available and to propose appropriate changes for the consideration of the EQB. While the implementation of new scientific information often results in lower MSCs, sometimes the application of new scientific information results in higher MSCs. Increases and decreases in MSC values can be due to a host of reasons including updates to toxicity information, exposure parameters, definitions of terms, and changes in calculation processes, to name a few.

The commentator also explains that other states have developed groundwater cleanup standards that are stricter than Federal standards. While this may be possible in other states, Act 2 Section 303(a) states that "Standards adopted under this section shall be no more stringent than those standards adopted by the Federal Government."

37) Comment: The commentator expects that the number of sites where remediators are applying the Act 2 remediation standards is much larger than 800 per year, based on the numbers of spill violations reported by the Oil and Gas Program, plus the 12,000 existing underground and aboveground storage facilities that the Department references in its proposal. The commentator recommends that the EQB and the DEP update the numbers of Oil & Gas sites applying Act 2 cleanup standards to be more reflective of what is being reported by the Oil and Gas Program and acknowledge that the impact of the reduction of the Chapter 250 cleanup standards will have a significant impact on the entire oil and gas industry.

Response: This comment is outside the scope of the Chapter 250 regulations.

38) Comment: The commentator believes Land Recycling Program staff should work with the Oil & Gas Program to ensure that Chapter 250 regulations are only required for spills greater than 42 gallons. The commentator believes that Oil and Gas inspectors and supervisors are inappropriately requiring the unconventional industry to follow Act 2 and the cleanup thresholds for small spills and those contained on a well pad and within secondary containment.

Response: This comment is outside the scope of the Chapter 250 regulations.

39) Comment: The commentator requests clarity be added to § 250.12. While there are significant specific activities under Chapter 250 that would require an engineer, geologist, or surveyor licensed in the Commonwealth, some consideration should be given to qualified environmental professionals being permitted for report submittals that may not have one of the above licenses, as long as the appropriate licensed activities are completed under the direction of Licensed individuals.

Response: The Department agrees that qualified environmental professionals may develop report submittals under the direction of licensed individuals, as long as the report submittals are stamped by qualified individuals. The proposed language does not exclude individuals from preparing submittals if they are stamped by a licensed professional.

40) Comment: The commentator suggests that the PIP (Public Involvement Plan) process be made more substantive by incorporating the following: (i) require that municipalities receive the Notice of Intent to Remediate ("NIR") prior to publishing in a newspaper, as the City often receives the NIR after publication in the newspaper has occurred. As it currently works, it risks municipalities having less than 30 days to request a PIP; (ii) require that NIR be published both in a local newspaper and on relevant news websites and social media locations, as well as provided via mail to relevant neighborhood associations, to increase their visibility to the public. Consider replacing typical legal notice, which few people ever see, with an advertisement; (iii) if a PIP is requested, require that remediators provide a common language summary of all related documents and reports; (iv) if a PIP is requested, require that remediators place relevant reports online in addition to providing "access at convenient locations…" to increase the public's access to the reports; (v) additionally, it might be helpful to provide examples of "convenient locations" such as local libraries, municipal buildings etc.; and (vi) if a PIP is requested, require that remediators host at least one public meeting. At least one of the public hearings in this matter should be done virtually, such as through WebEx, Zoom or similar platform.

Response: The local municipality and the community it serves are entitled to the rights provided in Section 304(n) and (o) of Act 2 with respect to notices, reviews, and community involvement, including PIPs. DEP is bound by the rules of Act 2 when determining regulatory language and requirements for PIPs. The amendments to § 250.6 in the proposed rulemaking help to clarify these rights. DEP is not permitted to impose requirements in Chapter 250 that go beyond the requirements of Act 2. Suggestions for individual PIPs can be provided by the municipality to the remediator during the development of the PIP. These suggestions will vary based on the specific needs for each site and each community. Requiring the commentator's suggestions for every PIP for every site within every municipality across Pennsylvania is not practical nor is it permitted under Act 2.

Annex A

TITLE 25. ENVIRONMENTAL PROTECTION

PART I. DEPARTMENT OF ENVIRONMENTAL PROTECTION

Subpart D. ENVIRONMENTAL HEALTH AND SAFETY

ARTICLE VI. GENERAL HEALTH AND SAFETY

CHAPTER 250. ADMINISTRATION OF LAND RECYCLING PROGRAM

Subchapter A. GENERAL PROVISIONS

§ 250.1. Definitions.

* * * * *

MCL—Maximum contaminant level.

***MDL—Method detection limit*—The instrument-specific minimum measured concentration of a substance that can be reported with 99% confidence to be distinguishable from the method blank result.**

MSC—Medium-specific concentration.

* * * * *

TF—Transfer factor.

Volatile compound—A chemical compound with **either** a boiling point less than 200° centigrade at 1 atmosphere **or a Henry's law constant greater than or equal to 1×10^{-5} atm-m^3/mol and a molecular weight less than 200 g/mol, where:**

atm = standard atmosphere
m^3 = cubic meter
mol = mole
g = gram
g/mol = molar mass

§ 250.4. Limits related to PQLs.

(a) The PQLs shall be selected from the PQLs **or EQLs** specified by the EPA **[as EQLs]** in the most current version of **[the EPA RCRA Manual SW-846 (U.S. EPA, 1990. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. Third Edition. Office of Solid Waste and Emergency Response) for soil listed as "low level soil" and for groundwater listed as "groundwater" in accordance with the following:]** **EPA's drinking water or solid waste analytical methods.**

[(1) For inorganic compounds, the PQLs under this chapter shall be the values listed for methods associated with analysis by Inductively Coupled Plasma (ICP) with the following exceptions:

(i) For lead, cadmium, arsenic and selenium, values listed for the atomic absorption graphite furnace methods for water shall be used.

(ii) Mercury shall be the value listed for the cold vapor method.

(2) For organic compounds, the PQLs shall be the EQLs listed for the GC/Mass spec methods—for example, Method 8240 for volatile organic compounds.

(b) If the PQL selected under subsection (a) is higher than the MCL or HAL for an organic regulated substance in groundwater, the PQLs shall be derived from the analytical methodologies published under the drinking water program in the most current version of *Methods for the Determination of Organic Compounds in Drinking Water* (U.S. EPA, 1988, Environmental Monitoring Systems Laboratory, EPA/600/4-88/039) If a PQL determined under this subsection is not below a HAL, the methodologies in subsection (c)(1) or (2) shall be used unless those quantitation limits are higher than the PQL determined under this subsection.

(c)] **(b)** For regulated substances when **PQLs or** EQLs set by the EPA **exceed an MCL or HAL or** have a health risk that is greater (less protective) than the risk levels set in sections 303(c) and 304(b) and (c) of the act (35 P.S. §§ 6026.303(c) and 6026.304(b) and (c)) **[or]** **and** for substances when no EQL has been established by the EPA, the **[limits related to the]** PQL shall be **[the quantitation limits]** established by the methodologies in paragraph (1) or (2).

(1) A level set by multiplying 3.18 by the published method detection limit (MDL) of the most recently approved EPA methodology.

(2) A level **[representing the lowest calibration point that can consistently be determined to have a percent relative standard deviation (%RSD) of less than 30% or correlation coefficient of greater than 0.995 using reagent water]** **set by multiplying 3.18 by the instrument-specific MDL. If multiple instruments are used, then the PQL is set by averaging the instrument-specific MDLs and multiplying that value by 3.18**.

[(d)] **(c)** For regulated substances which have no limits related to PQLs identified in subsection **[(c)(1)]** **(b)(1)** or (2), a person shall demonstrate attainment under the site-specific standard or the background standard.

[(e)] **(d)** When a minimum threshold MSC is used as a Statewide health standard, the minimum threshold MSC is the Statewide health standard regardless of whether it is higher or lower than a quantitation limit established by this section.

[(f)] **(e)** Nothing in this section restricts the selection of valid and generally accepted methods to be used to analyze samples of environmental media.

§ 250.6. Public participation.

* * * * *

(c) If a public involvement plan has been initiated, the person proposing remediation shall, at a minimum, **[provide]** **include the following three measures in the plan to involve the public in the development and review of the remedial investigation report, risk assessment report, cleanup plan and final report**:

(1) **[Public]** **Provide public** access at convenient locations for document review.

(2) **[Designation of]** **Designate** a single contact person to address questions from the community.

(3) **[A]** **Use a** location near the remediation site for any public hearings and meetings that may be part of the public involvement plan.

(d) If a public involvement plan has been requested, **[it shall be submitted with one of the following:]** **the person proposing the remediation shall notify the Department and submit the plan to the municipality and the Department prior to its implementation.**

[(1) A remedial investigation report under a site-specific remediation.

(2) A baseline environmental report under an SIA cleanup.]

§ 250.10. Measurement of regulated substances in media.

* * * * *

(d) For groundwater where monitoring is being performed at a drinking water well, samples for metals analysis shall be field acidified and unfiltered in accordance with the most current version of ***[Groundwater Monitoring Guidance Manual]*** *Land Recycling Program Technical Guidance Manual, Appendix A: Groundwater Monitoring Guidance,* Department of Environmental Protection, **[3610-BK-DEP1973]** **document number 261-0300-101, or in accordance with an alternative sampling method that accurately measures regulated substances in groundwater**.

* * * * *

(*Editor's Note*: The following rule is proposed to be added and printed in regular type to enhance readability.)

§ 250.12. Professional seal.

Reports submitted to satisfy this subchapter containing information or analysis that constitutes professional geologic or engineering work as defined by the Engineer, Land Surveyor and Geologist Registration Law (63 P.S. §§ 148—158.2) must be sealed by a professional geologist or engineer who is in compliance with that statute.

Subchapter C. STATEWIDE HEALTH STANDARDS

§ 250.304. MSCs for groundwater.

* * * * *

(c) The MSCs for regulated substances contained in groundwater in aquifers used or currently planned to be used for drinking water or for agricultural purposes are the MCLs as established by the Department or the EPA in § 109.202 (relating to State MCLs, MRDLs and treatment technique requirements). For regulated substances where no MCL has been established, the MSCs are the Lifetime Health Advisory Levels (HAL) set forth in Drinking Water Standards and Health Advisories (DWSHA), EPA Office of Water Publication No. EPA **[822-S-12-001 (April 2012 or as revised)]** **822-F-18-001 (March 2018 or as revised)**, except for substances designated in the DWSHA with cancer descriptor (L) "Likely to be carcinogenic to humans" or (L/N) "Likely to be carcinogenic above a specific dose but not likely to be carcinogenic below that dose because a key event in tumor formation does not occur below that dose." New or revised MCLs or HALs promulgated by the Department or the EPA shall become effective immediately for any demonstration of attainment completed after the date the new or revised MCLs or HALs become effective.

* * * * *

(g) The references referred to in subsection (f) are:

(1) Lide, D. R., ed. 1996. *CRC Handbook of Chemistry and Physics*, 77th Edition. CRC Press.

* * * * *

(18) Riddick, J. A., et al. 1986. *Organic Solvents; Physical Properties & Methods of Purification. Techniques of Chemistry*. 11th Edition. New York, NY: Wiley-Interscience.

(19) ATSDR (Agency for Toxic Substances and Disease Registry). 2015. *Toxicological Profile for Perfluoroalkyls. Draft for Public Comment*. Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA. Accessed May 2016. http://www.atsdr.cdc.gov/ToxProfiles/tp200.pdf.

(20) Hekster, F.M., R.W. Laane, and P. de Voogt. 2003. *Environmental and toxicity effects of perfluoroalkylated substances. Reviews of Environmental Contamination and Toxicology* 179:99—121.

(21) HSDB (Hazardous Substances Data Bank). 2012. U.S. National Library of Medicine, Bethesda, MD. Accessed May 2016. http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB.

(22) Kauck, E.A., and A.R. Diesslin. 1951. *Some properties of perfluorocarboxylic acids. Industrial & Engineering Chemistry Research* 43(10):2332—2334.

(23) SRC (Syracuse Research Corporation). 2016. PHYSPROP Database. Accessed May 2016. http://www.srcinc.com/what-we-do/environmental/scientific-databases.html.

(24) OECD (Organisation for Economic Co-operation and Development). 2002. *Hazard Assessment of Perfluorooctane Sulfonate (PFOS) and its Salts*. ENV/JM/RD (2002) 17/FINAL. Report of the Environment Directorate, Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology, Co-operation on Existing Chemicals, Paris, November 21, 2002.

§ 250.305. MSCs for soil.

* * * * *

(c) For the residential standard, the MSC for regulated substances contained in soil is one of the following:

(1) The lowest of the following:

(i) The ingestion numeric value throughout the soil column to a depth of up to 15 feet from the existing ground surface as determined by the methodology in § 250.306 (relating to ingestion numeric values), using the appropriate default residential exposure assumptions contained in **[§ 250.306(e)]** **§ 250.306(d)**.

* * * * *

(g) A person conducting a remediation of soils contaminated with **[a substance]** **one or more substances** having a secondary MCL**, but no toxicological properties listed in Appendix A, Table 5B,** will not be required to comply with **either the direct contact pathway or** the soil-to-groundwater pathway requirements for those substances **[to protect groundwater in aquifers for drinking water]**. **The substances shall be subject to the requirements of § 250.311(a) through (f) (relating to evaluation of ecological receptors) with respect to evaluation of ecological receptors.**

§ 250.306. Ingestion numeric values.

* * * * *

(d) The default exposure assumptions used to calculate the ingestion numeric values are as follows:

		Residential		*Nonresidential*
Term		*Systemic*[1]	*Carcinogens*[2,6]	*(Onsite Worker)*
THQ	Target Hazard Quotient	1	N/A	1
RfD_o	Oral Reference Dose (mg/kg-day)	Chemical-specific	N/A	Chemical-specific
BW	Body Weight (kg)		N/A	
	Soil	15		80
	Groundwater	80		80
AT_{nc}	Averaging Time for systemic toxicants			
	(yr)	6	N/A	25
	Soil	30	N/A	25
	Groundwater			
Abs	Absorption (unitless)[3]	1	1	1
EF	Exposure Frequency (d/yr)			
	Soil	250	250	180
	Groundwater	350	350	250
ED	Exposure Duration (yr)			
	Soil	6	N/A	25
	Groundwater	30	N/A	25
IngR	Ingestion Rate			
	Soil (mg/day)	100	N/A	50
	GW (L/day)	[2] **2.4**	N/A	[1] **1.2**

		Residential		
Term		*Systemic*[1]	*Carcinogens*[2,6]	*Nonresidential (Onsite Worker)*
CF	Conversion Factor			
	Soil (kg/mg)	1×10^{-6}	1×10^{-6}	1×10^{-6}
	GW (unitless)	1	1	1
TR	Target Risk	N/A	1×10^{-5}	1×10^{-5}
CSF_o	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$	N/A	Chemical-specific	Chemical-specific
AT_c	Averaging Time for carcinogens (yr)	N/A	70	70
IFadj[4]	Ingestion Factor	N/A		
	Soil (mg-yr/kg-day)		55	15.6
	GW (L-yr/kg day)		**[1]** **1.2**	**[0.3]** **0.38**
AIFadj[5]	Combined Age-Dependent Adjustment Factor and Ingestion Factor	N/A		N/A
	Soil (mg-yr/kg-day)		241	
	GW (L-yr/kg-day)		**[3.23]** **3.45**	
CSF_{ok}	TCE oral cancer slope factor for kidney cancer (mg/kg/day)$^{-1}$		9.3×10^{-3}	
CSF_{ol}	TCE oral cancer slope factor for non-Hodgkin lymphoma and liver cancer (mg/kg/day)$^{-1}$		3.7×10^{-2}	

Notes:

* * * * *

[4] The Ingestion Factor for the residential scenario is calculated using the equation If$_{[adj]}$**adj** = $ED_c \times IR_c/BW_c + ED_a \times IR_a/$B**[w]**$\mathbf{W}_a$, where $ED_c = 6$ yr, $IR_c = 100$ mg/day for soils and 1 L/day for groundwater, $BW_c = 15$ kg, $ED_a = 24$ yr, $IR_a = 50$ mg/day for soils and **[2]** **2.4** L/day for groundwater, and $BW_a = 80$ kg. The ingestion factor for the nonresidential scenario is calculated using the equation If$_{[adj]}$**adj** = ED × IR/BW, where ED = 25 yr, IR = 50 mg/day for soils and **[1]** **1.2** L/day for groundwater, and BW = 80 kg.

[5] The Combined Age-Dependent Adjustment Factor and Ingestion Factor (AIFadj) for the residential scenario is calculated using the equation AIFadj = $[(ADAF_{<2} \times ED_{<2}) + (ADAF_{2\text{-}6} \times ED_{2\text{-}6})] \times$ IR**[c]**$_{c}$ / BW**[c]**$_{c}$ + $[(ADAF_{[>]>6\text{-}16} \times ED_{[>]>6\text{-}16} + (ADAF_{>16} \times ED_{>[6\text{-}]16})] \times$ IR**[a]**$_{a}$ / BW**[a]**$_{a}$, where $ADAF_{<2} = 10$, $ED_{<2} = 2$ yr, $ADAF_{2\text{-}6} = 3$, $ED_{2\text{-}6} = 4$ yr, IR**[c]**$_{c}$ = 100mg/day for soils and 1 L/day for groundwater, BW**[c]**$_{c}$ = 15 kg, $ADAF_{[>]>6\text{-}16} = 3$, $ED_{[>]>6\text{-}16} = 10$ yr, $ADAF_{>16} = 1$, $ED_{>16} = 14$ yr, IR**[a]**$_{a}$ = 50 mg/day for soils and **[2]** **2.4** L/day for groundwater, and BW**[a]**$_{a}$ = 80 kg.

* * * * *

(e) The residential ingestion numeric value for lead in soil was developed using the **[Uptake Biokinetic (UBK) Model for Lead (version 0.4)]** ~~**Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children, Windows®® version (IEUBKwin v1.1 build 11) 32-bit version**~~ developed by the EPA (U.S. Environmental Protection Agency. (**[1990]** ~~**February**~~

~~2010~~) **[Uptake Biokinetic (UBK) Model for Lead (version 0.4). U.S. EPA/ECAO. August 1990,]** in lieu of the algorithms presented in subsections (a) and (b). Default input values are identified in Appendix A, Table 7. Because the **[UBK]** ~~IEUBK~~ model is applicable only to children, the nonresidential ingestion numeric value was calculated **[according to the method developed by the Society for Environmental Geochemistry and Health (Wixson, B. G. (1991)). The Society for Environmental Geochemistry and Health (SEGH) Task Force Approach to the Assessment of Lead in Soil. *Trace Substances in Environmental Health.* (11-20), using the following equations:**

$$S = \frac{1000\left[\left(\frac{T}{G^{n}}\right)-B\right]}{\delta}$$

]

~~using EPA's Adult Lead Methodology (ALM) in accordance with the guidance, exposure factors, equations, and spreadsheets provided in EPA's *Recommendations of the Technical Review Workgroup for Lead for an Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil* (EPA-540-R-03-001, OSWER Dir # 9285.7-54, January 2003), *OLEM Directive 9285.6-56 "Update to the Adult Lead Methodology's Default Baseline Blood Lead Concentration and Geometric Standard Deviation Parameters"* (May 2017) and the associated June 14, 2017, version of the *Calculations of Preliminary Remediation Goals (PRGs) for Soil in Nonresidential Areas U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee* spreadsheets.~~

Table 7 identifies each of the variables **[in this equation]** ~~used to calculate the nonresidential ingestion numeric value for lead~~.

§ 250.307. Inhalation numeric values.

* * * * *

(g) For a regulated substance which is a carcinogen and is a volatile compound, the numeric value for the inhalation of volatiles from groundwater shall be calculated by using the appropriate residential or nonresidential exposure assumptions from subsection (h) according to the following equations:

(1) For regulated substances not identified as a mutagen in § 250.301(b):

$$MSC = \frac{TR \times AT_c \times 365\text{ days/year} \mathbf{\times 24\text{ hr/day}}}{IUR \times ET \times EF \times ED \times TF \times CF}$$

* * * * *

§ 250.308. Soil to groundwater pathway numeric values.

(a) A person may use the soil-to-groundwater pathway numeric values listed in Appendix A, Tables 3B and 4B, as developed using the methods contained in paragraph (1), (2) or (4), may use a concentration in soil at the site which does not produce a leachate in excess of the MSC for groundwater contained in Appendix A, Tables 1 and 2, when subjected to the Synthetic Precipitation Leaching Procedure (Method 1312 of SW-846, Test Methods for Evaluating Solid Waste, promulgated by the U.S. EPA), or may use the soil-to-groundwater pathway soil buffer criteria in subsection (b) or may use the soil-to-groundwater pathway equivalency demonstration in subsection (d).

*   *   *   *   *

(2) For organic compounds, a generic value determined not to produce a concentration in groundwater in the aquifer in excess of the MSC for groundwater as calculated by the equation in paragraph (3).

(i) For soil not in the zone of groundwater saturation, the generic value shall be calculated by the equation in paragraph (3).

(ii) For soil in the zone of groundwater saturation, the **[standard]** **generic numeric value** is 1/10th of the generic value calculated by the equation in paragraph (3).

*   *   *   *   *

§ 250.311. Evaluation of ecological receptors.

*   *   *   *   *

(b) For purposes of determining impacts on ecological receptors, no additional evaluation is required if the remediation attains a level equal to 1/10th of the value in Appendix A, Tables 3 and 4 **or, for substances identified in § 250.305(g), 1/10th of the physical limitation identified in § 250.305(b)**, except for constituents of potential ecological concern identified in Table 8, or if the criteria in paragraph (1), (2) or (3) are met. Information that supports a determination that no additional evaluation is required shall be documented in the final report.

*   *   *   *   *

Subchapter D. SITE-SPECIFIC STANDARD

§ 250.402. Human health and environmental protection goals.

*   *   *   *   *

(d) If a person is using the site-specific standard to protect ecological receptors under this subchapter or **[in accordance with § 250.311(c)]** **as a result of selecting § 250.311(c)(4) when ecological receptors cannot be evaluated under the Statewide health standard**, the following shall be performed:

*   *   *   *   *

(3) Implementation of the selected remedy, which may include mitigation measures under § **[230.311(f)]** **250.311(f)**, that is protective of the ecological receptors.

§ 250.404. Pathway identification and elimination.

(a) The person shall use **Department or** Department-approved EPA or ASTM guidance to identify any potential current and future exposure pathways for both human receptors and environmental receptors identified in § 250.402 (relating to human health and environmental protection goals).

* * * * *

§ 250.409. Risk assessment report.

The risk assessment report shall conform to this subchapter and Subchapter F (relating to exposure and risk determinations), and shall include the following unless not required under § 250.405 (relating to when to perform a risk assessment):

(1) **[A] Except when submitted in combination with a remedial investigation report, a** risk assessment report that **[describes] uses site characterization information from an approved remedial investigation report to describe** the potential adverse effects, including the evaluation of ecological receptors, under both current and planned future conditions caused by the presence of regulated substances in the absence of any further control, remediation or mitigation measures.

* * * * *

§ 250.410. Cleanup plan.

* * * * *

(c) When a person proposes a remedy that relies on access to properties owned by third parties, for remediation or monitoring, documentation of cooperation or agreement shall be submitted as part of the cleanup plan.

(d) **A cleanup plan is required when an institutional or engineering control is used as a remedy to address current and future exposure pathways or exposure pathways that existed prior to submitting an NIR.**

(e) A cleanup plan is not required and no remedy is required to be proposed or completed if no current or future exposure pathways exist.

(*Editor's Note*: The following rule is proposed to be added and printed in regular type to enhance readability.)

§ 250.412. Combined reports.

A person does not need prior Department approval of a remedial investigation report if the remedial investigation report is submitted together with either a risk assessment report or a cleanup plan.

Subchapter E. SIA STANDARDS

§ 250.503. Remediation requirements.

* * * * *

(e) A person that changes the use of the property from nonresidential to residential, or changes the use of the property to create substantial changes in exposure conditions to contamination that existed prior to the person's reuse shall notify the Department of the changes and may be required to **amend the baseline environmental report and** implement a remediation plan to address any new imminent, direct or immediate threats to human health and the environment resulting from the changes.

* * * * *

Subchapter F. EXPOSURE AND RISK DETERMINATIONS

§ 250.603. Exposure factors for site-specific standards.

(a) A risk assessment for the site-specific standard shall use site-specific exposure factors under the EPA's **[*Final Guidelines for Exposure Assessment*, 1992 (57 FR 22888—22938)]** ***Exposure Factors Handbook: 2011 Edition*, 2011 (EPA/600/R-090/052F)** or exposure factors used in the development of the Statewide health standards identified in Subchapter C (relating to Statewide health standards).

* * * * *

§ 250.605. Sources of toxicity information.

(a) For site-specific standards, the person shall use appropriate reference doses, reference concentrations, cancer slope factors and unit risk factors identified in Subchapter C (relating to Statewide health standards), unless the person can demonstrate that published data, available from one of the following sources, provides more current reference doses, reference concentrations, cancer slope factors or unit risk factors:

(1) Integrated Risk Information System (IRIS).

(2) United States Environmental Protection Agency, National Center for Environmental Assessment (NCEA) Provisional Peer-Reviewed Toxicity Values (PPRTV).

(3) Other sources**:**

(i) Health Effects Assessment Summary Tables (HEAST)

(ii) Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profiles.

(iii) California EPA, California Cancer Potency Factors and Chronic Reference Exposure Levels.

(iv) EPA criteria documents, including drinking water criteria documents, drinking water health advisory summaries, ambient water quality criteria documents and air quality criteria documents.

(v) EPA Human Health Benchmarks for Pesticides (HHBP).

(vi) EPA PPRTV Appendix.

(b) If no toxicity values are available from sources identified in subsection (a), the person may use the background standard or meet one of the following:

* * * * *

Subchapter G. DEMONSTRATION OF ATTAINMENT

§ 250.707. Statistical tests.

* * * * *

(b) The following statistical tests may be accepted by the Department to demonstrate attainment of the Statewide health standard. The statistical test for soil shall apply to each distinct area of contamination. The statistical test for groundwater will apply to each compliance monitoring well. Testing shall be performed individually for each regulated substance identified in the final report site investigation as being present at the site for which a person wants relief from liability under the act. The application of a statistical method must meet the criteria in subsection (d).

(1) For soil attainment determination at each distinct area of contamination, subparagraph (i), (ii) or (iii) shall be met in addition to the attainment requirements in §§ 250.702 and 250.703 (relating to attainment requirements; and general attainment requirements for soil).

* * * * *

(ii) As applied in accordance with EPA approved methods on statistical analysis of environmental data, as identified in subsection (e), the 95% UCL of the arithmetic mean shall be at or below the **[Statewide health standard]** MSC.

(iii) For sites with a petroleum release where full site characterization, as defined in § 250.204(b) (relating to final report), has not been done in association with an excavation remediation, attainment of the Statewide health standard shall be demonstrated using the following procedure:

(A) For sites regulated under Chapter 245 (relating to administration of the storage tank and spill prevention program) where there is localized contamination as defined in the document "Closure Requirements for Underground Storage Tank Systems" (DEP technical document 2530-BK-DEP2008), samples shall be taken in accordance with that document.

(B) For sites not covered by clause (A), including all sites being remediated under an NIR under this chapter, samples shall be taken from the bottom and sidewalls of the excavation in a biased fashion that concentrates on areas where any remaining contamination above the Statewide health standard would most likely be found. The samples shall be taken from these suspect areas based on visual observation and the use of field instruments. If a sufficient number of samples has been collected from all suspect locations and the minimum number of samples has not been collected, or if there are no suspect areas, the locations to meet the minimum number of samples shall be based on a random procedure. The number of sample points required shall be determined in the following way:

(I) For 250 cubic yards or less of excavated contaminated soil, five samples shall be collected.

(II) For each additional 100 cubic yards of excavated contaminated soil, one sample shall be collected.

(III) For excavations involving more than 1,000 cubic yards of contaminated soil, the remediator shall identify the number and locations of samples in a confirmatory sampling plan submitted to the Department. The remediator shall obtain the Department's approval of the confirmatory sampling plan prior to conducting attainment sampling.

(IV) Where water is encountered in the excavation and no obvious contamination is observed or indicated, soil samples collected just above the soil/water interface shall be equal to or less than the applicable Statewide health MSC determined by § 250.308(a)(2)(ii) (relating to soil to groundwater pathway numeric values).

(V) Where water is encountered in the excavation and no obvious contamination is observed or indicated, a minimum of two samples shall be collected from the water surface in the excavation.

(VI) For sites where there is a release to surface soils resulting in excavation of 50 cubic yards or less of contaminated soil, samples shall be collected as described in this clause, except that two samples shall be collected.

(C) All sample results shall be equal to or less than the applicable Statewide health MSC as determined using Tables 1—4 and 6 in Appendix A.

(D) A vapor intrusion analysis is not necessary if the requirements of § 250.707(b)(1)(iii) are met in addition to the following:

(I) At least one soil sample is collected on the sidewall nearest an inhabited building within the appropriate proximity distance to a potential vapor intrusion source and there are not substantially higher field instrument readings elsewhere.

(II) Observations of obvious contamination and the use of appropriate field screening instruments verify that contamination has not contacted or penetrated the foundation of an inhabited building.

(III) Groundwater contamination has not been identified as a potential vapor intrusion concern.

(2) For groundwater attainment determination at each compliance monitoring well, subparagraph (i) or (ii) shall be met in addition to the attainment requirements in § 250.702 and § 250.704 (relating to general attainment requirements for groundwater).

*   *   *   *   *

Appendix A

Table 1 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Groundwater

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
ACENAPHTHENE	83-32-9	[2,500] 2,100 G	3,800 S	3,800 S	3,800 S	3,800 S	3,800 S
ACENAPHTHYLENE	208-96-8	[2,500] 2,100 G	[7,000] 5,800 G	16,000 S	16,000 S	16,000 S	16,000 S
ACEPHATE	30560-19-1	[84] 42 G	[390] 120 G	[8,400] 4,200 G	[39,000] 12,000 G	[84] 42 G	[390] 120 G
ACETALDEHYDE	75-07-0	19 N	79 N	1,900 N	7,900 N	19 N	79 N
ACETONE	67-64-1	[38,000] 31,000 G	[110,000] 88,000 G	[3,800,000] 3,100,000 G	[11,000,000] 8,800,000 G	[380,000] 310,000 G	[1,100,000] 880,000 G
ACETONITRILE	75-05-8	130 N	530 N	13,000 N	53,000 N	1,300 N	5,300 N
ACETOPHENONE	98-86-2	[4,200] 3,500 G	[12,000] 9,700 G	[420,000] 350,000 G	[1,200,000] 970,000 G	[4,200] 3,500 G	[12,000] 9,700 G
ACETYLAMINOFLUORENE, 2- (2AAF)	53-96-3	[0.19] 0.17 G	[0.89] 0.72 G	[19] 17 G	[89] 72 G	[190] 170 G	[890] 720 G
ACROLEIN	107-02-8	0.042 N	0.18 N	4.2 N	18 N	0.42 N	1.8 N
ACRYLAMIDE	79-06-1	0.19 N	2.5 N	19 N	250 N	0.19 N	2.5 N
ACRYLIC ACID	79-10-7	2.1 N	8.8 N	210 N	880 N	210 N	880 N
ACRYLONITRILE	107-13-1	0.72 N	3.7 N	72 N	370 N	72 N	370 N
ALACHLOR	15972-60-8	2 M	2 M	200 M	200 M	2 M	2 M
ALDICARB	116-06-3	3 M	3 M	300 M	300 M	3,000 M	3,000 M
ALDICARB SULFONE	1646-88-4	2 M	2 M	200 M	200 M	2 M	2 M
ALDICARB SULFOXIDE	1646-87-3	4 M	4 M	400 M	400 M	4 M	4 M
ALDRIN	309-00-2	[0.043] 0.038 G	[0.2] 0.16 G	[4.3] 3.8 G	[20] 16 G	20 S	20 S
ALLYL ALCOHOL	107-18-6	0.21 N	0.88 N	21 N	88 N	21 N	88 N
AMETRYN	834-12-8	60 H	60 H	6,000 H	6,000 H	60 H	60 H
AMINOBIPHENYL, 4-	92-67-1	[0.035] 0.031 G	[0.16] 0.13 G	[3.5] 3.1 G	[16] 13 G	[35] 31 G	[160] 130 G
AMITROLE	61-82-5	[0.78] 0.69 G	[3.6] 2.9 G	[78] 69 G	[360] 290 G	[780] 690 G	[3,600] 2,900 G
AMMONIA	7664-41-7	30,000 H	30,000 H	3,000,000 H	3,000,000 H	30,000 H	30,000 H
AMMONIUM SULFAMATE	7773-06-0	2,000 H	2,000 H	200,000 H	200,000 H	2,000 H	2,000 H
ANILINE	62-53-3	2.1 N	8.8 N	210 N	880 N	2.1 N	8.8 N
ANTHRACENE	120-12-7	66 S	66 S	66 S	66 S	66 S	66 S

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		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
ATRAZINE	1912-24-9	3 M	3 M	300 M	300 M	3 M	3 M
AZINPHOS-METHYL (GUTHION)	86-50-0	[130] 52 G	[350] 150 G	[13,000] 5,200 G	[32,000] 15,000 [S] G	[130] 52 G	[350] 150 G
BAYGON (PROPOXUR)	114-26-1	3 H	3 H	300 H	300 H	3,000 H	3,000 H
BENOMYL	17804-35-2	[2,000] 270 [S] G	[2,000] 1,100 [S] G	2,000 S	2,000 S	[2,000] 270 [S] G	[2,000] 1,100 [S] G
BENTAZON	25057-89-0	200 H	200 H	20,000 H	20,000 H	200 H	200 H
BENZENE	71-43-2	5 M	5 M	500 M	500 M	500 M	500 M
BENZIDINE	92-87-5	[0.00098] 0.00092 G	[0.015] 0.012 G	[0.098] 0.092 G	[1.5] 1.2 G	[0.98] 0.92 G	[15] 12 G
BENZO[A]ANTHRACENE	56-55-3	[0.32] 0.3 G	[4.9] 3.9 G	11 S	11 S	11 S	11 S
BENZO[A]PYRENE	50-32-8	0.2 M	0.2 M	3.8 S	3.8 S	3.8 S	3.8 S
BENZO[B]FLUORANTHENE	205-99-2	[0.19] 0.18 G	1.2 S	1.2 S	1.2 S	1.2 S	1.2 S
BENZO[GHI]PERYLENE	191-24-2	0.26 S	0.26 S	0.26 S	0.26 S	0.26 S	0.26 S
BENZO[K]FLUORANTHENE	207-08-9	[0.19] 0.18 G	0.55 S	0.55 S	0.55 S	0.55 S	0.55 S
BENZOIC ACID	65-85-0	[170,000] 140,000 G	[470,000] 390,000 G	2,700,000 S	2,700,000 S	[170,000] 140,000 G	[470,000] 390,000 G
BENZOTRICHLORIDE	98-07-7	[0.056] 0.05 G	[0.26] 0.21 G	[5.6] 5 G	[26] 21 G	[56] 5 G	[260] 21 G
BENZYL ALCOHOL	100-51-6	[4,200] 3,500 G	[12,000] 9,700 G	[420,000] 350,000 G	[1,200,000] 970,000 G	[4,200] 3,500 G	[12,000] 9,700 G
BENZYL CHLORIDE	100-44-7	1 N	5.1 N	100 N	510 N	100 N	510 N
BETA PROPIOLACTONE	57-57-8	0.012 N	0.063 N	1.2 N	6.3 N	0.12 N	0.63 N
BHC, ALPHA-	319-84-6	[0.12] 0.1 G	[0.54] 0.43 G	[12] 10 G	[54] 43 G	[120] 100 G	[540] 430 G
BHC, BETA-	319-85-7	[0.41] 0.36 G	[1.9] 1.5 G	[41] 36 G	100 S	100 S	100 S
BHC, GAMMA (LINDANE)	58-89-9	0.2 M	0.2 M	20 M	20 M	200 M	200 M
BIPHENYL, 1,1-	92-52-4	[91] 0.84 [G] N	[430] 3.5 [G] N	[7,200] 84 [S] N	[7,200] 350 [S] N	[7,200] 84 [S] N	[7,200] 350 [S] N
BIS(2-CHLOROETHOXY)METHANE	111-91-1	[130] 100 G	[350] 290 G	[13,000] 10,000 G	[35,000] 29,000 G	[130] 100 G	[350] 290 G
BIS(2-CHLOROETHYL)ETHER	111-44-4	0.15 N	0.76 N	15 N	76 N	15 N	76 N
BIS(2-CHLORO-ISOPROPYL)ETHER	108-60-1	300 H	300 H	30,000 H	30,000 H	30,000 H	30,000 H

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Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
BIS(CHLOROMETHYL)ETHER	542-88-1	0.00079 N	0.004 N	0.079 N	0.4 N	0.079 N	0.4 N
BIS[2-ETHYLHEXYL] PHTHALATE	117-81-7	6 M	6 M	290 S	290 S	290 S	290 S
BISPHENOL A	80-05-7	[2,100] 1,700 G	[5,800] 4,900 G	120,000 S	120,000 S	120,000 S	120,000 S
BROMACIL	314-40-9	70 H	70 H	7,000 H	7,000 H	70 H	70 H
BROMOBENZENE	108-86-1	0.06 H	0.06 H	6 H	6 H	0.06 H	0.06 H
BROMOCHLOROMETHANE	74-97-5	90 H	90 H	9,000 H	9,000 H	90 H	90 H
BROMODICHLOROMETHANE (THM)	75-27-4	80 M	80 M	8,000 M	8,000 M	80 M	80 M
BROMOMETHANE	74-83-9	10 H	10 H	1,000 H	1,000 H	1,000 H	1,000 H
BROMOXYNIL	1689-84-5	[830] 6.3 G	[2,300] 26 G	[83,000] 630 G	[130,000] 2,600 [S] G	[830] 6.3 G	[2,300] 26 G
BROMOXYNIL OCTANOATE	1689-99-2	[80] 6.3 [S] G	[80] 26 [S] G	80 S	80 S	80 S	80 S
BUTADIENE, 1,3-	106-99-0	[0.21] 1.1 G	[1] 4.5 G	[21] 110 G	[100] 450 G	[21] 110 G	[100] 450 G
BUTYL ALCOHOL, N-	71-36-3	[4,200] 3,500 G	[12,000] 9,700 G	[420,000] 350,000 G	[1,200,000] 970,000 G	[42,000] 35,000 G	[120,000] 97,000 G
BUTYLATE	2008-41-5	400 H	400 H	40,000 H	40,000 H	400 H	400 H
BUTYLBENZENE, N-	104-51-8	[2,100] 1,700 G	[5,800] 4,900 G	15,000 S	15,000 S	[2,100] 1,700 G	[5,800] 4,900 G
BUTYLBENZENE, SEC-	135-98-8	[4,200] 3,500 G	[12,000] 9,700 G	17,000 S	17,000 S	[4,200] 3,500 G	[12,000] 9,700 G
BUTYLBENZENE, TERT-	98-06-6	[4,200] 3,500 G	[12,000] 9,700 G	30,000 S	30,000 S	[4,200] 3,500 G	[12,000] 9,700 G
BUTYLBENZYL PHTHALATE	85-68-7	[380] 340 G	[1,800] 1,400 G	2,700 S	2,700 S	2,700 S	2,700 S
CAPTAN	133-06-2	[320] 280 G	500 S	500 S	500 S	500 S	500 S
CARBARYL	63-25-2	[4,200] 3,500 G	[12,000] 9,700 G	120,000 S	120,000 S	120,000 S	120,000 S
CARBAZOLE	86-74-8	[37] 33 G	[170] 140 G	1,200 S	1,200 S	[37] 33 [S] G	[170] 140 [S] G
CARBOFURAN	1563-66-2	40 M	40 M	4,000 M	4,000 M	40 M	40 M
CARBON DISULFIDE	75-15-0	1,500 N	6,200 N	150,000 N	620,000 N	1,500 N	6,200 N

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Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
CARBON TETRACHLORIDE	56-23-5	5 M	5 M	500 M	500 M	50 M	50 M
CARBOXIN	5234-68-4	700 H	700 H	70,000 H	70,000 H	700 H	700 H
CHLORAMBEN	133-90-4	100 H	100 H	10,000 H	10,000 H	100 H	100 H
CHLORDANE	57-74-9	2 M	2 M	56 S	56 S	56 S	56 S
CHLORO-1,1-DIFLUOROETHANE, 1-	75-68-3	110,000 N	440,000 N	1,400,000 S	1,400,000 S	110,000 N	440,000 N
CHLORO-1-PROPENE, 3- (ALLYL CHLORIDE)	107-05-1	2.1 N	8.8 N	210 N	880 N	210 N	880 N
CHLOROACETALDEHYDE	107-20-0	2.4 G	[11] 10 G	240 G	[1,100] 1,000 G	2.4 G	[11] 10 G
[CHLOROACETOPHENONE, 2-]	[532-27-4]	[1.3] [G]	[3.5] [G]	[130] [G]	[350] [G]	[1,300] [G]	[3,500] [G]
CHLOROANILINE, P-	106-47-8	[3.7] 3.3 G	[17] 14 G	[370] 330 G	[1,700] 1,400 G	[3.7] 3.3 G	[17] 14 G
CHLOROBENZENE	108-90-7	100 M	100 M	10,000 M	10,000 M	10,000 M	10,000 M
CHLOROBENZILATE	510-15-6	[6.6] 5.9 G	[31] 25 G	[660] 590 G	[3,100] 2,500 G	[6,600] 5,900 G	13,000 S
CHLOROBUTANE, 1-	109-69-3	[1,700] 1,400 G	[4,700] 3,900 G	[170,000] 140,000 G	[470,000] 390,000 G	[1,700] 1,400 G	[4,700] 3,900 G
CHLORODIBROMOMETHANE (THM)	124-48-1	80 M	80 M	8,000 M	8,000 M	8,000 M	8,000 M
CHLORODIFLUOROMETHANE	75-45-6	110,000 N	440,000 N	2,900,000 S	2,900,000 S	110,000 N	440,000 N
CHLOROETHANE	75-00-3	[250] 21,000 [G] N	[1,200] 88,000 [G] N	[25,000] 2,100,000 [G] N	[20,000] 5,700,000 [G] S	[25,000] 2,100,000 [G] N	[120,000] 5,700,000 [G] S
CHLOROFORM (THM)	67-66-3	80 M	80 M	8,000 M	8,000 M	800 M	800 M
CHLORONAPHTHALENE, 2-	91-58-7	[3,300] 2,800 G	[9,300] 7,800 G	12,000 S	12,000 S	[3,300] 2,800 G	[9,300] 7,800 G
CHLORONITROBENZENE, P-	100-00-5	[42] 4.2 [G] N	[120] 18 [G] N	[4,200] 420 [G] N	[12,000] 1,800 [G] N	[42] 4.2 [G] N	[120] 18 [G] N
CHLOROPHENOL, 2-	95-57-8	40 H	40 H	4,000 H	4,000 H	40 H	40 H
CHLOROPRENE	126-99-8	0.16 N	0.83 N	16 N	83 N	16 N	83 N
CHLOROPROPANE, 2-	75-29-6	210 N	880 N	21,000 N	88,000 N	210 N	880 N

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		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
CHLOROTHALONIL	1897-45-6	[240] 38 G	[600] 160 [S] G	600 S	600 S	[240] 38 G	[600] 160 [S] G
CHLOROTOLUENE, O-	95-49-8	100 H	100 H	10,000 H	10,000 H	100 H	100 H
CHLOROTOLUENE, P-	106-43-4	100 H	100 H	10,000 H	10,000 H	100 H	100 H
CHLORPYRIFOS	2921-88-2	2 H	2 H	200 H	200 H	2 H	2 H
CHLORSULFURON	64902-72-3	[2,100] 690 G	[5,800] 1,900 G	[190,000] 69,000 [S] G	190,000 [S] G	[2,100] 690 G	[5,800] 1,900 G
CHLORTHAL-DIMETHYL (DACTHAL) (DCPA)	1861-32-1	70 H	70 H	500 S	500 S	500 S	500 S
CHRYSENE	218-01-9	[1.9] 1.8 G	1.9 S	1.9 S	1.9 S	1.9 S	1.9 S
CRESOL(S)	1319-77-3	1,300 N	5,300 N	130,000 N	530,000 N	130,000 N	530,000 N
CRESOL, DINITRO-O-,4,6-	534-52-1	[3.3] 2.8 G	[9.3] 7.8 G	[330] 280 G	[930] 780 G	[3,300] 280 G	[9,300] 780 G
CRESOL, O- (METHYLPHENOL, 2-)	95-48-7	[2,100] 1,700 G	[5,800] 4,900 G	[210,000] 170,000 G	[580,000] 490,000 G	[210,000] 170,000 G	[580,000] 490,000 G
CRESOL, M (METHYLPHENOL, 3-)	108-39-4	[2,100] 1,700 G	[5,800] 4,900 G	[210,000] 170,000 G	[580,000] 490,000 G	[2,100,000] 1,700,000 G	2,500,000 S
CRESOL, P (METHYLPHENOL, 4-)	106-44-5	[210] 170 G	[580] 490 G	[21,000] 17,000 G	[58,000] 49,000 G	[210,000] 170,000 G	[580,000] 490,000 G
CRESOL, P-CHLORO-M-	59-50-7	[4,200] 3,500 G	[12,000] 9,700 G	[420,000] 350,000 G	[1,200,000] 970,000 G	[4,200] 3,500 G	[12,000] 9,700 G
CROTONALDEHYDE	4170-30-3	[0.38] 0.34 G	[1.8] 1.4 G	[38] 34 G	[180] 140 G	[38] 34 G	[180] 140 G
CROTONALDEHYDE, TRANS-	123-73-9	[0.38] 0.34 G	[1.8] 1.4 G	[38] 34 G	[180] 140 G	[38] 34 G	[180] 140 G
CUMENE (ISOPROPYL BENZENE)	98-82-8	840 N	3,500 N	50,000 S	50,000 S	50,000 S	50,000 S
CYANAZINE	21725-46-2	1 H	1 H	100 H	100 H	1 H	1 H
CYCLOHEXANE	110-82-7	13,000 N	53,000 N	55,000 S	55,000 S	13,000 N	53,000 N
CYCLOHEXANONE	108-94-1	1,500 N	6,200 N	150,000 N	620,000 N	1,500 N	6,200 N
CYFLUTHRIN	68359-37-5	1 S	1 S	1 S	1 S	1 S	1 S
CYROMAZINE	66215-27-8	[310] 17,000 G	[880] 49,000 G	[31,000] 1,700,000 G	[88,000] 4,900,000 G	[310] 17,000 G	[880] 49,000 G
DDD, 4,4'-	72-54-8	[3] 2.7 G	[14] 11 G	160 S	160 S	160 S	160 S
DDE, 4,4'-	72-55-9	[2.1] 1.9 G	[10] 8 G	40 S	40 S	40 S	40 S
DDT, 4,4'-	50-29-3	[2.1] 1.9 G	5.5 S	5.5 S	5.5 S	5.5 S	5.5 S

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		R	NR	R	NR	R	NR
DI(2-ETHYLHEXYL)ADIPATE	103-23-1	400 M	400 M	40,000 M	40,000 M	200,000 S	200,000 S
DIALLATE	2303-16-4	[12] 11 G	[56] 45 G	[1,200] 1,100 G	[5,600] 4,500 G	[12,000] 11,000 G	40,000 S
DIAMINOTOLUENE, 2,4-	95-80-7	[0.18] 0.16 G	[0.85] 0.68 G	[18] 16 G	[85] 68 G	[180] 160 G	[850] 680 G
DIAZINON	333-41-5	1 H	1 H	100 H	100 H	1 H	1 H
DIBENZO[A,H]ANTHRACENE	53-70-3	[0.055] 0.052 G	0.6 S	0.6 S	0.6 S	0.6 S	0.6 S
DIBENZOFURAN	132-64-9	[42] 35 G	[120] 97 G	[4,200] 3,500 G	4,500 S	[4,500] 3,500 [S] G	4,500 S
DIBROMO-3-CHLOROPROPANE, 1,2-	96-12-8	0.2 M	0.2 M	20 M	20 M	20 M	20 M
DIBROMOBENZENE, 1,4-	106-37-6	[420] 350 G	[1,200] 970 G	20,000 S	20,000 S	[420] 350 G	[1,200] 970 G
DIBROMOETHANE, 1,2- (ETHYLENE DIBROMIDE)	106-93-4	0.05 M	0.05 M	5 M	5 M	5 M	5 M
DIBROMOMETHANE	74-95-3	8.4 N	35 N	840 N	3,500 N	840 N	3,500 N
DIBUTYL PHTHALATE, N-	84-74-2	[4,200] 3,500 G	[12,000] 9,700 G	[400,000] 350,000 [S] G	400,000 S	400,000 S	400,000 S
DICAMBA	1918-00-9	4,000 H	4,000 H	400,000 H	400,000 H	4,000 H	4,000 H
DICHLOROACETIC ACID (HAA)	7[6]9-43-6	60 M	60 M	6,000 M	6,000 M	60 M	60 M
DICHLORO-2-BUTENE, 1,4-	764-41-0	0.012 N	0.06 N	1.2 N	6 N	0.012 N	0.06 N
DICHLORO-2-BUTENE, TRANS-1,4-	110-57-6	0.012 N	0.06 N	1.2 N	6 N	0.012 N	0.06 N
DICHLOROBENZENE, 1,2-	95-50-1	600 M	600 M	60,000 M	60,000 M	60,000 M	60,000 M
DICHLOROBENZENE, 1,3-	541-73-1	600 H	600 H	60,000 H	60,000 H	60,000 H	60,000 H
DICHLOROBENZENE, P-	106-46-7	75 M	75 M	7,500 M	7,500 M	7,500 M	7,500 M
DICHLOROBENZIDINE, 3,3'-	91-94-1	[1.6] 1.4 G	[7.6] 6 G	[160] 140 G	[760] 600 G	[1,600] 1,400 G	3,100 S
DICHLORODIFLUOROMETHANE (FREON 12)	75-71-8	1,000 H	1,000 H	100,000 H	100,000 H	100,000 H	100,000 H
DICHLOROETHANE, 1,1-	75-34-3	31 N	160 N	3,100 N	16,000 N	310 N	1,600 N
DICHLOROETHANE, 1,2-	107-06-2	5 M	5 M	500 M	500 M	50 M	50 M
DICHLOROETHYLENE, 1,1-	75-35-4	7 M	7 M	700 M	700 M	70 M	70 M
DICHLOROETHYLENE, CIS-1,2-	156-59-2	70 M	70 M	7,000 M	7,000 M	700 M	700 M
DICHLOROETHYLENE, TRANS-1,2-	156-60-5	100 M	100 M	10,000 M	10,000 M	1,000 M	1,000 M
DICHLOROMETHANE (METHYLENE CHLORIDE)	75-09-2	5 M	5 M	500 M	500 M	500 M	500 M

All concentrations in μg/L	M = Maximum Contaminant Level	N = Inhalation
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THMs – The values listed for trihalomethanes (THMs) are the total for all THMs combined.
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Appendix A

Table 1 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Groundwater

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
DICHLOROPHENOL, 2,4-	120-83-2	20 H	20 H	2,000 H	2,000 H	20,000 H	20,000 H
DICHLOROPHENOXYACETIC ACID, 2,4- (2,4-D)	94-75-7	70 M	70 M	7,000 M	7,000 M	70,000 M	70,000 M
DICHLOROPROPANE, 1,2-	78-87-5	5 M	5 M	500 M	500 M	50 M	50 M
DICHLOROPROPENE, 1,3-	542-75-6	[7.3] 6.5 G	[34] 27 G	[730] 650 G	[3,400] 2,700 G	[730] 650 G	[3,400] 2,700 G
DICHLOROPROPIONIC ACID, 2,2- (DALAPON)	75-99-0	200 M	200 M	20,000 M	20,000 M	20,000 M	20,000 M
DICHLORVOS	62-73-7	[2.5] 2.2 G	[12] 9.4 G	[250] 220 G	[1,200] 940 G	[2.5] 2.2 G	[12] 9.4 G
DICYCLOPENTADIENE	77-73-6	0.63 N	2.6 N	63 N	260 N	0.63 N	2.6 N
DIELDRIN	60-57-1	[0.046] 0.041 G	[0.21] 0.17 G	[4.6] 4.1 G	[21] 17 G	[46] 41 G	170 S
DIETHYL PHTHALATE	84-66-2	[33,000] 28,000 G	[93,000] 78,000 G	1,100,000 S	1,100,000 S	1,100,000 S	1,100,000 S
DIFLUBENZURON	35367-38-5	200 S	200 S	200 S	200 S	200 S	200 S
DIISOPROPYL METHYLPHOSPHONATE	1445-75-6	600 H	600 H	60,000 H	60,000 H	600 H	600 H
DIMETHOATE	60-51-5	[8.3] 76 G	[23] 210 G	[830] 7,600 G	[2,300] 21,000 G	[8,300] 76,000 G	[23,000] 210,000 G
DIMETHOXYBENZIDINE, 3,3-	119-90-4	[0.46] 0.41 G	[2] 1.7 G	[46] 41 G	[210] 170 G	[460] 410 G	[2,100] 1,700 G
DIMETHRIN	70-38-2	36 S	36 S	36 S	36 S	36 S	36 S
DIMETHYLAMINOAZOBENZENE, P-	60-11-7	[0.16] 0.14 G	[0.74] 0.59 G	[16] 14 G	[74] 59 G	[160] 140 G	[740] 590 G
DIMETHYLANILINE, N,N-	121-69-7	[83] 24 G	[230] 100 G	[8,300] 2,400 G	[23,000] 10,000 G	[8,300] 2,400 G	[23,000] 10,000 G
DIMETHYLBENZIDINE, 3,3-	119-93-7	[0.066] 0.059 G	[0.31] 0.25 G	[6.6] 5.9 G	[31] 25 G	[66] 59 G	[310] 250 G
DIMETHYL METHYLPHOSPHONATE	756-79-6	100 H	100 H	10,000 H	10,000 H	100 H	100 H
DIMETHYLPHENOL, 2,4-	105-67-9	[830] 690 G	[2,300] 1,900 G	[83,000] 69,000 G	[230,000] 190,000 G	[830,000] 690,000 G	[2,300,000] 1,900,000 G
DINITROBENZENE, 1,3-	99-65-0	1 H	1 H	100 H	100 H	1,000 H	1,000 H
DINITROPHENOL, 2,4-	51-28-5	[83] 69 G	[230] 190 G	[8,300] 6,900 G	[23,000] 19,000 G	[83,000] 69,000 G	[230,000] 190,000 G
DINITROTOLUENE, 2,4-	121-14-2	[2.4] 2.1 G	[11] 8.8 G	[240] 210 G	[1,100] 880 G	[2,400] 2,100 G	[11,000] 8,800 G

All concentrations in µg/L	M = Maximum Contaminant Level	N = Inhalation
R = Residential	H = Lifetime health advisory level	S = Aqueous solubility cap
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Appendix A

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Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
DINITROTOLUENE, 2,6- (2,6-DNT)	606-20-2	[0.49] 0.43 G	[2] 1.8 G	[49] 43 G	[230] 180 G	[490] 430 G	[2,300] 1,800 G
DINOSEB	88-85-7	7 M	7 M	700 M	700 M	7,000 M	7,000 M
DIOXANE, 1,4-	123-91-1	[6.4] 6.5 [N] G	[32] 27 [N] G	[640] 650 [N] G	[3,200] 2,700 [N] G	[64] 65 [N] G	[320] 270 [N] G
DIPHENAMID	957-51-7	200 H	200 H	20,000 H	20,000 H	200 H	200 H
DIPHENYLAMINE	122-39-4	[1,000] 3,500 G	[2,900] 9,700 G	[100,000] 300,000 [G] S	[290,000] 300,000 [G] S	300,000 S	300,000 S
DIPHENYLHYDRAZINE, 1,2-	122-66-7	[0.91] 0.22 [G] N	[4.3] 1.1 [G] N	[91] 22 [G] N	[250] 110 [S] N	[250] 22 [S] N	[250] 110 [S] N
DIQUAT	85-00-7	20 M	20 M	2,000 M	2,000 M	20 M	20 M
DISULFOTON	298-04-4	0.7 H	0.7 H	70 H	70 H	700 H	700 H
DITHIANE, 1,4-	505-29-3	80 H	80 H	8,000 H	8,000 H	80 H	80 H
DIURON	330-54-1	[83] 69 G	[230] 190 G	[8,300] 6,900 G	[23,000] 19,000 G	[83] 69 G	[230] 190 G
ENDOSULFAN	115-29-7	[250] 210 G	480 S	480 S	480 S	480 S	480 S
ENDOSULFAN I (APLHA)	959-98-8	[250] 210 G	500 S	500 S	500 S	[250] 210 G	500 S
ENDOSULFAN II (BETA)	33213-65-9	[250] 210 G	450 S	450 S	450 S	[250] 210 G	450 S
ENDOSULFAN SULFATE	1031-07-8	120 S	120 S	120 S	120 S	120 S	120 S
ENDOTHALL	145-73-3	100 M	100 M	10,000 M	10,000 M	100 M	100 M
ENDRIN	72-20-8	2 M	2 M	200 M	200 M	2 M	2 M
EPICHLOROHYDRIN	106-89-8	2.1 N	8.8 N	210 N	880 N	210 N	880 N
ETHEPHON	16672-87-0	[210] 170 G	[580] 490 G	[21,000] 17,000 G	[58,000] 49,000 G	[210] 170 G	[580] 490 G
ETHION	563-12-2	[21] 17 G	[58] 49 G	850 S	850 S	[21] 17 G	[58] 49 G
ETHOXYETHANOL, 2- (EGEE)	110-80-5	420 N	1,800 N	42,000 N	180,000 N	42,000 N	180,000 N
ETHYL ACETATE	141-78-6	150 [G] N	620 [G] N	[150,000] 15,000 [G] N	62,000 [G] N	[150,000] 15,000 [G] N	62,000 [G] N

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Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
ETHYL ACRYLATE	140-88-5	[15] 14 G	[70] 57 [N] G	[1,500] 1,400 G	[7,000] 5,700 [N] G	[1,500] 1,400 G	[7,000] 5,700 [N] G
ETHYL BENZENE	100-41-4	700 M	700 M	70,000 M	70,000 M	70,000 M	70,000 M
ETHYL DIPROPYLTHIOCARBAMATE, S- (EPTC)	759-94-4	[1,000] 1,700 G	[2,900] 4,900 G	[100,000] 170,000 G	[290,000] 370,000 [G] S	[1,000] 1,700 G	[2,900] 4,900 G
ETHYL ETHER	60-29-7	[8,300] 6,900 G	[23,000] 19,000 G	[830,000] 690,000 G	[2,300,000] 1,900,000 G	[8,300] 6,900 G	[23,000] 19,000 G
ETHYL METHACRYLATE	97-63-2	630 N	2,600 N	63,000 N	260,000 N	630 N	2,600 N
ETHYLENE CHLORHYDRIN	107-07-3	[830] 690 G	[2,300] 1,900 G	[83,000] 69,000 G	[230,000] 190,000 G	[830] 690 G	[2,300] 1,900 G
ETHYLENE GLYCOL	107-21-1	14,000 H	14,000 H	1,400,000 H	1,400,000 H	1,400,000 H	1,400,000 H
ETHYLENE THIOUREA (ETU)	96-45-7	[3.3] 2.8 G	[9.3] 7.8 G	[330] 280 G	[930] 780 G	[3,300] 2,800 G	[9,300] 7,800 G
ETHYLP-NITROPHENYL PHENYLPHOSPHOROTHIOATE	2104-64-5	[0.42] 0.35 G	[1] 0.97 G	[42] 35 G	[120] 97 G	[0.42] 0.35 G	[1.2] 0.97 G
FENAMIPHOS	22224-92-6	0.7 H	0.7 H	70 H	70 H	0.7 H	0.7 H
FENVALERATE (PYDRIN)	51630-58-1	85 S	85 S	85 S	85 S	85 S	85 S
FLUOMETURON	2164-17-2	90 H	90 H	9,000 H	9,000 H	90 H	90 H
FLUORANTHENE	206-44-0	260 S	260 S	260 S	260 S	260 S	260 S
FLUORENE	86-73-7	[1,700] 1,400 G	1,900 S	1,900 S	1,900 S	1,900 S	1,900 S
FLUOROTRICHLOROMETHANE (FREON 11)	75-69-4	2,000 H	2,000 H	200,000 H	200,000 H	200,000 H	200,000 H
FONOFOS	944-22-9	10 H	10 H	1,000 H	1,000 H	10 H	10 H
FORMALDEHYDE	50-00-0	1,000 H	1,000 H	100,000 H	100,000 H	100,000 H	100,000 H
FORMIC ACID	64-18-6	0.63 N	2.6 N	63 N	260 N	6.3 N	26 N
FOSETYL-AL	39148-24-8	[130,000] 87,000 G	[350,000] 240,000 G	[13,000,000] 8,700,000 G	[35,000,000] 24,000,000 G	[130,000] 87,000 G	[350,000] 240,000 G
FURAN	110-00-9	[42] 35 G	[120] 97 G	[4,200] 3,500 G	[12,000] 9,700 G	[4,200] 3,500 G	[12,000] 9,700 G

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Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
FURFURAL	98-01-1	[110] 19 [N] G	[350] 78 G	[11,000] 1,900 [N] G	[35,000] 7,800 G	[110] 19 [N] G	[350] 78 G
GLYPHOSATE	1071-83-6	700 M	700 M	70,000 M	70,000 M	700 M	700 M
HEPTACHLOR	76-44-8	0.4 M	0.4 M	40 M	40 M	180 S	180 S
HEPTACHLOR EPOXIDE	1024-57-3	0.2 M	0.2 M	20 M	20 M	200 M	200 M
HEXACHLOROBENZENE	118-74-1	1 M	1 M	6 S	6 S	6 S	6 S
HEXACHLOROBUTADIENE	87-68-3	[9.4] 8.4 G	[44] 35 G	[940] 840 G	2,900 S	2,900 S	2,900 S
HEXACHLOROCYCLOPENTADIENE	77-47-4	50 M	50 M	1,800 S	1,800 S	1,800 S	1,800 S
HEXACHLOROETHANE	67-72-1	1 H	1 H	100 H	100 H	100 H	100 H
HEXANE	110-54-3	1,500 N	[6,200] 5,800 [N] G	9,500 S	9,500 S	1,500 N	[6,200] 5,800 [N] G
HEXAZINONE	51235-04-2	400 H	400 H	40,000 H	40,000 H	400 H	400 H
HEXYTHIAZOX (SAVEY)	78587-05-0	500 S	500 S	500 S	500 S	500 S	500 S
HMX	2691-41-0	400 H	400 H	5,000 S	5,000 S	400 H	400 H
HYDRAZINE/HYDRAZINE SULFATE	302-01-2	0.01 N	0.051 N	1 N	5.1 N	0.1 N	0.51 N
HYDROQUINONE	123-31-9	[12] 11 G	[57] 45 G	[1,200] 1,100 G	[5,700] 4,500 G	[12,000] 11,000 G	[57,000] 45,000 G
INDENO[1,2,3-CD]PYRENE	193-39-5	[0.19] 0.18 G	[2.8] 2.3 G	[19] 18 G	62 S	62 S	62 S
IPRODIONE	36734-19-7	[1,700] 15 G	[4,700] 62 G	[13,000] 1,500 [S] G	[13,000] 6,200 [S] G	[1,700] 15 G	[4,700] 62 G
ISOBUTYL ALCOHOL	78-83-1	[13,000] 10,000 G	[35,000] 29,000 G	[1,300,000] 1,000,000 G	[3,500,000] 2,900,000 G	[1,300,000] 1,000,000 G	[3,500,000] 2,900,000 G
ISOPHORONE	78-59-1	100 H	100 H	10,000 H	10,000 H	100,000 H	100,000 H
ISOPROPYL METHYLPHOSPHONATE	1832-54-8	700 H	700 H	70,000 H	70,000 H	700 H	700 H
KEPONE	143-50-0	[0.073] 0.065 G	[0.34] 0.27 G	[7.3] 6.5 G	[34] 27 G	[73] 65 G	[340] 270 G
MALATHION	121-75-5	500 H	500 H	50,000 H	50,000 H	140,000 S	140,000 S
MALEIC HYDRAZIDE	123-33-1	4,000 H	4,000 H	400,000 H	400,000 H	4,000 H	4,000 H
MANEB	12427-38-2	[210] 11 G	[580] 45 G	[21,000] 1,100 G	[23,000] 4,500 [S] G	[210] 11 G	[580] 45 G

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Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
MERPHOS OXIDE	78-48-8	[1.3] ~~35~~ 17 G	[3.5] ~~97~~ 49 G	[130] ~~2,300~~ 1,700 [G] ~~S~~	[350] 2,300 [G] S	[1.3] ~~35~~ 17 G	[3.5] ~~97~~ 49 G
METHACRYLONITRILE	126-98-7	[4.2] 3.5 G	[12] 9.7 G	[420] 350 G	[1,200] 970 G	[4.2] 3.5 G	[12] 9.7 G
METHAMIDOPHOS	10265-92-6	[2.1] 1.7 G	[5.8] 4.9 G	[210] 170 G	[580] 490 G	[2.1] 1.7 G	[5.8] 4.9 G
METHANOL	67-56-1	[8,400] 42,000 N	[35,000] 180,000 N	[840,000] 4,200,000 N	[3,500,000] 18,000,000 N	[840,000] 4,200,000 N	[3,500,000] 18,000,000 N
METHOMYL	16752-77-5	200 H	200 H	20,000 H	20,000 H	200 H	200 H
METHOXYCHLOR	72-43-5	40 M	40 M	45 S	45 S	45 S	45 S
METHOXYETHANOL, 2-	109-86-4	42 N	180 N	4,200 N	18,000 N	[42] 420 N	[180] 1,800 N
METHYL ACETATE	79-20-9	[42,000] 35,000 G	[120,000] 97,000 G	[4,200,000] 3,500,000 G	[12,000,000] 9,700,000 G	[42,000] 35,000 G	[120,000] 97,000 G
METHYL ACRYLATE	96-33-3	42 N	180 N	4,200 N	18,000 N	4,200 N	18,000 N
METHYL CHLORIDE	74-87-3	30 H	30 H	3,000 H	3,000 H	3,000 H	3,000 H
METHYL ETHYL KETONE	78-93-3	4,000 H	4,000 H	400,000 H	400,000 H	400,000 H	400,000 H
METHYL HYDRAZINE	60-34-4	0.042 N	0.18 N	4.2 N	18 N	0.42 N	1.8 N
METHYL ISOBUTYL KETONE	108-10-1	[3,300] 2,800 G	[9,300] 7,800 G	[330,000] 280,000 G	[930,000] 780,000 G	[330,000] 280,000 G	[930,000] 780,000 G
METHYL ISOCYANATE	624-83-9	2.1 N	8.8 N	210 N	880 N	2.1 N	8.8 N
METHYL N-BUTYL KETONE	591-78-6	63 N	260 N	6,300 N	26,000 N	63 N	260 N
METHYL METHACRYLATE	80-62-6	1,500 N	6,200 N	150,000 N	620,000 N	150,000 N	620,000 N
METHYL METHANESULFONATE	66-27-3	[7.4] 6.6 G	[34] 27 G	[740] 660 G	[3,400] 2,700 G	[7.4] 6.6 G	[34] 27 G
METHYL PARATHION	298-00-0	1 H	1 H	100 H	100 H	1,000 H	1,000 H
METHYL STYRENE (MIXED ISOMERS)	25013-15-4	84 N	350 N	8,400 N	35,000 N	84 N	350 N
METHYL TERT-BUTYL ETHER (MTBE)	1634-04-4	20	20	2,000	2,000	200	200
METHYLCHLOROPHENOXYACETIC ACID (MCPA)	94-74-6	30 H	30 H	3,000 H	3,000 H	30,000 H	30,000 H
METHYLENE BIS(2-CHLOROANILINE), 4,4'-	101-14-4	[2.3] 2.1 G	[34] 27 G	[230] 210 G	[3,400] 2,700 G	[2.3] 2.1 G	[34] 27 G

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		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
METHYLNAPHTHALENE, 2-	91-57-6	[170] 6.3 [G] N	[470] 26 [G] N	[17,000] 630 [G] N	[25,000] 2,600 [S] N	[170] 6.3 [G] N	[470] 26 [G] N
METHYLSTYRENE, ALPHA	98-83-9	[2,900] 2,400 G	[8,200] 6,800 G	[290,000] 240,000 G	560,000 S	[2,900] 2,400 G	[8,200] 6,800 G
METOLACHLOR	51218-45-2	700 H	700 H	70,000 H	70,000 H	700 H	700 H
METRIBUZIN	21087-64-9	70 H	70 H	7,000 H	7,000 H	70 H	70 H
MEVINPHOS	7786-34-7	0.87 G	2.4 G	87 G	240 G	0.87 G	2.4 G
MONOCHLOROACETIC ACID (HAA)	79-11-8	60 H	60 H	6,000 H	6,000 H	60 H	60 H
NAPHTHALENE	91-20-3	100 H	100 H	10,000 H	10,000 H	[30,000] 10,000 [S] H	[30,000] 10,000 [S] H
NAPHTHYLAMINE, 1-	134-32-7	[0.41] 0.36 G	[1.9] 1.5 G	[41] 36 G	[190] 150 G	[410] 36 G	[1,900] 150 G
NAPHTHYLAMINE, 2-	91-59-8	[0.41] 0.36 G	[1.9] 1.5 G	[41] 36 G	[190] 150 G	[410] 360 G	[1,900] 1,500 G
NAPROPAMIDE	15299-99-7	4,200 G	12,000 G	70,000 S	70,000 S	4,200 G	12,000 G
NITROANILINE, O-	88-74-4	[420] 0.11 [G] N	[1,200] 0.44 [G] N	[42,000] 11 [G] N	[120,000] 44 [G] N	[420] 0.11 [G] N	[1,200] 0.44 [G] N
NITROANILINE, P-	100-01-6	[37] 33 G	[170] 140 G	[3,700] 3,300 G	[17,000] 14,000 G	[37] 33 G	[170] 140 G
NITROBENZENE	98-95-3	[83] 1.2 [G] N	[230] 6.3 [G] N	[8,300] 120 [G] N	[23,000] 630 [G] N	[83,000] 120 [G] N	[230,000] 630 [G] N
NITROGUANIDINE	556-88-7	700 H	700 H	70,000 H	70,000 H	700 H	700 H
NITROPHENOL, 2-	88-75-5	[330] 280 G	[930] 780 G	[33,000] 28,000 G	[93,000] 78,000 G	[330,000] 28,000 G	[930,000] 78,000 G
NITROPHENOL, 4-	100-02-7	60 H	60 H	6,000 H	6,000 H	[60,000] 6,000 H	[60,000] 6,000 H
NITROPROPANE, 2-	79-46-9	0.018 N	0.093 N	1.8 N	9.3 N	0.18 N	0.93 N
NITROSODIETHYLAMINE, N-	55-18-5	0.00045 N	0.0058 N	0.045 N	0.58 N	0.0045 N	0.058 N
NITROSODIMETHYLAMINE, N-	62-75-9	0.0014 N	0.018 N	0.14 N	1.8 N	0.014 N	0.18 N

All concentrations in μg/L	M = Maximum Contaminant Level	N = Inhalation
R = Residential	H = Lifetime health advisory level	S = Aqueous solubility cap
NR = Non-Residential	G = Ingestion	

THMs – The values listed for trihalomethanes (THMs) are the total for all THMs combined.

HAAs – The values listed for haloacetic acids (HAAs) are the total for all HAAs combined.

PFOA and PFOS values listed are for individual or total combined.

Appendix A

Table 1 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Groundwater

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
NITROSO-DI-N-BUTYLAMINE, N-	924-16-3	[0.14] 0.031 [G] N	[0.63] 0.16 [G] N	[14] 3.1 [G] N	[63] 16 [G] N	[140] 3.1 [G] N	[630] 16 [G] N
NITROSODI-N-PROPYLAMINE, N-	621-64-7	[0.1] 0.025 [G] N	[0.49] 0.13 [G] N	[10] 2.5 [G] N	[49] 13 [G] N	[100] 0.25 [G] N	[490] 1.3 [G] N
NITROSODIPHENYLAMINE, N-	86-30-6	[150] 19 [G] N	[690] 96 [G] N	[15,000] 1,900 [G] N	[35,000] 9,600 [S] N	[35,000] 1,900 [S] N	[35,000] 9,600 [S] N
NITROSO-N-ETHYLUREA, N-	759-73-9	[0.0084] 0.0079 G	[0.13] 0.1 G	[0.84] 0.79 G	[13] 10 G	[8.4] 7.9 G	[130] 100 G
OCTYL PHTHALATE, DI-N-	117-84-0	[420] 350 G	[1,200] 970 G	3,000 S	3,000 S	3,000 S	3,000 S
OXAMYL (VYDATE)	23135-22-0	200 M	200 M	20,000 M	20,000 M	200 M	200 M
PARAQUAT	1910-42-5	30 H	30 H	3,000 H	3,000 H	30 H	30 H
PARATHION	56-38-2	[250] 1 G	[700] 2.9 G	[20,000] 100 [S] G	[20,000] 290 [S] G	[250] 1 G	[700] 2.9 G
PCBS, TOTAL (POLYCHLORINATED BIPHENYLS) (AROCLORS)	1336-36-3	0.5 M	0.5 M	50 M	50 M	0.5 M	0.5 M
PCB-1016 (AROCLOR)	12674-11-2	[0.37] 2.4 G	[1.7] 6.8 G	[37] 240 G	[170] 250 [G] S	[0.37] 2.4 G	[1.7] 6.8 G
PCB-1221 (AROCLOR)	11104-28-2	[0.37] 0.33 G	[1.7] 1.4 G	[37] 33 G	[170] 140 G	[0.37] 0.33 G	[1.7] 1.4 G
PCB-1232 (AROCLOR)	11141-16-5	[0.37] 0.33 G	[1.7] 1.4 G	[37] 33 G	[170] 140 G	[0.37] 0.33 G	[1.7] 1.4 G
PCB-1242 (AROCLOR)	53469-21-9	[0.37] 0.33 G	[1.7] 1.4 G	[37] 33 G	100 S	[0.37] 0.33 G	[1.7] 1.4 G
PCB-1248 (AROCLOR)	12672-29-6	[0.37] 0.33 G	[1.7] 1.4 G	[37] 33 G	54 S	[0.37] 0.33 G	[1.7] 1.4 G
PCB-1254 (AROCLOR)	11097-69-1	[0.37] 0.69 G	[1.7] 1.9 G	[37] 57 [G] S	57 S	[0.37] 0.69 G	[1.7] 1.9 G
PCB-1260 (AROCLOR)	11096-82-5	[0.37] 0.33 G	[1.7] 1.4 G	[37] 33 G	80 S	[0.37] 0.33 G	[1.7] 1.4 G
PEBULATE	1114-71-2	[2,100] 1,700 G	[5,800] 4,900 G	92,000 S	92,000 S	[2,100] 1,700 G	[5,800] 4,900 G
PENTACHLOROBENZENE	608-93-5	[33] 28 G	[93] 78 G	740 S	740 S	740 S	740 S

All concentrations in μg/L	M = Maximum Contaminant Level	N = Inhalation
R = Residential	H = Lifetime health advisory level	S = Aqueous solubility cap
NR = Non-Residential	G = Ingestion	

THMs – The values listed for trihalomethanes (THMs) are the total for all THMs combined.

HAAs – The values listed for haloacetic acids (HAAs) are the total for all HAAs combined.

PFOA and PFOS values listed are for individual or total combined.

Appendix A

Table 1 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Groundwater

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
PENTACHLOROETHANE	76-01-7	[8.1] 7.2 G	[38] 30 G	[810] 720 G	[3,800] 3,000 G	[8.1] 7.2 G	[38] 30 G
PENTACHLORONITROBENZENE	82-68-8	[2.8] 2.5 G	[13] 10 G	[280] 250 G	440 S	440 S	440 S
PENTACHLOROPHENOL	87-86-5	1 M	1 M	100 M	100 M	1,000 M	1,000 M
PERFLUOROBUTANE SULFONATE (PFBS)	375-73-5	~~690~~ 10 G	~~1,900~~ 29 G	~~69,000~~ 1,000 G	~~190,000~~ 2,900 G	~~690~~ 10 G	~~1,900~~ 29 G
PERFLUOROOCTANE SULFONATE (PFOS)	1763-23-1	0.07 H	0.07 H	7 H	7 H	0.07 H	0.07 H
PERFLUOROOCTANOIC ACID (PFOA)	335-67-1	0.07 H	0.07 H	7 H	7 H	0.07 H	0.07 H
PHENACETIN	62-44-2	[330] 300 G	[1,500] 1,200 G	[33,000] 30,000 G	[150,000] 120,000 G	[330,000] 300,000 G	760,000 S
PHENANTHRENE	85-01-8	1,100 S	1,100 S	1,100 S	1,100 S	1,100 S	1,100 S
PHENOL	108-95-2	2,000 H	2,000 H	200,000 H	200,000 H	200,000 H	200,000 H
PHENYL MERCAPTAN	108-98-5	[42] 35 G	[120] 97 G	[4,200] 3,500 G	[12,000] 9,700 G	[42] 35 G	[120] 97 G
PHENYLENEDIAMINE, M-	108-45-2	[250] 210 G	[700] 580 G	[25,000] 21,000 G	[70,000] 58,000 G	[250,000] 210,000 G	[700,000] 580,000 G
PHENYLPHENOL, 2-	90-43-7	[380] 340 G	[1,800] 1,400 G	[38,000] 34,000 G	[180,000] 140,000 G	[380,000] 340,000 G	700,000 S
PHORATE	298-02-2	[8.3] 6.9 G	[23] 19 G	[830] 690 G	[2,300] 1,900 G	[8.3] 6.9 G	[23] 19 G
PHTHALIC ANHYDRIDE	85-44-9	[83,000] 42 [G] N	[230,000] 180 [G] N	[6,200,000] 4,200 [S] N	[6,200,000] 18,000 [S] N	[6,200,000] 4,200 [S] N	[6,200,000] 18,000 [S] N
PICLORAM	1918-02-1	500 M	500 M	50,000 M	50,000 M	500 M	500 M
[POLYCHLORINATED BIPHENYLS (PCBS)]	[1336-36-3]	[0.5] [M]	[0.5] [M]	[50] [M]	[50] [M]	[0.5] [M]	[0.5] [M]
PROMETON	1610-18-0	400 H	400 H	40,000 H	40,000 H	400 H	400 H
PRONAMIDE	23950-58-5	[3,100] 2,600 G	[8,800] 7,300 G	15,000 S	15,000 S	[3,100] 2,600 G	[8,800] 7,300 G
PROPACHLOR	1918-16-7	0.1 H	0.1 H	10 H	10 H	10 H	10 H
PROPANIL	709-98-8	[210] 170 G	[580] 490 G	[21,000] 17,000 G	[58,000] 49,000 G	[210] 170 G	[580] 490 G
PROPANOL, 2- (ISOPROPYL ALCOHOL)	67-63-0	420 N	1,800 N	42,000 N	180,000 N	420 N	1,800 N
PROPAZINE	139-40-2	10 H	10 H	1,000 H	1,000 H	10 H	10 H

All concentrations in μg/L	M = Maximum Contaminant Level	N = Inhalation
R = Residential	H = Lifetime health advisory level	S = Aqueous solubility cap
NR = Non-Residential	G = Ingestion	

THMs – The values listed for trihalomethanes (THMs) are the total for all THMs combined.
HAAs – The values listed for haloacetic acids (HAAs) are the total for all HAAs combined.
PFOA and PFOS values listed are for individual or total combined.

Appendix A

Table 1 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Groundwater

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
PROPHAM	122-42-9	100 H	100 H	10,000 H	10,000 H	100 H	100 H
PROPYLBENZENE, N-	103-65-1	2,100 N	8,800 N	52,000 S	52,000 S	2,100 N	8,800 N
PROPYLENE OXIDE	75-56-9	[3] 2.7 G	[14] 11 G	[300] 270 G	[1,400] G 1,100	[3] 2.7 G	[14] 11 G
PYRENE	129-00-0	130 S	130 S	130 S	130 S	130 S	130 S
PYRETHRUM	8003-34-7	350 S	350 S	350 S	350 S	350 S	350 S
PYRIDINE	110-86-1	[42] 35 G	[120] 97 G	[4,200] G 3,500	[12,000] G 9,700	[420] 350 G	[1,200] G 970
QUINOLINE	91-22-5	[0.24] 0.22 G	[1.1] 0.91 G	[24] 22 G	[110] 91 G	[240] 220 G	[1,100] G 910
QUIZALOFOP (ASSURE)	76578-14-8	300 S	300 S	300 S	300 S	300 S	300 S
RDX	121-82-4	2 H	2 H	200 H	200 H	2 H	2 H
RESORCINOL	108-46-3	[83,000] G 69,000	[230,000] G 190,000	[8,300,000 G] 6,900,000	[23,000,00 G 0] 19,000,00 0	[83,000] G 69,000	[230,000] G 190,000
RONNEL	299-84-3	[2,100] G 1,700	[5,800] G 4,900	40,000 S	40,000 S	[2,100] G 1,700	[5,800] G 4,900
SIMAZINE	122-34-9	4 M	4 M	400 M	400 M	4 M	4 M
STRYCHNINE	57-24-9	[13] 10 G	[35] 29 G	[1,300] G 1,000	[3,500] G 2,900	[13,000] G 10,000	[35,000] G 29,000
STYRENE	100-42-5	100 M	100 M	10,000 M	10,000 M	10,000 M	10,000 M
TEBUTHIURON	34014-18-1	500 H	500 H	50,000 H	50,000 H	500 H	500 H
TERBACIL	5902-51-2	90 H	90 H	9,000 H	9,000 H	90 H	90 H
TERBUFOS	13071-79-9	0.4 H	0.4 H	40 H	40 H	0.4 H	0.4 H
TETRACHLOROBENZENE, 1,2,4,5-	95-94-3	[13] 10 G	[35] 29 G	580 S	580 S	580 S	580 S
TETRACHLORODIBENZO-P-DIOXIN, 2,3,7,8- (TCDD)	1746-01-6	0.00003 M	0.00003 M	0.003 M	0.003 M	0.019 S	0.019 S
TETRACHLOROETHANE, 1,1,1,2-	630-20-6	70 H	70 H	7,000 H	7,000 H	7,000 H	7,000 H
TETRACHLOROETHANE, 1,1,2,2-	79-34-5	0.84 N	4.3 N	84 N	430 N	84 N	430 N
TETRACHLOROETHYLENE (PCE)	127-18-4	5 M	5 M	500 M	500 M	50 M	50 M
TETRACHLOROPHENOL, 2,3,4,6-	58-90-2	[1,300] G 1,000	[3,500] G 2,900	[130,000] G 100,000	180,000 S	180,000 S	180,000 S
TETRAETHYL LEAD	78-00-2	[0.0042] G 0.0035	[0.012] G 0.0097	[0.42] 0.35 G	[1] 0.97 G	[4.2] 3.5 G	[12] 9.7 G

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THMs – The values listed for trihalomethanes (THMs) are the total for all THMs combined.
HAAs – The values listed for haloacetic acids (HAAs) are the total for all HAAs combined.
PFOA and PFOS values listed are for individual or total combined.

Appendix A

Table 1 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Groundwater

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
TETRAETHYLDITHIOPYROPHOSPHATE	3689-24-5	[21] 17 G	[58] 49 G	[2,100] 1,700 G	[5,800] 4,900 G	[21] 17 G	[58] 49 G
TETRAHYDROFURAN	109-99-9	[26] 25 N	130 N	[2,600] 2,500 N	13,000 N	[26] 25 N	130 N
THIOFANOX	39196-18-4	[13] 10 G	[35] 29 G	[1,300] 1,000 G	[3,500] 2,900 G	[13] 10 G	[35] 29 G
THIRAM	137-26-8	[210] 520 G	[580] 1,500 G	[21,000] 30,000 [G]S	30,000 S	[210] 520 G	[580] 1,500 G
TOLUENE	108-88-3	1,000 M	1,000 M	100,000 M	100,000 M	100,000 M	100,000 M
TOLUIDINE, M-	108-44-1	[46] 41 G	[210] 170 G	[4,600] 4,100 G	[21,000] 17,000 G	[46] 41 G	[210] 170 G
TOLUIDINE, O	95-53-4	[46] 41 G	[210] 170 G	[4,600] 4,100 G	[21,000] 17,000 G	[46,000] 41,000 G	[210,000] 170,000 G
TOLUIDINE, P-	106-49-0	[24] 22 G	[110] 91 G	[2,400] 2,200 G	[11,000] 9,100 G	[24] 22 G	[110] 91 G
TOXAPHENE	8001-35-2	3 M	3 M	300 M	300 M	3 M	3 M
TRIALLATE	2303-17-5[	[540] 0.91 G	[1,500] 3.8 G	[4,000] 91 [S]G	[4,000] 380 [S]G	[540] 0.91 G	[1,500] 3.8 G
TRIBROMOMETHANE (BROMOFORM) (THM)	75-25-2	80 M	80 M	8,000 M	8,000 M	8,000 M	8,000 M
TRICHLORO-1,2,2-TRIFLUOROETHANE, 1,1,2-	76-13-1	[63,000] 11,000 N	[170,000] 44,000 [S]N	170,000 S	170,000 S	170,000 S	170,000 S
TRICHLOROACETIC ACID (HAA)	76-03-9	60 [H]M	60 [H]M	6,000 [H]M	6,000 [H]M	60 [H]M	60 [H]M
TRICHLOROBENZENE, 1,2,4-	120-82-1	70 M	70 M	7,000 M	7,000 M	[44,000] 7,000 [S]M	[44,000] 7,000 [S]M
TRICHLOROBENZENE, 1,3,5-	108-70-3	40 H	40 H	4,000 H	4,000 H	40 H	40 H
TRICHLOROETHANE, 1,1,1-	71-55-6	200 M	200 M	20,000 M	20,000 M	2,000 M	2,000 M
TRICHLOROETHANE, 1,1,2-	79-00-5	5 M	5 M	500 M	500 M	50 M	50 M
TRICHLOROETHYLENE (TCE)	79-01-6	5 M	5 M	500 M	500 M	50 M	50 M

All concentrations in µg/L	M = Maximum Contaminant Level	N = Inhalation
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NR = Non-Residential	G = Ingestion	

THMs – The values listed for trihalomethanes (THMs) are the total for all THMs combined.
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PFOA and PFOS values listed are for individual or total combined.

Appendix A

Table 1 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Groundwater

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
TRICHLOROPHENOL, 2,4,5-	95-95-4	[4,200] 3,500 G	[12,000] 9,700 G	[420,000] 350,000 G	[1,000,000] 970,000 [S] G	1,000,000 S	1,000,000 S
TRICHLOROPHENOL, 2,4,6-	88-06-2	[42] 35 G	[120] 97 G	[4,200] 3,500 G	[12,000] 9,700 G	[42,000] 35,000 G	[120,000] 97,000 G
TRICHLOROPHENOXYACETIC ACID, 2,4,5- (2,4,5-T)	93-76-5	70 H	70 H	7,000 H	7,000 H	70,000 H	70,000 H
TRICHLOROPHENOXYPROPIONIC ACID, 2,4,5- (2,4,5-TP)	93-72-1	50 M	50 M	5,000 M	5,000 M	50 M	50 M
TRICHLOROPROPANE, 1,1,2-	598-77-6	[210] 170 G	[580] 490 G	[21,000] 17,000 G	[58,000] 49,000 G	[210] 170 G	[580] 490 G
TRICHLOROPROPANE, 1,2,3-	96-18-4	40 H	40 H	4,000 H	4,000 H	4,000 H	4,000 H
TRICHLOROPROPENE, 1,2,3-	96-19-5	0.63 N	2.6 N	63 N	260 N	0.63 N	2.6 N
TRIETHYLAMINE	121-44-8	15 N	62 N	1,500 N	6,200 N	15 N	62 N
TRIETHYLENE GLYCOL	112-27-6	[83,000] 69,000 G	[230,000] 190,000 G	[8,300,000] 6,900,000 G	[23,000,000] 19,000,000 G	[83,000] 69,000 G	[230,000] 190,000 G
TRIFLURALIN	1582-09-8	10 H	10 H	1,000 H	1,000 H	10 H	10 H
TRIMETHYLBENZENE, 1,3,4- (TRIMETHYLBENZENE, 1,2,4-)	95-63-6	[15] 130 N	[62] 530 N	[1,500] 13,000 N	[6,200] 53,000 N	[1,500] 13,000 N	[6,200] 53,000 N
TRIMETHYLBENZENE, 1,3,5-	108-67-8	[420] 130 [G] N	[1,200] 530 [G] N	[42,000] 13,000 [G] N	49,000 S	[420] 130 [G] N	[1,200] 530 [G] N
TRINITROGLYCEROL (NITROGLYCERIN)	55-63-0	5 H	5 H	500 H	500 H	[5] 500 H	[5] 500 H
TRINITROTOLUENE, 2,4,6-	118-96-7	2 H	2 H	200 H	200 H	2 H	2 H
VINYL ACETATE	108-05-4	420 N	1,800 N	42,000 N	180,000 N	420 N	1,800 N
VINYL BROMIDE (BROMOETHENE)	593-60-2	1.5 N	7.8 N	150 N	780 N	15 N	78 N
VINYL CHLORIDE	75-01-4	2 M	2 M	200 M	200 M	20 M	20 M
WARFARIN	81-81-2	[13] 10 G	[35] 29 G	[1,300] 1,000 G	[3,500] 2,900 G	[13,000] 10,000 G	17,000 S
XYLENES (TOTAL)	1330-20-7	10,000 M	10,000 M	180,000 S	180,000 S	180,000 S	180,000 S
ZINEB	12122-67-7	[2,100] 1,700 G	[5,800] 4,900 G	10,000 S	10,000 S	[2,100] 1,700 G	[5,800] 4,900 G

All concentrations in µg/L	M = Maximum Contaminant Level	N = Inhalation
R = Residential	H = Lifetime health advisory level	S = Aqueous solubility cap
NR = Non-Residential	G = Ingestion	

THMs – The values listed for trihalomethanes (THMs) are the total for all THMs combined.
HAAs – The values listed for haloacetic acids (HAAs) are the total for all HAAs combined.
PFOA and PFOS values listed are for individual or total combined.

Appendix A

Table 2 – Medium-Specific Concentrations (MSCs) for Inorganic Regulated Substances in Groundwater

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
ANTIMONY	7440-36-0	6 M	6 M	600 M	600 M	6,000 M	6,000 M
ARSENIC	7440-38-2	10 M	10 M	1,000 M	1,000 M	10,000 M	10,000 M
ASBESTOS (fibers/L)	12001-29-5	7,000,000 M	7,000,000 M	7,000,000 M	7,000,000 M	7,000,000 M	7,000,000 M
BARIUM AND COMPOUNDS	7440-39-3	2,000 M	2,000 M	200,000 M	200,000 M	2,000,000 M	2,000,000 M
BERYLLIUM	7440-41-7	4 M	4 M	400 M	400 M	4,000 M	4,000 M
BORON AND COMPOUNDS	7440-42-8	6,000 H	6,000 H	600,000 H	600,000 H	6,000,000 H	6,000,000 H
CADMIUM	7440-43-9	5 M	5 M	500 M	500 M	5,000 M	5,000 M
CHROMIUM (TOTAL)	7440-47-3	100 M	100 M	10,000 M	10,000 M	100,000 M	100,000 M
COBALT	7440-48-4	[13] 10 G	[35] 29 G	[1,300] 1,000 G	[3,500] 2,900 G	[13,000] 10,000 G	[35,000] 29,000 G
COPPER	7440-50-8	1,000 M	1,000 M	100,000 M	100,000 M	1,000,000 M	1,000,000 M
CYANIDE, FREE	57-12-5	200 M	200 M	20,000 M	20,000 M	200,000 M	200,000 M
FLUORIDE	16984-48-8	4,000 M	4,000 M	400,000 M	400,000 M	4,000,000 M	4,000,000 M
LEAD	7439-92-1	5 M	5 M	500 M	500 M	5,000 M	5,000 M
LITHIUM	7439-93-2	[83] 69 G	[230] 190 G	[8,300] 6,900 G	[23,000] 19,000 G	[83,000] 69,000 G	[230,000] 190,000 G
MANGANESE	7439-96-5	300 H	300 H	30,000 H	30,000 H	300,000 H	300,000 H
MERCURY	7439-97-6	2 M	2 M	200 M	200 M	2,000 M	2,000 M
MOLYBDENUM	7439-98-7	40 H	40 H	4,000 H	4,000 H	40,000 H	40,000 H
NICKEL	7440-02-0	100 H	100 H	10,000 H	10,000 H	100,000 H	100,000 H
NITRATE NITROGEN	14797-55-8	10,000 M	10,000 M	1,000,000 M	1,000,000 M	10,000,000 M	10,000,000 M
NITRITE NITROGEN	14797-65-0	1,000 M	1,000 M	100,000 M	100,000 M	1,000,000 M	1,000,000 M
PERCHLORATE	7790-98-9	15 H	15 H	1,500 H	1,500 H	15,000 H	15,000 H
SELENIUM	7782-49-2	50 M	50 M	5,000 M	5,000 M	50,000 M	50,000 M
SILVER	7440-22-4	100 H	100 H	10,000 H	10,000 H	100,000 H	100,000 H
STRONTIUM	7440-24-6	4,000 H	4,000 H	400,000 H	400,000 H	4,000,000 H	4,000,000 H
THALLIUM	7440-28-0	2 M	2 M	200 M	200 M	2,000 M	2,000 M
TIN	7440-31-5	[25,000] 21,000 G	[70,000] 58,000 G	[2,500,000] 2,100,000 G	[7,000,000] 5,800,000 G	[25,000,000] 21,000,000 G	[70,000,000] 58,000,000 G

All concentrations in µg/L (except asbestos)
M = Maximum Contaminant Level
H = Lifetime Health Advisory Level
SMCL = Secondary Maximum Contaminant Level
G = Ingestion
N = Inhalation
PA State MCL adopted as MSC for Copper and Lead

R = Residential
NR = Nonresidential

Appendix A

Table 2 – Medium-Specific Concentrations (MSCs) for Inorganic Regulated Substances in Groundwater

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500 mg/L		TDS > 2500 mg/L			
		R	NR	R	NR	R	NR
VANADIUM	7440-62-2	[2.9] 2.4 G	[8.2] 6.8 G	[290] 240 G	[820] 680 G	[2,900] G 2,400	[8,200] G 6,800
ZINC AND COMPOUNDS	7440-66-6	2,000 H	2,000 H	200,000 H	200,000 H	2,000,000 H	2,000,000 H

SECONDARY CONTAMINANTS			
REGULATED SUBSTANCE	CASRN	SMCL	UNITS
ALUMINUM	7429-90-5	200	µg/L
CHLORIDE	7647-14-5	250,000	µg/L
[COPPER]	[7440-50-8]	[1000]	[µg/L]
[FLUORIDE]	[7681-49-4]	[2,000]	[µg/L]
IRON	7439-89-6	300	µg/L
[MANGANESE]	[7439-96-5]	[50]	[µg/L]
SULFATE	7757-82-6	250,000	µg/L

All concentrations in µg/L (except asbestos)
M = Maximum Contaminant Level
H = Lifetime Health Advisory Level
SMCL = Secondary Maximum Contaminant Level
G = Ingestion
N = Inhalation
PA State MCL adopted as MSC for Copper and Lead

R = Residential
NR = Nonresidential

Appendix A
Table 3 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Soil
A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential 0-15 feet		Nonresidential			
				Surface Soil 0-2 feet		Subsurface Soil 2-15 feet	
ACENAPHTHENE	83-32-9	13,000	G	190,000	C	190,000	C
ACENAPHTHYLENE	208-96-8	13,000	G	190,000	C	190,000	C
ACEPHATE	30560-19-1	[880] 260	G	[10,000] 3,800	G	190,000	C
ACETALDEHYDE	75-07-0	170	N	[720] 710	N	[830] 820	N
ACETONE	67-64-1	10,000	C	10,000	C	10,000	C
ACETONITRILE	75-05-8	1,100	N	[4,800] 4,700	N	5,500	N
ACETOPHENONE	98-86-2	10,000	C	10,000	C	10,000	C
ACETYLAMINOFLUORENE, 2- (2AAF)	53-96-3	4.9	G	24	G	190,000	C
ACROLEIN	107-02-8	0.38	N	1.6	N	1.8	N
ACRYLAMIDE	79-06-1	1.7	N	22	N	[26] 25	N
ACRYLIC ACID	79-10-7	19	N	79	N	91	N
ACRYLONITRILE	107-13-1	[6.6] 6.5	N	33	N	[38] 37	N
ALACHLOR	15972-60-8	330	G	1,600	G	190,000	C
ALDICARB	116-06-3	220	G	3,200	G	190,000	C
ALDICARB SULFONE	1646-88-4	220	G	3,200	G	190,000	C
ALDICARB SULFOXIDE	1646-87-3	220	G	3,200	G	190,000	C
ALDRIN	309-00-2	1.1	G	5.4	G	190,000	C
ALLYL ALCOHOL	107-18-6	1.9	N	[8] 7.9	N	9.1	N
AMETRYN	834-12-8	2,000	G	29,000	G	190,000	C
AMINOBIPHENYL, 4-	92-67-1	0.89	G	4.3	G	190,000	C
AMITROLE	61-82-5	20	G	97	G	190,000	C
AMMONIA	7664-41-7	[1,900] 9,600	N	[8,000] 10,000	[N] C	[9,100] 10,000	[N] C
AMMONIUM SULFAMATE	7773-06-0	44,000	G	190,000	C	190,000	C
ANILINE	62-53-3	19	N	79	N	[91] 90	N
ANTHRACENE	120-12-7	66,000	G	190,000	C	190,000	C
ATRAZINE	1912-24-9	81	G	400	G	190,000	C
AZINPHOS-METHYL (GUTHION)	86-50-0	[660] 330	G	[9,600] 4,800	G	190,000	C
BAYGON (PROPOXUR)	114-26-1	880	G	13,000	G	190,000	C
BENOMYL	17804-35-2	[11,000] 7,800	G	[160,000] 38,000	G	190,000	C
BENTAZON	25057-89-0	6,600	G	96,000	G	190,000	C
BENZENE	71-43-2	57	N	[290] 280	N	330	N
BENZIDINE	92-87-5	0.018	G	0.4	G	190,000	C
BENZO[A]ANTHRACENE	56-55-3	[6] 6.1	G	130	G	190,000	C
BENZO[A]PYRENE	50-32-8	[0.58] 4.2	G	[12] 91	G	190,000	C
BENZO[B]FLUORANTHENE	205-99-2	3.5	G	76	G	190,000	C
BENZO[GHI]PERYLENE	191-24-2	13,000	G	190,000	C	190,000	C
BENZO[K]FLUORANTHENE	207-08-9	[4] 3.5	G	76	G	190,000	C
BENZOIC ACID	65-85-0	190,000	C	190,000	C	190,000	C
BENZOTRICHLORIDE	98-07-7	1.4	G	7	G	10,000	C
BENZYL ALCOHOL	100-51-6	10,000	C	10,000	C	10,000	C
BENZYL CHLORIDE	100-44-7	9	N	45	N	52	N
BETA PROPIOLACTONE	57-57-8	0.11	N	[0.56] 0.55	N	[0.64] 0.63	N
BHC, ALPHA	319-84-6	3	G	14	G	190,000	C
BHC, BETA-	319-85-7	10	G	51	G	190,000	C
BHC, GAMMA (LINDANE)	58-89-9	17	G	83	G	190,000	C

All concentrations in mg/kg
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Appendix A
Table 3 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Soil
A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential 0-15 feet		Nonresidential			
				Surface Soil 0-2 feet		Subsurface Soil 2-15 feet	
BIPHENYL, 1,1-	92-52-4	[2,300] **8.2**	[G] **N**	[11,000] **34**	[G] **N**	[190,000] **40**	[C] **N**
BIS(2-CHLOROETHOXY)METHANE	111-91-1	660	G	9,600	G	10,000	C
BIS(2-CHLOROETHYL)ETHER	111-44-4	1.3	N	6.7	N	[7.7] **7.6**	N
BIS(2-CHLORO-ISOPROPYL)ETHER	108-60-1	44	N	220	N	250	N
BIS(CHLOROMETHYL)ETHER	542-88-1	[0.0072] **0.0071**	N	0.036	N	0.041	N
BIS[2-ETHYLHEXYL] PHTHALATE	117-81-7	1,300	G	6,500	G	10,000	C
BISPHENOL A	80-05-7	11,000	G	160,000	G	190,000	C
BROMACIL	314-40-9	22,000	G	190,000	C	190,000	C
BROMOBENZENE	**108-86-1**	**1,100**	**N**	**4,700**	**N**	**5,400**	**N**
BROMOCHLOROMETHANE	74-97-5	[770] **760**	N	3,200	N	3,600	N
BROMODICHLOROMETHANE	75-27-4	12	N	60	N	69	N
BROMOMETHANE	74-83-9	[96] **95**	N	400	N	460	N
BROMOXYNIL	1689-84-5	[4,400] **180**	G	[64,000] **880**	G	190,000	C
BROMOXYNIL OCTANOATE	1689-99-2	[4,400] **180**	G	[64,000] **880**	G	190,000	C
BUTADIENE, 1,3-	106-99-0	[5.5] **15**	[G] **N**	[27] **74**	[G] **N**	85	N
BUTYL ALCOHOL, N-	71-36-3	10,000	C	10,000	C	10,000	C
BUTYLATE	2008-41-5	10,000	C	10,000	C	10,000	C
BUTYLBENZENE, N-	104-51-8	10,000	C	10,000	C	10,000	C
BUTYLBENZENE, SEC-	135-98-8	10,000	C	10,000	C	10,000	C
BUTYLBENZENE, TERT-	98-06-6	10,000	C	10,000	C	10,000	C
BUTYLBENZYL PHTHALATE	85-68-7	9,800	G	10,000	C	10,000	C
CAPTAN	133-06-2	8,100	G	40,000	G	190,000	C
CARBARYL	63-25-2	22,000	G	190,000	C	190,000	C
CARBAZOLE	86-74-8	930	G	4,600	G	190,000	C
CARBOFURAN	1563-66-2	1,100	G	16,000	G	190,000	C
CARBON DISULFIDE	75-15-0	10,000	C	10,000	C	10,000	C
CARBON TETRACHLORIDE	56-23-5	[74] **75**	N	370	N	430	N
CARBOXIN	5234-68-4	22,000	G	190,000	C	190,000	C
CHLORAMBEN	133-90-4	3,300	G	48,000	G	190,000	C
CHLORDANE	57-74-9	53	G	260	G	190,000	C
CHLORO-1,1-DIFLUOROETHANE, 1-	75-68-3	10,000	C	10,000	C	10,000	C
CHLORO-1-PROPENE, 3- (ALLYL CHLORIDE)	107-05-1	19	N	80	N	[91] **92**	N
CHLOROACETALDEHYDE	107-20-0	[62] **69**	G	[300] **340**	G	10,000	C
CHLOROACETOPHENONE, 2-	532-27-4	190,000	C	190,000	C	190,000	C
CHLOROANILINE, P-	106-47-8	93	G	460	G	190,000	C
CHLOROBENZENE	108-90-7	[960] **950**	N	[4,000] **3,900**	N	[4,600] **4,500**	N
CHLOROBENZILATE	510-15-6	170	G	830	G	190,000	C
CHLOROBUTANE, 1-	109-69-3	8,800	G	10,000	C	10,000	C
CHLORODIBROMOMETHANE	124-48-1	[17] **220**	[N] **G**	[82] **1,100**	[N] **G**	[95] **10,000**	[N] **C**
CHLORODIFLUOROMETHANE	75-45-6	10,000	C	10,000	C	10,000	C
CHLOROETHANE	75-00-3	[6,400] **10,000**	[G] **C**	10,000	C	10,000	C
CHLOROFORM	67-66-3	19	N	[97] **96**	N	110	N
CHLORONAPHTHALENE, 2-	91-58-7	18,000	G	190,000	C	190,000	C

All concentrations in mg/kg
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Appendix A
Table 3 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Soil
A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential 0-15 feet		Nonresidential			
				Surface Soil 0-2 feet		Subsurface Soil 2-15 feet	
CHLORONITROBENZENE, P-	100-00-5	[220] 39	[G] N	[3,200] 160	[G] N	[190,000] 180	[C] N
CHLOROPHENOL, 2-	95-57-8	1,100	G	10,000	C	10,000	C
CHLOROPRENE	126-99-8	1.5	N	7.4	N	8.5	N
CHLOROPROPANE, 2-	75-29-6	1,900	N	[8,000] 7,900	N	9,100	N
CHLOROTHALONIL	1897-45-6	[3,300] 1,100	G	[29,000] 5,400	G	190,000	C
CHLOROTOLUENE, O-	95-49-8	4,400	G	10,000	C	10,000	C
CHLOROTOLUENE, P-	106-43-4	4,400	C	10,000	C	10,000	C
CHLORPYRIFOS	2921-88-2	220	G	3,200	G	190,000	C
CHLORSULFURON	64902-72-3	[11,000] 4,400	G	[160,000] 64,000	G	190,000	C
CHLORTHAL-DIMETHYL (DACTHAL) (DCPA)	1861-32-1	2,200	G	32,000	G	190,000	C
CHRYSENE	218-01-9	35	G	760	G	190,000	C
CRESOL(S)	1319-77-3	10,000	C	10,000	C	10,000	C
CRESOL, 4,6-DINITRO-O-	534-52-1	18	G	260	G	190,000	C
CRESOL, O- (2-METHYLPHENOL)	95-48-7	11,000	G	160,000	G	190,000	C
CRESOL, M- (3-METHYLPHENOL)	108-39-4	10,000	C	10,000	C	10,000	C
CRESOL, P- (4-METHYLPHENOL)	106-44-5	1,100	G	16,000	G	190,000	C
CRESOL, P-CHLORO-M-	59-50-7	22,000	G	190,000	G	190,000	C
CROTONALDEHYDE	4170-30-3	9.8	G	48	G	10,000	C
CROTONALDEHYDE, TRANS-	123-73-9	9.8	G	48	G	10,000	C
CUMENE (ISOPROPYL BENZENE)	98-82-8	[7,700] 7,600	N	10,000	C	10,000	C
CYANAZINE	21725-46-2	22	G	110	G	190,000	C
CYCLOHEXANE	110-82-7	10,000	C	10,000	C	10,000	C
CYCLOHEXANONE	108-94-1	10,000	C	10,000	C	10,000	C
CYFLUTHRIN	68359-37-5	5,500	G	80,000	G	190,000	C
CYROMAZINE	66215-27-8	[1,700] 110,000	G	[24,000] 190,000	[G] C	190,000	C
DDD, 4,4'-	72-54-8	78	G	380	G	190,000	C
DDE, 4,4'-	72-55-9	55	G	270	G	190,000	C
DDT, 4,4'-	50-29-3	55	G	270	G	190,000	C
DI(2-ETHYLHEXYL)ADIPATE	103-23-1	10,000	C	10,000	C	10,000	C
DIALLATE	2303-16-4	300	G	1,500	G	10,000	C
DIAMINOTOLUENE, 2,4-	95-80-7	4.7	G	23	G	190,000	C
DIAZINON	333-41-5	150	G	2,200	G	10,000	C
DIBENZO[A,H]ANTHRACENE	53-70-3	1	G	22	G	190,000	C
DIBENZOFURAN	132-64-9	220	G	3,200	G	190,000	C
DIBROMO-3-CHLOROPROPANE, 1,2-	96-12-8	0.029	N	0.37	N	[0.43] 0.42	N
DIBROMOBENZENE, 1,4-	106-37-6	2,200	G	32,000	G	190,000	C
DIBROMOETHANE, 1,2- (ETHYLENE DIBROMIDE)	106-93-4	0.74	N	3.7	N	[4.3] 4.2	N
DIBROMOMETHANE	74-95-3	[77] 76	N	[320] 310	N	[370] 360	N
DIBUTYL PHTHALATE, N-	84-74-2	10,000	C	10,000	C	10,000	C
DICAMBA	1918-00-9	6,600	G	96,000	G	190,000	C
DICHLOROACETIC ACID	76-43-6	370	G	1,800	G	10,000	C
DICHLORO-2-BUTENE, 1,4-	764-41-0	0.11	N	[0.53] 0.52	N	[0.61] 0.6	N
DICHLORO-2-BUTENE, TRANS-1,4-	110-57-6	[0.1] 0.11	N	0.52	N	0.6	N
DICHLOROBENZENE, 1,2-	95-50-1	3,800	N	10,000	C	10,000	C

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A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential 0-15 feet		Nonresidential			
				Surface Soil 0-2 feet		Subsurface Soil 2-15 feet	
DICHLOROBENZENE, 1,3-	541-73-1	10,000	C	10,000	C	10,000	C
DICHLOROBENZENE, P-	106-46-7	40	N	200	N	230	N
DICHLOROBENZIDINE, 3,3'-	91-94-1	41	G	200	G	190,000	C
DICHLORODIFLUOROMETHANE (FREON 12)	75-71-8	1,900	N	8,000	N	9,100	N
DICHLOROETHANE, 1,1-	75-34-3	280	N	1,400	N	1,600	N
DICHLOROETHANE, 1,2-	107-06-2	17	N	[86] 85	N	98	N
DICHLOROETHYLENE, 1,1-	75-35-4	3,800	N	10,000	C	10,000	C
DICHLOROETHYLENE, CIS-1,2-	156-59-2	440	G	6,400	G	10,000	C
DICHLOROETHYLENE, TRANS-1,2-	156-60-5	[1,100] 4,400	[N] G	[4,800] 10,000	[N] C	[5,500] 10,000	[N] C
DICHLOROMETHANE (METHYLENE CHLORIDE)	75-09-2	1,300	G	10,000	C	10,000	C
DICHLOROPHENOL, 2,4-	120-83-2	660	G	9,600	G	190,000	C
DICHLOROPHENOXYACETIC ACID, 2,4- (2,4-D)	94-75-7	2,200	G	32,000	G	190,000	C
DICHLOROPROPANE, 1,2-	78-87-5	[45] 0.12	N	[220] 0.6	N	[260] 0.69	N
DICHLOROPROPENE, 1,3-	542-75-6	110	N	[560] 550	N	640	N
DICHLOROPROPIONIC ACID, 2,2- (DALAPON)	75-99-0	6,600	G	10,000	C	10,000	C
DICHLORVOS	62-73-7	64	G	310	G	10,000	C
DICYCLOPENTADIENE	77-73-6	[6] 5.7	N	24	N	27	N
DIELDRIN	60-57-1	1.2	G	[6] 5.7	G	190,000	C
DIETHANOLAMINE	111-42-2	440	G	6,400	G	10,000	C
DIETHYL PHTHALATE	84-66-2	10,000	C	10,000	C	10,000	C
DIFLUBENZURON	35367-38-5	4,400	G	64,000	G	190,000	C
DIISOPROPYL METHYLPHOSPHONATE	1445-75-6	10,000	C	10,000	C	10,000	C
DIMETHOATE	60-51-5	[44] 480	G	[40] 7,000	G	190,000	C
DIMETHOXYBENZIDINE, 3,3-	119-90-4	[1,300] 12	G	[6,500] 57	G	190,000	C
DIMETHRIN	70-38-2	66,000	G	190,000	C	190,000	C
DIMETHYLAMINOAZOBENZENE, P-	60-11-7	4	G	20	G	190,000	C
DIMETHYLANILINE, N,N-	121-69-7	440	G	[6,400] 3,400	G	10,000	C
DIMETHYLBENZIDINE, 3,3-	119-93-7	1.7	G	8.3	G	190,000	C
DIMETHYL METHYLPHOSPHONATE	756-79-6	10,000	C	10,000	C	10,000	C
DIMETHYLPHENOL, 2,4-	105-67-9	4,400	G	10,000	C	10,000	C
DINITROBENZENE, 1,3-	99-65-0	22	G	320	G	190,000	C
DINITROPHENOL, 2,4-	51-28-5	440	G	6,400	G	190,000	C
DINITROTOLUENE, 2,4-	121-14-2	60	G	290	G	190,000	C
DINITROTOLUENE, 2,6- (2,6-DNT)	606-20-2	12	G	61	G	190,000	C
DINOSEB	88-85-7	220	G	3,200	G	190,000	C
DIOXANE, 1,4-	123-91-1	[58] 89	N	[290] 440	N	[330] 510	N
DIPHENAMID	957-51-7	6,600	G	96,000	G	190,000	C
DIPHENYLAMINE	122-39-4	[5,500] 22,000	G	[80,000] 190,000	[G] C	190,000	C
DIPHENYLHYDRAZINE, 1,2-	122-66-7	[23] 2.1	[G] N	[110] 10	[G] N	[190,000] 12	[C] N
DIQUAT	85-00-7	480	G	7,000	G	190,000	C
DISULFOTON	298-04-4	8.8	G	130	G	10,000	C
DITHIANE, 1,4-	505-29-3	2,200	G	32,000	G	190,000	C
DIURON	330-54-1	440	G	6,400	G	190,000	C
ENDOSULFAN	115-29-7	1,300	G	19,000	G	190,000	C
ENDOSULFAN I (ALPHA)	959-98-8	1,300	G	19,000	G	190,000	C
ENDOSULFAN II (BETA)	33213-65-9	1,300	G	19,000	G	190,000	C
ENDOSULFAN SULFATE	1031-07-8	1,300	G	19,000	G	190,000	C

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				Surface Soil 0-2 feet		Subsurface Soil 2-15 feet	
ENDOTHALL	145-73-3	4,400	G	64,000	G	190,000	C
ENDRIN	72-20-8	66	G	960	G	190,000	C
EPICHLOROHYDRIN	106-89-8	19	N	79	N	91	N
ETHEPHON	16672-87-0	1,100	G	16,000	G	190,000	C
ETHION	563-12-2	110	G	1,600	G	10,000	C
ETHOXYETHANOL, 2- (EGEE)	110-80-5	[3,900] 3,800	N	10,000	C	10,000	C
ETHYL ACETATE	141-78-6	1,300	N	[5,600] 5,500	N	[6,400] 6,300	N
ETHYL ACRYLATE	140-88-5	150	N	[640] 630	N	[730] 720	N
ETHYL BENZENE	100-41-4	180	N	[890] 880	N	1,000	N
ETHYL DIPROPYLTHIOCARBAMATE, S- (EPTC)	759-94-4	[5,500] 10,000	[G] C	10,000	C	10,000	C
ETHYL ETHER	60-29-7	10,000	C	10,000	C	10,000	C
ETHYL METHACRYLATE	97-63-2	5,700	N	10,000	C	10,000	C
ETHYLENE CHLORHYDRIN	107-07-3	4,400	G	10,000	C	10,000	C
ETHYLENE GLYCOL	107-21-1	[7,700] 7,600	N	10,000	C	10,000	C
ETHYLENE THIOUREA (ETU)	96-45-7	18	G	260	G	190,000	C
ETHYLP-NITROPHENYL PHENYLPHOSPHOROTHIOATE	2104-64-5	2.2	G	32	G	190,000	C
FENAMIPHOS	22224-92-6	55	G	800	G	190,000	C
FENVALERATE (PYDRIN)	51630-58-1	5,500	G	10,000	C	10,000	C
FLUOMETURON	2164-17-2	2,900	G	42,000	G	190,000	C
FLUORANTHENE	206-44-0	8,800	G	130,000	G	190,000	C
FLUORENE	86-73-7	8,800	G	130,000	G	190,000	C
FLUOROTRICHLOROMETHANE (FREON 11)	75-69-4	10,000	C	10,000	C	10,000	C
FONOFOS	944-22-9	440	G	6,400	G	10,000	C
FORMALDEHYDE	50-00-0	34	N	170	N	200	N
FORMIC ACID	64-18-6	[6] 5.7	N	24	N	27	N
FOSETYL-AL	39148-24-8	190,000	C	190,000	C	190,000	C
FURAN	110-00-9	220	G	3,200	G	10,000	C
FURFURAL	98-01-1	[660] 530	G	[4,000] 2,600	[N] G	4,500	N
GLYPHOSATE	1071-83-6	22,000	G	190,000	C	190,000	C
HEPTACHLOR	76-44-8	[4] 4.1	G	20	G	190,000	C
HEPTACHLOR EPOXIDE	1024-57-3	2	G	10	G	190,000	C
HEXACHLOROBENZENE	118-74-1	12	G	57	G	190,000	C
HEXACHLOROBUTADIENE	87-68-3	220	G	1,200	G	10,000	C
HEXACHLOROCYCLOPENTADIENE	77-47-4	1,300	G	10,000	C	10,000	C
HEXACHLOROETHANE	67-72-1	[44] 46	N	[220] 230	N	[260] 270	N
HEXANE	110-54-3	10,000	C	10,000	C	10,000	C
HEXAZINONE	51235-04-2	7,300	G	110,000	G	190,000	C
HEXYTHIAZOX (SAVEY)	78587-05-0	5,500	G	80,000	G	190,000	C
HMX	2691-41-0	11,000	G	160,000	G	190,000	C
HYDRAZINE/HYDRAZINE SULFATE	302-01-2	[0.09] 0.091	N	0.45	N	0.52	N
HYDROQUINONE	123-31-9	310	G	1,500	G	190,000	C
INDENO[1,2,3-CD]PYRENE	193-39-5	3.5	G	76	G	190,000	C
IPRODIONE	36734-19-7	[8,800] 420	G	[130,000] 2,100	G	190,000	C
ISOBUTYL ALCOHOL	78-83-1	10,000	C	10,000	C	10,000	C

All concentrations in mg/kg
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Appendix A
Table 3 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Soil
A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential 0-15 feet		Nonresidential			
				Surface Soil 0-2 feet		Subsurface Soil 2-15 feet	
ISOPHORONE	78-59-1	10,000	C	10,000	C	10,000	C
ISOPROPYL METHYLPHOSPHONATE	1832-54-8	10,000	C	10,000	C	10,000	C
KEPONE	143-50-0	1.9	G	9.1	G	190,000	C
MALATHION	121-75-5	4,400	G	10,000	C	10,000	C
MALEIC HYDRAZIDE	123-33-1	110,000	G	190,000	C	190,000	C
MANEB	12427-38-2	[1,100] 310	G	[16,000] 1,500	G	190,000	C
MERPHOS OXIDE	78-48-8	[6.6] ~~220~~ 110	G	[96] ~~3,200~~ 1,600	G	10,000	C
METHACRYLONITRILE	126-98-7	22	G	320	G	[2,800] 2,700	N
METHAMIDOPHOS	10265-92-6	11	G	160	G	190,000	C
METHANOL	67-56-1	10,000	C	10,000	C	10,000	C
METHOMYL	16752-77-5	5,500	G	80,000	G	190,000	C
METHOXYCHLOR	72-43-5	1,100	G	16,000	G	190,000	C
METHOXYETHANOL, 2-	109-86-4	380	N	1,600	N	1,800	N
METHYL ACETATE	79-20-9	10,000	C	10,000	C	10,000	C
METHYL ACRYLATE	96-33-3	380	N	1,600	N	1,800	N
METHYL CHLORIDE	74-87-3	250	N	1,200	N	1,400	N
METHYL ETHYL KETONE	78-93-3	10,000	C	10,000	C	10,000	C
METHYL HYDRAZINE	60-34-4	0.38	N	1.6	N	1.8	N
METHYL ISOBUTYL KETONE	108-10-1	10,000	C	10,000	C	10,000	C
METHYL ISOCYANATE	624-83-9	19	N	79	N	91	N
METHYL N-BUTYL KETONE (2-HEXANONE)	591-78-6	570	N	2,400	N	[2,800] 2,700	N
METHYL METHACRYLATE	80-62-6	10,000	C	10,000	C	10,000	C
METHYL METHANESULFONATE	66-27-3	190	G	920	G	10,000	C
METHYL PARATHION	298-00-0	55	G	800	G	190,000	C
METHYL STYRENE (MIXED ISOMERS)	25013-15-4	[770] 760	N	[3,200] 3,100	N	3,600	N
METHYL TERT-BUTYL ETHER (MTBE)	1634-04-4	1,700	N	[8,600] 8,500	N	[9,900] 9,800	N
METHYLCHLOROPHENOXYACETIC ACD (MCPA)	94-74-6	110	G	1,600	C	190,000	C
METHYLENE BIS(2-CHLOROANILINE), 4,4'-	101-14-4	42	G	910	G	190,000	C
METHYLNAPHTHALENE, 2-	91-57-6	[880] 57	[G] N	[13,000] 240	[G] N	[190,000] 270	[C] N
METHYLSTYRENE, ALPHA	98-83-9	10,000	C	10,000	C	10,000	C
METOLACHLOR	51218-45-2	10,000	C	10,000	C	10,000	C
METRIBUZIN	21087-64-9	5,500	G	80,000	G	190,000	C
MEVINPHOS	7786-34-7	5.5	G	80	G	190,000	C
MONOCHLOROACETIC ACID	79-11-8	440	G	6,400	G	190,000	C
NAPHTHALENE	91-20-3	[160] 13	[G] N	[760] 66	[G] N	[190,000] 77	[C] N
NAPHTHYLAMINE, 1-	134-32-7	10	G	51	G	190,000	C
NAPHTHYLAMINE, 2-	91-59-8	10	G	51	G	190,000	C
NAPROPAMIDE	15299-99-7	[22,000] 26,000	G	190,000	C	190,000	C
NITROANILINE, O-	88-74-4	[2,200] 0.95	[G] N	[32,000] 3.9	[G] N	[190,000] 4.5	[C] N
NITROANILINE, P-	100-01-6	880	G	4,600	G	190,000	C
NITROBENZENE	98-95-3	[440] 11	[G] N	[6,400] 55	[G] N	[10,000] 63	[C] N
NITROGUANIDINE	556-88-7	22,000	G	190,000	C	190,000	C

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A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential 0-15 feet		Nonresidential			
				Surface Soil 0-2 feet		Subsurface Soil 2-15 feet	
NITROPHENOL, 2-	88-75-5	1,800	G	26,000	G	190,000	C
NITROPHENOL, 4-	100-02-7	1,800	G	26,000	G	190,000	C
NITROPROPANE, 2-	79-46-9	0.16	N	0.82	N	0.94	N
NITROSODIETHYLAMINE, N-	55-18-5	0.0041	N	0.051	N	0.059	N
NITROSODIMETHYLAMINE, N-	62-75-9	0.012	N	0.16	N	0.18	N
NITROSO-DI-N-BUTYLAMINE, N-	924-16-3	[3.4] 0.28	[G] N	[17] 1.4	[G] N	[10,000] 1.6	[C] N
NITROSODI-N-PROPYLAMINE, N-	621-64-7	[2.7] 0.22	[G] N	[13] 1.1	[G] N	[10,000] 1.3	[C] N
NITROSODIPHENYLAMINE, N-	86-30-6	[3,800] 170	[G] N	[19,000] 860	[G] N	[190,000] 990	[C] N
NITROSO-N-ETHYLUREA, N-	759-73-9	0.16	G	3.4	G	190,000	C
OCTYL PHTHALATE, DI-N-	117-84-0	2,200	G	10,000	C	10,000	C
OXAMYL (VYDATE)	23135-22-0	5,500	G	80,000	G	190,000	C
PARAQUAT	1910-42-5	990	G	14,000	G	190,000	C
PARATHION	56-38-2	[1,300] 6.6	G	[10,000] 96	[C] G	10,000	C
PCBS, TOTAL (POLYCHLORINATED BIPHENYLS) (AROCLORS)	**1336-36-3**	**9.3**	**G**	**46**	**G**	**190,000**	**C**
PCB-1016 (AROCLOR)	12674-11-2	[9] 15	G	[46] 220	G	10,000	C
PCB-1221 (AROCLOR)	11104-28-2	[9] 4.7	[G] N	[46] 23	[G] N	[10,000] 27	[C] N
PCB-1232 (AROCLOR)	11141-16-5	[9] 9.3	G	46	G	10,000	C
PCB-1242 (AROCLOR)	53469-21-9	[9] 9.3	G	46	G	10,000	C
PCB-1248 (AROCLOR)	12672-29-6	9.3	G	46	G	10,000	C
PCB-1254 (AROCLOR)	11097-69-1	4.4	G	[46] 64	G	10,000	C
PCB-1260 (AROCLOR)	11096-82-5	[9] 9.3	G	46	G	190,000	C
PEBULATE	1114-71-2	10,000	C	10,000	C	10,000	C
PENTACHLOROBENZENE	608-93-5	180	G	2,600	G	190,000	C
PENTACHLOROETHANE	76-01-7	210	G	1,000	G	10,000	C
PENTACHLORONITROBENZENE	82-68-8	72	G	350	G	190,000	C
PENTACHLOROPHENOL	87-86-5	47	G	230	G	190,000	C
PERFLUOROBUTANE SULFONATE (PFBS)	**375-73-5**	**~~4,400~~ 66**	**G**	**~~10,000~~ 960**	**~~C~~ G**	**10,000**	**C**
PERFLUOROOCTANE SULFONATE (PFOS)	**1763-23-1**	**4.4**	**G**	**64**	**G**	**190,000**	**C**
PERFLUOROOCTANOIC ACID (PFOA)	**335-67-1**	**4.4**	**G**	**64**	**G**	**190,000**	**C**
PHENACETIN	62-44-2	8,500	G	41,000	G	190,000	C
PHENANTHRENE	85-01-8	66,000	G	190,000	C	190,000	C
PHENOL	108-95-2	3,800	N	16,000	N	18,000	N
PHENYL MERCAPTAN	108-98-5	220	G	3,200	G	10,000	C
PHENYLENEDIAMINE, M-	108-45-2	1,300	G	19,000	G	190,000	C
PHENYLPHENOL, 2-	90-43-7	[9,800] 9,600	G	[48,000] 47,000	G	190,000	C
PHORATE	298-02-2	44	G	640	G	10,000	C
PHTHALIC ANHYDRIDE	85-44-9	[190,000] 380	[C] N	[190,000] 1,600	[C] N	[190,000] 1,800	[C] N
PICLORAM	1918-02-1	15,000	G	190,000	C	190,000	C
PROMETON	1610-18-0	3,300	G	48,000	G	190,000	C
PRONAMIDE	23950-58-5	17,000	G	190,000	C	190,000	C
PROPACHLOR	**1918-16-7**	**2,900**	**G**	**42,000**	**G**	**190,000**	**C**
PROPANIL	709-98-8	1,100	G	16,000	G	190,000	C
PROPANOL, 2- (ISOPROPYL ALCOHOL)	67-63-0	3,800	N	10,000	C	10,000	C

All concentrations in mg/kg
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Appendix A
Table 3 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Soil
A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential 0-15 feet		Nonresidential			
				Surface Soil 0-2 feet		Subsurface Soil 2-15 feet	
PROPAZINE	139-40-2	4,400	G	10,000	C	10,000	C
PROPHAM	122-42-9	4,400	G	64,000	G	190,000	C
PROPYLBENZENE, N-	103-65-1	10,000	C	10,000	C	10,000	C
PROPYLENE OXIDE	75-56-9	78	G	380	G	690	N
PYRENE	129-00-0	6,600	G	96,000	G	190,000	C
PYRETHRUM	**8003-34-7**	**220**	**G**	**3,200**	**G**	**10,000**	**C**
PYRIDINE	110-86-1	220	G	3,200	G	10,000	C
QUINOLINE	91-22-5	[6] 6.2	G	30	G	10,000	C
QUIZALOFOP (ASSURE)	76578-14-8	2,000	G	29,000	G	190,000	C
RDX	121-82-4	[170] 230	G	[830] 1,100	G	190,000	C
RESORCINOL	108-46-3	190,000	C	190,000	C	190,000	C
RONNEL	299-84-3	11,000	G	160,000	G	190,000	C
SIMAZINE	122-34-9	160	G	760	G	190,000	C
STRYCHNINE	57-24-9	66	G	960	G	190,000	C
STYRENE	100-42-5	10,000	C	10,000	C	10,000	C
TEBUTHIURON	34014-18-1	15,000	G	190,000	C	190,000	C
TERBACIL	5902-51-2	2,900	G	42,000	G	190,000	C
TERBUFOS	13071-79-9	5.5	G	80	G	10,000	C
TETRACHLOROBENZENE, 1,2,4,5-	95-94-3	66	G	960	G	190,000	C
TETRACHLORODIBENZO-P-DIOXIN, 2,3,7,8- (TCDD)	1746-01-6	0.00014	G	0.0007	G	190,000	C
TETRACHLOROETHANE, 1,1,1,2-	630-20-6	60	N	300	N	340	N
TETRACHLOROETHANE, 1,1,2,2-	79-34-5	[7.7] 7.6	N	38	N	44	N
TETRACHLOROETHYLENE (PCE)	127-18-4	[770] 760	N	3,200	N	3,600	N
TETRACHLOROPHENOL, 2,3,4,6-	58-90-2	6,600	G	96,000	G	190,000	C
TETRAETHYL LEAD	78-00-2	0.022	G	0.32	G	10,000	C
TETRAETHYLDITHIOPYROPHOSPHATE	3689-24-5	110	G	1,600	G	10,000	C
TETRAHYDROFURAN	109-99-9	[240] 230	N	[1,200] 1,100	N	[1,400] 1,300	N
THIOFANOX	39196-18-4	66	G	960	G	190,000	C
THIRAM	137-26-8	[1,100] 3,300	G	[16,000] 48,000	G	190,000	C
TOLUENE	108-88-3	10,000	C	10,000	C	10,000	C
TOLUIDINE, M-	108-44-1	1,200	G	5,700	G	10,000	C
TOLUIDINE, O-	95-53-4	1,200	G	5,700	G	10,000	C
TOLUIDINE, P-	106-49-0	620	G	3,000	G	190,000	C
TOXAPHENE	8001-35-2	17	G	83	G	190,000	C
TRIALLATE	2303-17-5	[2,900] 26	G	[10,000] 130	[C] G	10,000	C
TRIBROMOMETHANE (BROMOFORM)	75-25-2	[410] 400	N	2,000	N	2,300	N
TRICHLORO-1,2,2-TRIFLUOROETHANE, 1,1,2-	76-13-1	10,000	C	10,000	C	10,000	C
TRICHLOROACETIC ACID	76-03-9	270	G	1,300	G	190,000	C
TRICHLOROBENZENE, 1,2,4-	120-82-1	[640] 39	[G] N	[3,100] 160	[G] N	[10,000] 190	[C] N
TRICHLOROBENZENE, 1,3,5-	108-70-3	[1,300] 46	[G] N	[19,000] 190	[G] N	[190,000] 230	[C] N
TRICHLOROETHANE, 1,1,1-	71-55-6	10,000	C	10,000	C	10,000	C
TRICHLOROETHANE, 1,1,2-	79-00-5	[4] 3.8	N	16	N	18	N
TRICHLOROETHYLENE (TCE)	79-01-6	38	N	160	N	180	N
TRICHLOROPHENOL, 2,4,5-	95-95-4	22,000	G	190,000	C	190,000	C
TRICHLOROPHENOL, 2,4,6-	88-06-2	220	G	3,200	G	190,000	C
TRICHLOROPHENOXYACETIC ACID, 2,4,5- (2,4,5-T)	93-76-5	2,200	G	32,000	G	190,000	C

All concentrations in mg/kg
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Appendix A
Table 3 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Soil
A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential 0-15 feet	Nonresidential	
			Surface Soil 0-2 feet	Subsurface Soil 2-15 feet
TRICHLOROPHENOXYPROPIONIC ACID, 2,4,5-(2,4,5-TP)(SILVEX)	93-72-1	1,800 G	26,000 G	190,000 C
TRICHLOROPROPANE, 1,1,2-	598-77-6	1,100 G	10,000 C	10,000 C
TRICHLOROPROPANE, 1,2,3-	96-18-4	0.14 G	3.0 G	**[28] 27** N
TRICHLOROPROPENE, 1,2,3-	96-19-5	5.7 N	24 N	27 N
TRIETHYLAMINE	121-44-8	130 N	**[560] 550** N	**[640] 630** N
TRIETHYLENE GLYCOL	112-27-6	10,000 C	10,000 C	10,000 C
TRIFLURALIN	1582-09-8	1,700 G	12,000 G	190,000 C
TRIMETHYLBENZENE, 1,3,4- (TRIMETHYLBENZENE, 1,2,4-)	95-63-6	**[130]** **1,100** N	**[560]** **4,700** N	**[640]** **5,400** N
TRIMETHYLBENZENE, 1,3,5-	108-67-8	**[2,200] [G]** **1,100 N**	**[10,000] [C]** **4,700 N**	**[10,000] [C]** **5,400 N**
TRINITROGLYCEROL (NITROGLYCERIN)	55-63-0	22 G	320 G	10,000 C
TRINITROTOLUENE, 2,4,6-	118-96-7	110 G	1,600 G	190,000 C
VINYL ACETATE	108-05-4	**[3,900]** **3,800** N	10,000 C	10,000 C
VINYL BROMIDE (BROMOETHENE)	593-60-2	14 N	70 N	80 N
VINYL CHLORIDE	75-01-4	**[0.9] 0.93** G	61 G	**[280] 290** N
WARFARIN	81-81-2	66 G	960 G	190,000 C
XYLENES (TOTAL)	1330-20-7	1,900 N	**[8,000]** **7,900** N	9,100 N
ZINEB	12122-67-7	11,000 G	160,000 G	190,000 C

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Appendix A
Table 3 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Soil
B. Soil to Groundwater Numeric Values[1]

REGULATED SUBSTANCE	CASRN	Used Aquifers												Nonuse Aquifers						Soil Buffer Distance (feet)
		TDS ≤ 2500 mg/L						TDS > 2500 mg/L												
		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
ACENAPHTHENE	83-32-9	[250] 210	[3,100] 2,600	E	380	4,700	E	380	4,700	E	380	4,700	E	380	4,700	E	380	4,700	E	15
ACENAPHTHYLENE	208-96-8	[250] 210	[2,800] 2,400	E	[700] 580	[8,000] 6,600	E	1,600	18,000	E	1,600	18,000	E	1,600	18,000	E	1,600	18,000	E	15
ACEPHATE	30560-19-1	[8.4] 4.2	[1.0] 0.5	E	[39] 12	[4.6] 1.4	E	[840] 420	[100] 50	E	[3,900] 1,200	[460] 140	E	[8.4] 4.2	[1.0] 0.5	E	[39] 12	[4.6] 1.4	E	NA
ACETALDEHYDE	75-07-0	1.9	0.23	E	7.9	0.96	E	190	23	E	790	96	E	1.9	0.23	E	7.9	0.96	E	NA
ACETONE	67-64-1	[3,800] 3,100	[430] 350	E	[10,000] 8,800	[1,200] 980	E	10,000	10,000	C	10,000	10,000	C	10,000	[4,300] 3,500	E	10,000	[10,000] 9,800	[C] E	NA
ACETONITRILE	75-05-8	13	1.5	E	53	6	E	1,300	150	E	5,300	600	E	130	15	E	530	60	E	NA
ACETOPHENONE	98-86-2	[420] 350	[230] 190	E	[1,200] 970	[640] 520	E	10,000	10,000	C	10,000	10,000	C	[420] 350	[230] 190	E	[1,200] 970	[640] 520	E	NA
ACETYLAMINOFLUORENE, 2- (2AAF)	53-96-3	[0.019] 0.017	[0.08] 0.07	E	[0.089] 0.072	[0.37] 0.3	E	[1.9] 1.7	[8] 7	E	[8.9] 7.2	[37] 30	E	[19] 17	[78] 70	E	[89] 72	[370] 300	E	20
ACROLEIN	107-02-8	0.0042	0.00047	E	0.018	0.002	E	0.42	0.047	E	1.8	0.2	E	0.042	0.0047	E	0.18	0.02	E	NA
ACRYLAMIDE	79-06-1	0.019	0.0033	E	0.25	0.043	E	1.9	0.33	E	25	4.3	E	0.019	0.0033	E	0.25	0.043	E	NA
ACRYLIC ACID	79-10-7	0.21	0.039	E	0.88	0.16	E	21	3.9	E	88	16	E	21	3.9	E	88	16	E	NA
ACRYLONITRILE	107-13-1	0.072	0.01	E	0.37	0.051	E	7.2	1	E	37	5.1	E	7.2	1	E	37	5.1	E	NA
ALACHLOR	15972-60-8	0.2	0.077	E	0.2	0.077	E	20	7.7	E	20	7.7	E	0.2	0.077	E	0.2	0.077	E	NA
ALDICARB	116-06-3	0.3	0.05	E	0.3	0.05	E	30	5	E	30	5	E	300	50	E	300	50	E	NA
ALDICARB SULFONE	1646-88-4	0.2	0.027	E	0.2	0.027	E	20	2.7	E	20	2.7	E	0.2	0.027	E	0.2	0.027	E	NA
ALDICARB SULFOXIDE	1646-87-3	0.4	0.045	E	0.4	0.045	E	40	4.5	E	40	4.5	E	0.4	0.045	E	0.4	0.045	E	NA
ALDRIN	309-00-2	[0.0043] 0.0038	[0.52] 0.46	E	[0.02] 0.016	[2.4] 1.9	E	[0.43] 0.38	[52] 46	E	[2.0] 1.6	[240] 190	E	2	240	E	2	240	E	10
ALLYL ALCOHOL	107-18-6	0.021	0.0025	E	0.088	0.01	E	2.1	0.25	E	[9] 8.8	1	E	2.1	0.25	E	[9] 8.8	1	E	NA
AMETRYN	834-12-8	6	6.5	E	6	6.5	E	600	650	E	600	650	E	6	6.5	E	6	6.5	E	NA
AMINOBIPHENYL, 4-	92-67-1	[0.0035] 0.0031	[0.0014] 0.0012	E	[0.016] 0.013	[0.0062] 0.005	E	[0.35] 0.31	[0.14] 0.12	E	[1.6] 1.3	[0.62] 0.5	E	[3.5] 3.1	[1.4] 1.2	E	[16] 13	[6.2] 5	E	NA

[1] For other options see Section 250.308

All concentrations in mg/kg

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Appendix A
Table 3 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Soil
B. Soil to Groundwater Numeric Values[1]

REGULATED SUBSTANCE	CASRN	Used Aquifers												Nonuse Aquifers						Soil Buffer Distance (feet)
		TDS ≤ 2500 mg/L						TDS > 2500 mg/L												
		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
AMITROLE	61-82-5	[0.078] 0.069	[0.032] 0.028	E	[0.36] 0.29	[0.15] 0.12	E	[8] 6.9	[3.2] 2.8	E	[36] 29	[15] 12	E	[78] 69	[32] 28	E	[360] 290	[150] 120	E	NA
AMMONIA	7664-41-7	3,000	360	E	3,000	360	E	10,000	10,000	C	10,000	10,000	C	3,000	360	E	3,000	360	E	NA
AMMONIUM SULFAMATE	7773-06-0	200	24	E	200	24	E	20,000	2,400	E	20,000	2,400	E	200	24	E	200	24	E	NA
ANILINE	62-53-3	0.21	0.12	E	0.88	0.52	E	21	12	E	88	52	E	0.21	0.12	E	0.88	0.52	E	NA
ANTHRACENE	120-12-7	6.6	350	E	6.6	350	E	6.6	350	E	6.6	350	E	6.6	350	E	6.6	350	E	10
ATRAZINE	1912-24-9	0.3	0.13	E	0.3	0.13	E	30	13	E	30	13	E	0.3	0.13	E	0.3	0.13	E	NA
AZINPHOS-METHYL (GUTHION)	86-50-0	[13] 5.2	[15] 5.9	E	[35] 15	[40] 17	E	[1,300] 520	[1,500] 590	E	[3,200] 1,500	[3,600] 1,700	E	[13] 5.2	[15] 5.9	E	[35] 15	[40] 17	E	NA
BAYGON (PROPOXUR)	114-26-1	0.3	0.057	E	0.3	0.057	E	30	5.7	E	30	5.7	E	300	57	E	300	57	E	NA
BENOMYL	17804-35-2	[200] 27	[970] 130	E	[200] 110	[970] 530	E	200	970	E	200	970	E	[200] 27	[970] 130	E	[200] 110	[970] 530	E	20
BENTAZON	25057-89-0	20	2.9	E	20	2.9	E	2,000	290	E	2,000	290	E	20	2.9	E	20	2.9	E	NA
BENZENE	71-43-2	0.5	0.13	E	0.5	0.13	E	50	13	E	50	13	E	50	13	E	50	13	E	NA
BENZIDINE	92-87-5	[0.000098] 0.000092	[0.13] 0.12	E	[0.0015] 0.0012	[2] 1.6	E	[0.0098] 0.0092	[13] 12	E	[0.15] 0.12	[200] 160	E	[0.098] 0.092	[130] 120	E	[1.5] 1.2	[2,000] 1,600	E	5
BENZO[A]ANTHRACENE	56-55-3	[0.032] 0.03	[28] 26	E	[0.49] 0.39	[430] 340	E	1.1	960	E	1.1	960	E	1.1	960	E	1.1	960	E	5
BENZO[A]PYRENE	50-32-8	0.02	46	E	0.02	46	E	0.38	860	E	0.38	860	E	0.38	860	E	0.38	860	E	5
BENZO[B]FLUORANTHENE	205-99-2	[0.019] 0.018	[26] 25	E	0.12	170	E	0.12	170	E	0.12	170	E	0.12	170	E	0.12	170	E	5
BENZO[GHI]PERYLENE	191-24-2	0.026	180	E	0.026	180	E	0.026	180	E	0.026	180	E	0.026	180	E	0.026	180	E	5
BENZO[K]FLUORANTHENE	207-08-9	[0.019] 0.018	[210] 200	E	0.055	610	E	0.055	610	E	0.055	610	E	0.055	610	E	0.055	610	E	5
BENZOIC ACID	65-85-0	[17,000] 14,000	[3,200] 2,700	E	[47,000] 39,000	[9,000] 7,500	E	190,000	52,000	E	190,000	52,000	E	[17,000] 14,000	[3,200] 2,700	E	[47,000] 39,000	[9,000] 7,500	E	NA
BENZOTRICHLORIDE	98-07-7	[0.0056] 0.005	[0.014] 0.012	E	[0.026] 0.021	[0.063] 0.051	E	[0.56] 0.5	[1.4] 1.2	E	[3] 2.1	[6.3] 5.1	E	[5.6] 0.5	[14] 1.2	E	[26] 2.1	[63] 5.1	E	30

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B. Soil to Groundwater Numeric Values[1]

REGULATED SUBSTANCE	CASRN	Used Aquifers												Nonuse Aquifers						Soil Buffer Distance (feet)
		TDS ≤ 2500 mg/L						TDS > 2500 mg/L												
		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
BENZYL ALCOHOL	100-51-6	[420] 350	[150] 130	E	[1,200] 970	[430] 350	E	10,000	10,000	C	10,000	10,000	C	[420] 350	[150] 130	E	[1,200] 970	[430] 350	E	NA
BENZYL CHLORIDE	100-44-7	0.1	0.059	E	0.51	0.3	E	10	5.9	E	51	30	E	10	5.9	E	51	30	E	NA
BETA PROPIOLACTONE	57-57-8	0.0012	0.00015	E	0.0063	0.00076	E	[0.1] 0.12	0.015	E	0.63	0.076	E	0.012	0.0015	E	0.063	0.0076	E	NA
BHC, ALPHA	319-84-6	[0.012] 0.01	[0.055] 0.046	E	[0.054] 0.043	[0.25] 0.2	E	1	[5.5] 4.6	E	[5.4] 4.3	[25] 20	E	[12] 10	[55] 46	E	[54] 43	[250] 200	E	20
BHC, BETA-	319-85-7	[0.041] 0.036	[0.24] 0.21	E	[0.19] 0.15	[1.1] 0.88	E	[4.1] 3.6	[24] 21	E	10	59	E	10	59	E	10	59	E	15
BHC, GAMMA (LINDANE)	58-89-9	0.02	0.072	E	0.02	0.072	E	2	7.2	E	2	7.2	E	20	72	E	20	72	E	20
BIPHENYL, 1,1-	92-52-4	[9.1] 0.084	[40] 0.37	E	[43] 0.35	[190] 1.5	E	[720] 8.4	[3,100] 37	E	[720] 35	[3,100] 150	E	[720] 8.4	[3,100] 37	E	[720] 35	[3,100] 150	E	20
BIS(2-CHLOROETHOXY) METHANE	111-91-1	[13] 10	[3.4] 2.6	E	[35] 29	[9.2] 7.6	E	[1,300] 1,000	[340] 260	E	[3,500] 2,900	[920] 760	E	[13] 10	[3.4] 2.6	E	[35] 29	[9.2] 7.6	E	NA
BIS(2-CHLOROETHYL)ETHER	111-44-4	0.015	0.0045	E	0.076	0.023	E	1.5	0.45	E	7.6	2.3	E	1.5	0.45	E	7.6	2.3	E	NA
BIS(2-CHLORO-ISOPROPYL)ETHER	108-60-1	30	8	E	30	8	E	3,000	800	E	3,000	800	E	3,000	800	E	3,000	800	E	NA
BIS(CHLOROMETHYL)ETHER	542-88-1	0.000079	0.000012	E	0.0004	0.00006	E	0.0079	[0.001] 0.0012	E	0.04	0.006	E	0.0079	[0.001] 0.0012	E	0.04	0.006	E	NA
BIS[2-ETHYLHEXYL] PHTHALATE	117-81-7	0.6	130	E	0.6	130	E	29	6,300	E	29	6,300	E	29	6,300	E	29	6,300	E	10
BISPHENOL A	80-05-7	[210] 170	[810] 660	E	[580] 490	[2,200] 1,900	E	12,000	46,000	E	12,000	46,000	E	12,000	46,000	E	12,000	46,000	E	20
BROMACIL	314-40-9	7	1.8	E	7	1.8	E	700	180	E	700	180	E	7	1.8	E	7	1.8	E	NA
BROMOBENZENE	108-86-1	0.006	0.0047	E	0.006	0.0047	E	0.6	0.47	E	0.6	0.47	E	0.006	0.0047	E	0.006	0.0047	E	NA
BROMOCHLOROMETHANE	74-97-5	9	1.6	E	9	1.6	E	900	160	E	900	160	E	9	1.6	E	9	1.6	E	NA
BROMODICHLORO METHANE (THM)	75-27-4	8	2.7	E	8	2.7	E	800	270	E	800	270	E	8	2.7	E	8	2.7	E	NA
BROMOMETHANE	74-83-9	1	0.54	E	1	0.54	E	100	54	E	100	54	E	100	54	E	100	54	E	NA
BROMOXYNIL	1689-84-5	[83] 0.63	[71] 0.54	E	[230] 2.6	[200] 2.2	E	[8,300] 63	[7,100] 54	E	[13,000] 260	[11,000] 220	E	[83] 0.63	[71] 0.54	E	[230] 2.6	[200] 2.2	E	NA

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		TDS ≤ 2500 mg/L						TDS > 2500 mg/L												
		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
BROMOXYNIL OCTANOATE	1689-99-2	[8] 0.63	[360] 28	E	[8] 2.6	[360] 120	E	8	360	E	8	360	E	8	360	E	8	360	E	15
BUTADIENE, 1,3-	106-99-0	[0.021] 0.11	[0.0086] 0.045	E	[0.1] 0.45	[0.041] 0.19	E	[2.1] 11	[0.86] 4.5	E	[10] 45	[4.1] 19	E	[2.1] 11	[0.86] 4.5	E	[10] 45	[4.1] 19	E	NA
BUTYL ALCOHOL, N-	71-36-3	[420] 350	[50] 42	E	[1,200] 970	[140] 120	E	10,000	[5,000] 4,200	E	10,000	10,000	C	[4,200] 3,500	[500] 420	E	[10,000] 9,700	[1,400] 1,200	E	NA
BUTYLATE	2008-41-5	40	58	E	40	58	E	4,000	5,800	E	4,000	5,800	E	40	58	E	40	58	E	30
BUTYLBENZENE, N-	104-51-8	[210] 170	[1,300] 1,100	E	[580] 490	[3,700] 3,100	E	1,500	9,500	E	1,500	9,500	E	[210] 170	[1,300] 1,100	E	[580] 490	[3,700] 3,100	E	15
BUTYLBENZENE, SEC-	135-98-8	[420] 350	[980] 820	E	[1,200] 970	[2,800] 2,300	E	1,700	4,000	E	1,700	4,000	E	[420] 350	[980] 820	E	[1,200] 970	[2,800] 2,300	E	30
BUTYLBENZENE, TERT-	98-06-6	[420] 350	[760] 630	E	[1,200] 970	[2,200] 1,800	E	3,000	5,400	E	3,000	5,400	E	[420] 350	[760] 630	E	[1,200] 970	[2,200] 1,800	E	30
BUTYLBENZYL PHTHALATE	85-68-7	[38] 34	[3,200] 2,900	E	[180] 140	10,000	C	270	10,000	C	270	10,000	C	270	10,000	C	270	10,000	C	10
CAPTAN	133-06-2	[32] 28	[20] 17	E	50	31	E	50	31	E	50	31	E	50	31	E	50	31	E	NA
CARBARYL	63-25-2	[420] 350	[250] 210	E	[1,200] 970	[700] 570	E	12,000	7,000	E	12,000	7,000	E	12,000	7,000	E	12,000	7,000	E	NA
CARBAZOLE	86-74-8	[3.7] 3.3	[24] 21	E	[17] 14	[110] 89	E	120	760	E	120	760	E	[4] 3.3	[24] 21	E	[17] 14	[110] 89	E	15
CARBOFURAN	1563-66-2	4	0.87	E	4	0.87	E	400	87	E	400	87	E	4	0.87	E	4	0.87	E	NA
CARBON DISULFIDE	75-15-0	150	130	E	620	530	E	10,000	10,000	C	10,000	10,000	C	150	130	E	620	530	E	NA
CARBON TETRACHLORIDE	56-23-5	0.5	0.26	E	0.5	0.26	E	50	26	E	50	26	E	5	2.6	E	5	2.6	E	NA
CARBOXIN	5234-68-4	70	53	E	70	53	E	7,000	5,300	E	7,000	5,300	E	70	53	E	70	53	E	NA
CHLORAMBEN	133-90-4	10	1.6	E	10	1.6	E	1,000	160	E	1,000	160	E	10	1.6	E	10	1.6	E	NA
CHLORDANE	57-74-9	0.2	49	E	0.2	49	E	5.6	1,400	E	5.6	1,400	E	5.6	1,400	E	5.6	1,400	E	10
CHLORO-1,1-DIFLUOROETHANE, 1-	75-68-3	10,000	1,800	E	10,000	7,300	E	10,000	10,000	C	10,000	10,000	C	10,000	1,800	E	10,000	7,300	E	NA
CHLORO-1-PROPENE, 3- (ALLYL CHLORIDE)	107-05-1	0.21	0.049	E	0.88	0.2	E	21	4.9	E	88	20	E	21	4.9	E	88	20	E	NA
CHLOROACETALDEHYDE	107-20-0	0.24	0.029	E	[1.1] 1	[0.13] 0.12	E	24	2.9	E	[110] 100	[13] 12	E	0.24	0.029	E	[1.1] 1	[0.1] 0.12	E	NA

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		TDS ≤ 2500 mg/L						TDS > 2500 mg/L												
		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
[CHLOROACETOPHENONE, 2-]	[532-27-4]	[0.13]	[0.039]	[E]	[0.35]	[0.11]	[E]	[13]	[3.9]	[E]	[35]	[11.0]	[E]	[130]	[39]	[E]	[350]	[110]	[E]	[NA]
CHLOROANILINE, P-	106-47-8	[0.37] 0.33	[0.47] 0.42	E	[1.7] 1.4	[2.1] 1.8	E	[37] 33	[47] 42	E	[170] 140	[210] 180	E	[0.37] 0.33	[0.47] 0.42	E	[1.7] 1.4	[2.1] 1.8	E	NA
CHLOROBENZENE	108-90-7	10	6.1	E	10	6.1	E	1,000	610	E	1,000	610	E	1,000	610	E	1,000	610	E	NA
CHLOROBENZILATE	510-15-6	[0.66] 0.59	[4.4] 3.9	E	[3.1] 2.5	[20] 17	E	[66] 59	[440] 390	E	[310] 250	[2,000] 1,700	E	[660] 590	[4,400] 3,900	E	1,300	8,600	E	15
CHLOROBUTANE, 1-	109-69-3	[170] 140	[270] 220	E	[470] 390	[730] 610	E	10,000	10,000	C	10,000	10,000	C	[170] 140	[270] 220	E	[470] 390	[730] 610	E	30
CHLORODIBROMO METHANE (THM)	124-48-1	8	2.5	E	8	2.5	E	800	250	E	800	250	E	800	250	E	800	250	E	NA
CHLORODIFLUORO METHANE (THM)	75-45-6	10,000	2,800	E	10,000	10,000	C	10,000	10,000	C	10,000	10,000	C	10,000	2,800	E	10,000	10,000	C	NA
CHLOROETHANE	75-00-3	[25] 2,100	[5.4] 450	E	[120] 8,800	[26] 1,900	E	[2,500] 10,000	[540] 10,000	[E] C	10,000	[2,600] 10,000	[E] C	[2,500] 10,000	[540] 10,000	[E] C	10,000	[2,600] 10,000	[E] C	NA
CHLOROFORM (THM)	67-66-3	8	2	E	8	2	E	800	200	E	800	200	E	80	20	E	80	20	E	NA
CHLORONAPHTHALENE, 2-	91-58-7	[330] 280	[7,000] 6,000	E	[930] 780	[20,000] 17,000	E	1,200	26,000	E	1,200	26,000	E	[330] 280	[7,000] 6,000	E	[930] 780	[20,000] 17,000	E	15
CHLORONITROBENZENE, P-	100-00-5	[4.2] 0.42	[5.5] 0.55	E	[12] 1.8	[16] 2.4	E	[420] 42	[550] 55	E	[1,200] 180	[1,600] 240	E	[4.2] 0.42	[5.5] 0.55	E	[12] 1.8	[16] 2.4	E	NA
CHLOROPHENOL, 2-	95-57-8	4	4.4	E	4	4.4	E	400	440	E	400	440	E	4	4.4	E	4	4.4	E	NA
CHLOROPRENE	126-99-8	0.016	0.0038	E	0.083	0.02	E	1.6	0.38	E	8.3	2	E	1.6	0.38	E	8.3	2	E	NA
CHLOROPROPANE, 2-	75-29-6	21	16	E	88	67	E	2,100	1,600	E	8,800	6,700	E	21	16	E	88	67	E	NA
CHLOROTHALONIL	1897-45-6	[24] 3.8	[61] 9.7	E	[60] 16	[150] 41	E	60	150	E	60	150	E	[24] 3.8	[61] 9.7	E	[60] 16	[150] 41	E	30
CHLOROTOLUENE, O-	95-49-8	10	20	E	10	20	E	1,000	2,000	E	1,000	2,000	E	10	20	E	10	20	E	30
CHLOROTOLUENE, P-	106-43-4	10	10	E	10	10	E	1,000	1,000	E	1,000	1,000	E	10	10	E	10	10	E	NA
CHLORPYRIFOS	2921-88-2	0.2	2.3	E	0.2	2.3	E	20	230	E	20	230	E	0.2	2.3	E	0.2	2.3	E	15

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		TDS ≤ 2500 mg/L						TDS > 2500 mg/L												
		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
CHLORSULFURON	64902-72-3	[210] 69	[29] 9.6	E	[580] 190	[80] 26	E	[19,000] 6,900	[2,600] 960	E	19,000	2,600	E	[210] 69	[29] 9.6	E	[580] 190	[80] 26	E	NA
CHLORTHAL-DIMETHYL (DACTHAL) (DCPA)	1861-32-1	7	110	E	7	110	E	50	820	E	50	820	E	50	820	E	50	820	E	15
CHRYSENE	218-01-9	[0.19] 0.18	[230] 220	E	0.19	230	E	0.19	230	E	0.19	230	E	0.19	230	E	0.19	230	E	5
CRESOL(S)	1319-77-3	130	23	E	530	92	E	10,000	2,300	E	10,000	9,200	E	10,000	2,300	E	10,000	9,200	E	NA
CRESOL, 4,6-DINITRO-O-	534-52-1	[0.33] 0.28	[0.25] 0.21	E	[0.93] 0.78	[0.7] 0.59	E	[33] 28	[25] 21	E	[93] 78	[70] 59	E	[330] 28	[250] 21	E	[930] 78	[700] 59	E	NA
CRESOL, O- (2-METHYLPHENOL)	95-48-7	[210] 170	[35] 28	E	[580] 490	[96] 81	E	[21,000] 17,000	[3,500] 2,800	E	[58,000]49,000	[9,600] 8,100	E	[21,000] 17,000	[3,500] 2,800	E	[58,000] 49,000	[9,600] 8,100	E	NA
CRESOL, M- (3-METHYLPHENOL)	108-39-4	[210] 170	[41] 34	E	[580] 490	[110] 97	E	10,000	[4,100] 3,400	E	10,000	[10,000] 9,700	[C] E	10,000	10,000	C	10,000	10,000	C	NA
CRESOL, P- (4-METHYLPHENOL)	106-44-5	[21] 17	[4.9] 4	E	[58] 49	[14] 11	E	[2,100] 1,700	[490] 400	E	[5,800] 4,900	[1,400] 1,100	E	[21,000] 17,000	[4,900] 4,000	E	[58,000] 49,000	[14,000] 11,000	E	NA
CRESOL, P-CHLORO-M-	59-50-7	[420] 350	[870] 720	E	[1,200] 970	[2,500] 2,000	E	[42,000] 35,000	[87,000] 72,000	E	[120,000] 97,000	190,000	C	[420] 350	[870] 720	E	[1,200] 970	[2,500] 2,000	E	30
CROTONALDEHYDE	4170-30-3	[0.038] 0.034	[0.0048] 0.0043	E	[0.18] 0.14	[0.023] 0.018	E	[3.8] 3.4	[0.48] 0.43	E	[18] 14	[2.3] 1.8	E	[3.8] 3.4	[0.48] 0.43	E	[18] 14	[2.3] 1.8	E	NA
CROTONALDEHYDE, TRANS-	123-73-9	[0.038] 0.034	[0.0048] 0.0043	E	[0.18] 0.14	[0.023] 0.018	E	[3.8] 3.4	[0.48] 0.43	E	[18] 14	[2.3] 1.8	E	[3.8] 3.4	[0.48] 0.43	E	[18] 14	[2.3] 1.8	E	NA
CUMENE (ISOPROPYL BENZENE)	98-82-8	84	600	E	350	2,500	E	5,000	10,000	C	5,000	10,000	C	5,000	10,000	C	5,000	10,000	C	15
CYANAZINE	21725-46-2	0.1	0.061	E	0.1	0.061	E	10	6.1	E	10	6.1	E	0.1	0.061	E	0.1	0.061	E	NA
CYCLOHEXANE	110-82-7	1,300	1,700	E	5,300	6,900	E	5,500	7,200	E	5,500	7,200	E	1,300	1,700	E	5,300	6,900	E	NA
CYCLOHEXANONE	108-94-1	150	41	E	620	170	E	10,000	4,100	E	10,000	10,000	C	150	41	E	620	170	E	NA
CYFLUTHRIN	68359-37-5	0.1	33	E	0.1	33	E	0.1	33	E	0.1	33	E	0.1	33	E	0.1	33	E	10

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		TDS ≤ 2500 mg/L						TDS > 2500 mg/L												
		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
CYROMAZINE	66215-27-8	[31] 1,700	[96] 5,300	E	[88] 4,900	[270] 15,000	E	[3,100] 170,000	[9,600] 190,000	[E] C	[8,800] 190,000	[27,000] 190,000	[E] C	[31] 1,700	[96] 5,300	E	[88] 4,900	[270] 15,000	E	20
DDD, 4,4'-	72-54-8	[0.3] 0.27	[33] 30	E	[1.4] 1.1	[150] 120	E	16	1,800	E	16	1,800	E	16	1,800	E	16	1,800	E	10
DDE, 4,4'-	72-55-9	[0.21] 0.19	[46] 41	E	[1] 0.8	[220] 170	E	4	870	E	4	870	E	4	870	E	4	870	E	10
DDT, 4,4'-	50-29-3	[0.21] 0.19	[130] 110	E	0.55	330	E	0.55	330	E	0.55	330	E	0.55	330	E	0.55	330	E	5
DI(2-ETHYLHEXYL)ADIPATE	103-23-1	40	10,000	C	40	10,000	C	4,000	10,000	C	4,000	10,000	C	10,000	10,000	C	10,000	10,000	C	5
DIALLATE	2303-16-4	[1.2] 1.1	[0.7] 0.64	E	[5.6] 4.5	[3.3] 2.6	E	[120] 110	[70] 64	E	[560] 450	[330] 260	E	[1,200] 1,100	[700] 640	E	[4,000] 4,000	[2,300] 2,300	E	NA
DIAMINOTOLUENE, 2,4-	95-80-7	[0.018] 0.016	[0.0036] 0.0032	E	[0.085] 0.068	[0.017] 0.014	E	[1.8] 1.6	[0.36] 0.32	E	[8.5] 6.8	[1.7] 1.4	E	[18] 16	[3.6] 3.2	E	[85] 68	[17] 14	E	NA
DIAZINON	333-41-5	0.1	0.14	E	0.1	0.14	E	10	14	E	10	14	E	0.1	0.14	E	0.1	0.14	E	30
DIBENZO[A,H] ANTHRACENE	53-70-3	[0.0055] 0.0052	[25] 23	E	0.06	270	E	0.06	270	E	0.06	270	E	0.06	270	E	0.06	270	E	5
DIBENZOFURAN	132-64-9	[4.2] 3.5	[110] 90	E	[12] 9.7	[310] 250	E	[420] 350	[11,000] 9,000	E	450	12,000	E	[450] 350	[12,000] 9,000	E	450	12,000	E	15
DIBROMO-3-CHLOROPROPANE, 1,2-	96-12-8	0.02	0.0092	E	0.02	0.0092	E	2	0.92	E	2	0.92	E	2	0.92	E	2	0.92	E	NA
DIBROMOBENZENE, 1,4-	106-37-6	[42] 35	[170] 140	E	[120] 97	[490] 400	E	2,000	8,200	E	2,000	8,200	E	[42] 35	[170] 140	E	[120] 97	[490] 400	E	20
DIBROMOETHANE, 1,2- (ETHYLENE DIBROMIDE)	106-93-4	0.005	0.0012	E	0.005	0.0012	E	0.5	0.12	E	0.5	0.12	E	0.5	0.12	E	0.5	0.12	E	NA
DIBROMOMETHANE	74-95-3	0.84	0.32	E	3.5	1.4	E	84	32	E	350	140	E	84	32	E	350	140	E	NA
DIBUTYL PHTHALATE, N-	84-74-2	[420] 350	[1,700] 1,400	E	[1,200] 970	[4,900] 4,000	E	10,000	10,000	C	10,000	10,000	C	10,000	10,000	C	10,000	10,000	C	20
DICAMBA	1918-00-9	400	45	E	400	45	E	40,000	4,500	E	40,000	4,500	E	400	45	E	400	45	E	NA

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		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
DICHLOROACETIC ACID (HAA)	76-43-6	6	0.79	E	6	0.79	E	600	79	E	600	79	E	6	0.79	E	6	0.79	E	NA
DICHLORO-2-BUTENE, 1,4-	764-41-0	0.0012	0.00067	E	0.006	0.0034	E	0.12	[0.07] 0.067	E	0.6	0.34	E	0.0012	[0.0007] 0.00067	E	0.006	0.0034	E	NA
DICHLORO-2-BUTENE, TRANS-1,4-	110-57-6	0.0012	0.00078	E	0.006	0.0039	E	0.12	0.078	E	0.6	0.39	E	0.0012	0.00078	E	0.006	0.0039	E	NA
DICHLOROBENZENE, 1,2-	95-50-1	60	59	E	60	59	E	6,000	5,900	E	6,000	5,900	E	6,000	5,900	E	6,000	5,900	E	NA
DICHLOROBENZENE, 1,3-	541-73-1	60	61	E	60	61	E	6,000	6,100	E	6,000	6,100	E	6,000	6,100	E	6,000	6,100	E	NA
DICHLOROBENZENE, P-	106-46-7	7.5	10	E	7.5	10	E	750	1,000	E	750	1,000	E	750	1,000	E	750	1,000	E	30
DICHLOROBENZIDINE, 3,3'-	91-94-1	[0.16] 0.14	[8.8] 7.7	E	[0.76] 0.6	[42] 33	E	[16] 14	[880] 770	E	[76] 60	[4,200] 3,300	E	[160] 140	[8,800] 7,700	E	310	17,000	E	10
DICHLORODIFLUOROMETHANE (FREON 12)	75-71-8	100	100	E	100	100	E	10,000	10,000	C	10,000	10,000	C	10,000	10,000	C	10,000	10,000	C	NA
DICHLOROETHANE, 1,1-	75-34-3	3.1	0.75	E	16	3.9	E	310	75	E	1,600	390	E	31	7.5	E	160	39	E	NA
DICHLOROETHANE, 1,2-	107-06-2	0.5	0.1	E	0.5	0.1	E	50	10	E	50	10	E	5	1	E	5	1	E	NA
DICHLOROETHYLENE, 1,1-	75-35-4	0.7	0.19	E	0.7	0.19	E	70	19	E	70	19	E	7	1.9	E	7	1.9	E	NA
DICHLOROETHYLENE, CIS-1,2-	156-59-2	7	1.6	E	7	1.6	E	700	160	E	700	160	E	70	16	E	70	16	E	NA
DICHLOROETHYLENE, TRANS-1,2-	156-60-5	10	2.3	E	10	2.3	E	1,000	230	E	1,000	230	E	100	23	E	100	23	E	NA
DICHLOROMETHANE (METHYLENE CHLORIDE)	75-09-2	0.5	0.076	E	0.5	0.076	E	50	7.6	E	50	7.6	E	50	7.6	E	50	7.6	E	NA
DICHLOROPHENOL, 2,4-	120-83-2	2	1	E	2	1	E	200	100	E	200	100	E	2,000	1,000	E	2,000	1,000	E	NA
DICHLOROPHENOXY ACETIC ACID, 2,4- (2,4-D)	94-75-7	7	1.8	E	7	1.8	E	700	180	E	700	180	E	7,000	1,800	E	7,000	1,800	E	NA
DICHLOROPROPANE, 1,2-	78-87-5	0.5	0.11	E	0.5	0.11	E	50	11	E	50	11	E	5	1.1	E	5	1.1	E	NA
DICHLOROPROPENE, 1,3-	542-75-6	[0.73] 0.65	[0.13] 0.12	E	[3.4] 2.7	[0.61] 0.48	E	[73] 65	[13] 12	E	[340] 270	[61] 48	E	[73] 65	[13] 12	E	[340] 270	[61] 48	E	NA
DICHLOROPROPIONIC ACID, 2,2- (DALAPON)	75-99-0	20	5.3	E	20	5.3	E	2,000	530	E	2,000	530	E	2,000	530	E	2,000	530	E	NA
DICHLORVOS	62-73-7	[0.25] 0.22	[0.059] 0.052	E	[1.2] 0.94	[0.28] 0.22	E	[25] 22	[5.9] 5.2	E	[120] 94	[28] 22	E	[0.25] 0.22	[0.059] 0.052	E	[1.2] 0.94	[0.28] 0.22	E	NA

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		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
DICYCLOPENTADIENE	77-73-6	0.063	0.13	E	0.26	0.56	E	[6] 6.3	13	E	26	56	E	[0.1] 0.063	[0.1] 0.13	E	[0.3] 0.26	[1] 0.56	E	30
DIELDRIN	60-57-1	[0.0046] 0.0041	[0.13] 0.11	E	[0.021] 0.017	[0.58] 0.47	E	[0.46] 0.41	[13] 11	E	[2.1] 1.7	[58] 47	E	[4.6] 4.1	[130] 110	E	[17] 17	[470] 470	E	15
[DIETHANOLAMINE]	[111-42-2]	[NA]	[NA]		[NA]	[NA]		[NA]	[NA]		[NA]	[NA]		[NA]	[NA]		[NA]	[NA]		[NA]
DIETHYL PHTHALATE	84-66-2	[3,300] 2,800	[1,000] 880	E	[9,300] 7,800	[2,900] 2,400	E	10,000	10,000	C	10,000	10,000	C	10,000	10,000	C	10,000	10,000	C	NA
DIFLUBENZURON	35367-38-5	20	52	E	20	52	E	20	52	E	20	52	E	20	52	E	20	52	E	20
DIISOPROPYL METHYLPHOSPHONATE	1445-75-6	60	8.2	E	60	8.2	E	6,000	820	E	6,000	820	E	60	8.2	E	60	8.2	E	NA
DIMETHOATE	60-51-5	[0.83] 7.6	[0.32] 2.9	E	[2.3] 21	[0.89] 8.1	E	[83] 760	[32] 290	E	[230] 2,100	[89] 810	E	[830] 7,600	[320] 2,900	E	[2,300] 21,000	[890] 8,100	E	NA
DIMETHOXYBENZIDINE, 3,3-	119-90-4	[0.046] 0.041	[0.15] 0.14	E	[0.21] 0.17	[0.71] 0.57	E	[5] 4.1	[15] 14	E	[21] 17	[71] 57	E	[46] 41	[150] 140	E	[210] 170	[710] 570	E	20
DIMETHRIN	70-38-2	3.6	240	E	3.6	240	E	3.6	240	E	3.6	240	E	3.6	240	E	3.6	240	E	10
DIMETHYLAMINOAZO BENZENE, P-	60-11-7	[0.016] 0.014	[0.042] 0.037	E	[0.074] 0.059	[0.19] 0.15	E	[1.6] 1.4	[4.2] 3.7	E	[7.4] 5.9	[19] 15	E	[16] 14	[42] 37	E	[74] 59	[190] 150	E	20
DIMETHYLANILINE, N,N-	121-69-7	[8.3] 2.4	[4.7] 1.3	E	[23] 10	[13] 5.6	E	[830] 240	[470] 130	E	[2,300] 1,000	[1,300] 560	E	[830] 240	[470] 130	E	[2,300] 1,000	[1,300] 560	E	NA
DIMETHYLBENZIDINE, 3,3-	119-93-7	[0.0066] 0.0059	[0.36] 0.33	E	[0.031] 0.025	[1.7] 1.4	E	[0.7] 0.59	[36] 33	E	[3.1] 2.5	[170] 140	E	[7] 5.9	[360] 330	E	[31] 25	[1,700] 1,400	E	10
DIMETHYL METHYLPHOSPHONATE	756-79-6	10	1.2	E	10	1.2	E	1,000	120	E	1,000	120	E	10	1.2	E	10	1.2	E	NA
DIMETHYLPHENOL, 2,4-	105-67-9	[83] 69	[36] 30	E	[230] 190	[100] 83	E	[8,300] 6,900	[3,600] 3,000	E	10,000	[10,000] 8,300	[C] E	10,000	10,000	C	10,000	10,000	C	NA
DINITROBENZENE, 1,3-	99-65-0	0.1	0.049	E	0.1	0.049	E	10	4.9	E	10	4.9	E	100	49	E	100	49	E	NA

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		TDS ≤ 2500 mg/L						TDS > 2500 mg/L												
		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
DINITROPHENOL, 2,4-	51-28-5	[8.3] 6.9	[0.94] 0.78	E	[23] 19	[2.6] 2.1	E	[830] 690	[94] 78	E	[2,300] 1,900	[260] 210	E	[8,300] 6,900	[940] 780	E	[23,000] 19,000	[2,600] 2,100	E	NA
DINITROTOLUENE, 2,4-	121-14-2	[0.24] 0.21	[0.057] 0.05	E	[1.1] 0.88	[0.26] 0.21	E	[24] 21	[6] 5	E	[110] 88	[26] 21	E	[240] 210	[57] 50	E	[1,100] 880	[260] 210	E	NA
DINITROTOLUENE, 2,6- (2,6-DNT)	606-20-2	[0.049] 0.043	[0.015] 0.013	E	[0.23] 0.18	[0.068] 0.053	E	[5] 4.3	[2] 1.3	E	[23] 18	[7] 5.3	E	[49] 43	[15] 13	E	[230] 180	[68] 53	E	NA
DINOSEB	88-85-7	0.7	0.29	E	0.7	0.29	E	70	29	E	70	29	E	700	290	E	700	290	E	NA
DIOXANE, 1,4-	123-91-1	[0.64] 0.65	[0.084] 0.085	E	[3.2] 2.7	[0.42] 0.35	E	[64] 65	[8.4] 8.5	E	[320] 270	[42] 35	E	[6.4] 6.5	[0.84] 0.85	E	[32] 27	[4.2] 3.5	E	NA
DIPHENAMID	957-51-7	20	12	E	20	12	E	2,000	1,200	E	2,000	1,200	E	20	12	E	20	12	E	NA
DIPHENYLAMINE	122-39-4	[100] 350	[59] 210	E	[290] 970	[170] 570	E	[10,000] 30,000	[5,900] 18,000	E	[29,000] 30,000	[17,000] 18,000	E	30,000	18,000	E	30,000	18,000	E	NA
DIPHENYLHYDRAZINE, 1,2-	122-66-7	[0.091] 0.022	[0.16] 0.039	E	[0.43] 0.11	[0.76] 0.19	E	[9.1] 2.2	[16] 3.9	E	[25] 11	[44] 19	E	[25] 2.2	[44] 3.9	E	[25] 11	[44] 19	E	30
DIQUAT	85-00-7	2	0.24	E	2	0.24	E	200	24	E	200	24	E	2	0.24	E	2	0.24	E	NA
DISULFOTON	298-04-4	0.07	0.18	E	0.07	0.18	E	7	18	E	7	18	E	70	180	E	70	180	E	20
DITHIANE, 1,4-	505-29-3	8	1.3	E	8	1.3	E	800	130	E	800	130	E	8	1.3	E	8	1.3	E	NA
DIURON	330-54-1	[8.3] 6.9	[7.1] 5.9	E	[23] 19	[20] 16	E	[830] 690	[710] 590	E	[2,300] 1,900	[2,000] 1,600	E	[8.3] 6.9	[7.1] 5.9	E	[23] 19	[20] 16	E	NA
ENDOSULFAN	115-29-7	[25] 21	[130] 110	E	48	250	E	48	250	E	48	250	E	48	250	E	48	250	E	15
ENDOSULFAN I (ALPHA)	959-98-8	[25] 21	[130] 110	E	50	260	E	50	260	E	50	260	E	[25] 21	[130] 110	E	50	260	E	15
ENDOSULFAN II (BETA)	33213-65-9	[25] 21	[150] 120	E	45	260	E	45	260	E	45	260	E	[25] 21	[150] 120	E	45	260	E	15
ENDOSULFAN SULFATE	1031-07-8	12	70	E	12	70	E	12	70	E	12	70	E	12	70	E	12	70	E	15
ENDOTHALL	145-73-3	10	4.1	E	10	4.1	E	1,000	410	E	1,000	410	E	10	4.1	E	10	4.1	E	NA
ENDRIN	72-20-8	0.2	5.5	E	0.2	5.5	E	20	550	E	20	550	E	0.2	5.5	E	0.2	5.5	E	15
EPICHLOROHYDRIN	106-89-8	0.21	0.042	E	0.88	0.17	E	21	4.2	E	88	17	E	21	4.2	E	88	17	E	NA
ETHEPHON	16672-87-0	[21] 17	[2.4] 2	E	[58] 49	[6.7] 5.7	E	[2,100] 1,700	[240] 200	E	[5,800] 4,900	[670] 570	E	[21] 17	[2.4] 2	E	[58] 49	[6.7] 5.7	E	NA

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		TDS ≤ 2500 mg/L						TDS > 2500 mg/L												
		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
ETHION	563-12-2	[2.1] 1.7	[46] 37	E	[5.8] 4.9	[130] 110	E	85	1,900	E	85	1,900	E	[2.1] 1.7	[46] 37	E	[5.8] 4.9	[130] 110	E	15
ETHOXYETHANOL, 2- (EGEE)	110-80-5	42	5.9	E	180	25	E	4,200	590	E	10,000	2,500	E	4,200	590	E	10,000	2,500	E	NA
ETHYL ACETATE	141-78-6	15	3.9	E	62	16	E	1,500	390	E	6,200	1,600	E	1,500	390	E	6,200	1,600	E	NA
ETHYL ACRYLATE	140-88-5	[1.5] 1.4	[0.58] 0.54	E	[7.0] 5.7	[2.7] 2.2	E	[150] 140	[58] 54	E	[700] 570	[270] 220	E	[150] 140	[58] 54	E	[700] 570	[270] 220	E	NA
ETHYL BENZENE	100-41-4	70	46	E	70	46	E	7,000	4,600	E	7,000	4,600	E	7,000	4,600	E	7,000	4,600	E	NA
ETHYL DIPROPYL THIOCARBAMATE, S- (EPTC)	759-94-4	[100] 170	[71] 120	E	[290] 490	[210] 350	E	10,000	[7,100] 10,000	[E] C	10,000	10,000	C	[100] 170	[71] 120	E	[290] 490	[210] 350	E	NA
ETHYL ETHER	60-29-7	[830] 690	[230] 190	E	[2,300] 1,900	[650] 530	E	10,000	10,000	C	10,000	10,000	C	[830] 690	[230] 190	E	[2,300] 1,900	[650] 530	E	NA
ETHYL METHACRYLATE	97-63-2	63	10	E	260	43	E	6,300	1,000	E	10,000	4,300	E	63	10	E	260	43	E	NA
ETHYLENE CHLORHYDRIN	107-07-3	[83] 69	[10] 7.9	E	[230] 190	[26] 22	E	[8,300] 6,900	[950] 790	E	10,000	[2,600] 2,200	E	[83] 69	[10] 7.9	E	[230] 190	[26] 22	E	NA
ETHYLENE GLYCOL	107-21-1	1,400	170	E	1,400	170	E	10,000	10,000	C	10,000	10,000	C	10,000	10,000	C	10,000	10,000	C	NA
ETHYLENE THIOUREA (ETU)	96-45-7	[0.33] 0.28	[0.037] 0.031	E	[0.93] 0.78	[0.1] 0.087	E	[33] 28	[3.7] 3.1	E	[93] 78	[10] 8.7	E	[330] 280	[37] 31	E	[930] 780	[100] 87	E	NA
ETHYLP-NITROPHENYL PHENYLPHOSPHORO THIOATE	2104-64-5	[0.042] 0.035	[0.13] 0.11	E	[0.12] 0.097	[0.37] 0.3	E	[4.2] 3.5	[13] 11	E	[12] 9.7	[37] 30	E	[0.042] 0.035	[0.13] 0.11	E	[0.12] 0.097	[0.37] 0.3	E	20
FENAMIPHOS	22224-92-6	0.07	0.06	E	0.07	0.06	E	7	6	E	7	6	E	0.07	0.06	E	0.07	0.06	E	NA
FENVALERATE (PYDRIN)	51630-58-1	8.5	94	E	8.5	94	E	8.5	94	E	8.5	94	E	8.5	94	E	8.5	94	E	15
FLUOMETURON	2164-17-2	9	2.5	E	9	2.5	E	900	250	E	900	250	E	9	2.5	E	9	2.5	E	NA
FLUORANTHENE	206-44-0	26	3,200	E	26	3,200	E	26	3,200	E	26	3,200	E	26	3,200	E	26	3,200	E	10
FLUORENE	86-73-7	[170] 140	[3,400] 2,800	E	190	3,800	E	190	3,800	E	190	3,800	E	190	3,800	E	190	3,800	E	15
FLUOROTRICHLORO METHANE (FREON 11)	75-69-4	200	87	E	200	87	E	10,000	8,700	E	10,000	8,700	E	10,000	8,700	E	10,000	8,700	E	NA
FONOFOS	944-22-9	1	2.9	E	1	2.9	E	100	290	E	100	290	E	1	2.9	E	1	2.9	E	20
FORMALDEHYDE	50-00-0	100	12	E	100	12	E	10,000	1,200	E	10,000	1,200	E	10,000	1,200	E	10,000	1,200	E	NA

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		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
FORMIC ACID	64-18-6	0.063	0.0071	E	0.26	0.029	E	6.3	0.71	E	26	2.9	E	0.63	0.071	E	2.6	0.29	E	NA
FOSETYL-AL	39148-24-8	[13,000] 8,700	[12,000] 7,700	E	[35,000] 24,000	[31,000] 21,000	E	190,000	190,000	C	190,000	190,000	C	[13,000] 8,700	[12,000] 7,700	E	[35,000] 24,000	[31,000] 21,000	E	NA
FURAN	110-00-9	[4.2] 3.5	[1.8] 1.5	E	[12] 9.7	[5.2] 4.2	E	[420] 350	[180] 150	E	[1,200] 970	[520] 420	E	[420] 350	[180] 150	E	[1,200] 970	[520] 420	E	NA
FURFURAL	98-01-1	[11] 1.9	[1.4] 0.24	E	[35] 7.8	[4.4] 0.99	E	[1,100] 190	[140] 24	E	[3,500] 780	[440] 99	E	[11] 1.9	[1.4] 0.24	E	[35] 7.8	[4.4] 0.99	E	NA
GLYPHOSATE	1071-83-6	70	620	E	70	620	E	7,000	62,000	E	7,000	62,000	E	70	620	E	70	620	E	15
HEPTACHLOR	76-44-8	0.04	0.68	E	0.04	0.68	E	4	68	E	4	68	E	18	310	E	18	310	E	15
HEPTACHLOR EPOXIDE	1024-57-3	0.02	1.1	E	0.02	1.1	E	2	110	E	2	110	E	20	1,100	E	20	1,100	E	10
HEXACHLOROBENZENE	118-74-1	0.1	0.96	E	0.1	0.96	E	0.6	5.8	E	0.6	5.8	E	0.6	5.8	E	0.6	5.8	E	15
HEXACHLOROBUTADIENE	87-68-3	[0.94] 0.84	[11] 10	E	[4.4] 3.5	[52] 42	E	[94] 84	[1,100] 1,000	E	290	3,400	E	290	3,400	E	290	3,400	E	15
HEXACHLOROCYCLO PENTADIENE	77-47-4	5	91	E	5	91	E	180	3,300	E	180	3,300	E	180	3,300	E	180	3,300	E	15
HEXACHLOROETHANE	67-72-1	0.1	0.56	E	0.1	0.56	E	10	56	E	10	56	E	10	56	E	10	56	E	15
HEXANE	110-54-3	150	1,400	E	[620] 580	[5,600] 5,300	E	950	8,700	E	950	8,700	E	150	1,400	E	[620] 580	[5,600] 5,300	E	15
HEXAZINONE	51235-04-2	40	8.5	E	40	8.5	E	4,000	850	E	4,000	850	E	40	8.5	E	40	8.5	E	NA
HEXYTHIAZOX (SAVEY)	78587-05-0	50	820	E	50	820	E	50	820	E	50	820	E	50	820	E	50	820	E	15
HMX	2691-41-0	40	4.8	E	40	4.8	E	500	60	E	500	60	E	40	4.8	E	40	4.8	E	NA
HYDRAZINE/HYDRAZINE SULFATE	302-01-2	0.001	0.00011	E	0.0051	0.00057	E	0.1	0.011	E	0.51	0.057	E	0.01	0.0011	E	0.051	0.0057	E	NA
HYDROQUINONE	123-31-9	[1.2] 1.1	[0.16] 0.15	E	[5.7] 4.5	[0.77] 0.61	E	[120] 110	[16] 15	E	[570] 450	[77] 61	E	[1,200] 1,100	[160] 150	E	[5,700] 4,500	[770] 610	E	NA
INDENO[1,2,3-CD]PYRENE	193-39-5	[0.019] 0.018	[1,500] 1,400	E	[0.28] 0.23	[22,000] 18,000	E	[1.9] 1.8	[150,000] 140,000	E	6.2	190,000	C	6.2	190,000	C	6.2	190,000	C	5
IPRODIONE	36734-19-7	[170] 1.5	[490] 4.3	E	[470] 6.2	[1,300] 18	E	[1,300] 150	[3,700] 430	E	[1,300] 620	[3,700] 1,800	E	[170] 1.5	[490] 4.3	E	[470] 6.2	[1,300] 18	E	20

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		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
ISOBUTYL ALCOHOL	78-83-1	[1,300] 1,000	[340] 260	E	[3,500] 2,900	[910] 760	E	10,000	10,000	C	10,000	10,000	C	10,000	10,000	C	10,000	10,000	C	NA
ISOPHORONE	78-59-1	10	1.9	E	10	1.9	E	1,000	190	E	1,000	190	E	10,000	1,900	E	10,000	1,900	E	NA
ISOPROPYL METHYLPHOSPHONATE	1832-54-8	70	8.1	E	70	8.1	E	7,000	810	E	7,000	810	E	70	8.1	E	70	8.1	E	NA
KEPONE	143-50-0	[0.0073] 0.0065	[1] 0.89	E	[0.034] 0.027	[4.7] 3.7	E	[0.73] 0.65	[100] 89	E	[3.4] 2.7	[470] 370	E	[7.3] 6.5	[1,000] 890	E	[34] 27	[4,700] 3,700	E	10
MALATHION	121-75-5	50	170	E	50	170	E	5,000	10,000	C	5,000	10,000	C	10,000	10,000	C	10,000	10,000	C	20
MALEIC HYDRAZIDE	123-33-1	400	47	E	400	47	E	40,000	4,700	E	40,000	4,700	E	400	47	E	400	47	E	NA
MANEB	12427-38-2	[21] 1.1	[2] 0.12	E	[58] 4.5	[6.6] 0.51	E	[2,100] 110	[240] 12	E	[2,300] 450	[260] 51	E	[21] 1.1	[2] 0.12	E	[58] 4.5	[6.6] 0.51	E	NA
MERPHOS OXIDE	78-48-8	[0.13] ~~3.5~~ 1.7	[17] ~~460~~ 230	E	[0.35] ~~9.7~~ 4.9	[46] ~~1,300~~ 650	E	[13] ~~230~~ 170	[1,700] 10,000	[E] C	[35] 230	[4,600] 10,000	[E] C	[0.13] ~~3.5~~ 1.7	[17] ~~460~~ 230	E	[0.35] ~~9.7~~ 4.9	[46] ~~1,300~~ 650	E	10
METHACRYLONITRILE	126-98-7	[0.42] 0.35	[0.069] 0.057	E	[1.2] 0.97	[0.2] 0.16	E	[42] 35	[6.9] 5.7	E	[120] 97	[20] 16	E	[0.42] 0.35	[0.069] 0.057	E	[1.2] 0.97	[0.2] 0.16	E	NA
METHAMIDOPHOS	10265-92-6	[0.21] 0.17	[0.026] 0.021	E	[0.58] 0.49	[0.072] 0.061	E	[21] 17	[2.6] 2.1	E	[58] 49	[7.2] 6.1	E	[0.21] 0.17	[0.026] 0.021	E	[0.58] 0.49	[0.072] 0.061	E	NA
METHANOL	67-56-1	[840] 4,200	[99] 500	E	[3,500] 10,000	[410] 2,100	E	10,000	[9,900] 10,000	[E] C	10,000	10,000	C	10,000	[9,900] 10,000	[E] C	10,000	10,000	C	NA
METHOMYL	16752-77-5	20	3.2	E	20	3.2	E	2,000	320	E	2,000	320	E	20	3.2	E	20	3.2	E	NA
METHOXYCHLOR	72-43-5	4	630	E	4	630	E	4.5	710	E	4.5	710	E	4.5	710	E	4.5	710	E	10
METHOXYETHANOL, 2-	109-86-4	4.2	0.48	E	18	2	E	420	48	E	1,800	200	E	42	4.8	E	180	20	E	NA
METHYL ACETATE	79-20-9	[4,200] 3,500	[780] 650	E	[10,000] 9,700	[2,200] 1,800	E	10,000	10,000	C	10,000	10,000	C	[4,200] 3,500	[780] 650	E	[10,000] 9,700	[2,200] 1,800	E	NA
METHYL ACRYLATE	96-33-3	[4] 4.2	1	E	18	[5] 4.5	E	420	100	E	1,800	450	E	420	100	E	1,800	450	E	NA
METHYL CHLORIDE	74-87-3	3	0.38	E	3	0.38	E	300	38	E	300	38	E	300	38	E	300	38	E	NA

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Table 3 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Soil
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REGULATED SUBSTANCE	CASRN	Used Aquifers												Nonuse Aquifers						Soil Buffer Distance (feet)
		TDS ≤ 2500 mg/L						TDS > 2500 mg/L												
		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
METHYL ETHYL KETONE	78-93-3	400	76	E	400	76	E	10,000	7,600	E	10,000	7,600	E	10,000	7,600	E	10,000	7,600	E	NA
METHYL HYDRAZINE	60-34-4	0.0042	0.00048	E	0.018	0.002	E	0.42	0.048	E	1.8	0.2	E	0.042	0.0048	E	0.18	0.02	E	NA
METHYL ISOBUTYL KETONE	108-10-1	[330] 280	[51] 43	E	[930] 780	[140] 120	E	10,000	[5,100] 4,300	E	10,000	10,000	C	10,000	[5,100] 4,300	E	10,000	10,000	C	NA
METHYL ISOCYANATE	624-83-9	0.21	0.029	E	0.88	0.12	E	21	2.9	E	88	12	E	0.21	0.029	E	0.88	0.12	E	NA
METHYL N-BUTYL KETONE (2-HEXANONE)	591-78-6	6.3	1.6	E	26	6.4	E	630	160	E	2,600	640	E	6.3	1.6	E	26	6.4	E	NA
METHYL METHACRYLATE	80-62-6	150	20	E	620	84	E	10,000	2,000	E	10,000	8,400	E	10,000	2,000	E	10,000	8,400	E	NA
METHYL METHANESULFONATE	66-27-3	[0.74] 0.66	[0.092] 0.082	E	[3.4] 2.7	[0.42] 0.34	E	[74] 66	[9.2] 8.2	E	[340] 270	[42] 34	E	[0.74] 0.66	[0.092] 0.082	E	[3.4] 2.7	[0.42] 0.34	E	NA
METHYL PARATHION	298-00-0	0.1	0.21	E	0.1	0.21	E	10	21	E	10	21	E	100	210	E	100	210	E	30
METHYL STYRENE (MIXED ISOMERS)	25013-15-4	8.4	47	E	35	200	E	840	4,700	E	3,500	10,000	C	8.4	47	E	35	200	E	15
METHYL TERT-BUTYL ETHER (MTBE)	1634-04-4	2	0.28	E	2	0.28	E	200	28	E	200	28	E	20	2.8	E	20	2.8	E	NA
METHYLCHLOROPHENOXYACETIC ACID (MCPA)	94-74-6	3	1.2	E	3	1.2	E	300	120	E	300	120	E	3,000	1,200	E	3,000	1,200	E	NA
METHYLENE BIS(2-CHLOROANILINE), 4,4'-	101-14-4	[0.23] 0.21	[1.8] 1.6	E	[3.4] 2.7	[26] 21	E	[23] 21	[180] 160	E	[340] 270	[2,600] 2,100	E	[0.23] 0.21	[1.8] 1.6	E	[3.4] 2.7	[26] 21	E	15
METHYLNAPHTHALENE, 2-	91-57-6	[17] 0.63	[680] 25	E	[47] 2.6	[1,900] 100	E	[1,700] 63	[68,000] 2,500	E	[2,500] 260	[100,000] 10,000	E	[17] 0.63	[680] 25	E	[47] 2.6	[1,900] 100	E	15
METHYLSTYRENE, ALPHA	98-83-9	[290] 240	[510] 420	E	[820] 680	[1,400] 1,200	E	10,000	10,000	C	10,000	10,000	C	[290] 240	[510] 420	E	[820] 680	[1,400] 1,200	E	30
METOLACHLOR	51218-45-2	70	40	E	70	40	E	7,000	4,000	E	7,000	4,000	E	70	40	E	70	40	E	NA
METRIBUZIN	21087-64-9	7	2.4	E	7	2.4	E	700	240	E	700	240	E	7	2.4	E	7	2.4	E	NA
MEVINPHOS	7786-34-7	0.087	0.019	E	0.24	0.053	E	8.7	1.9	E	24	5.3	E	0.087	0.019	E	0.24	0.053	E	NA
MONOCHLOROACETIC ACID (HAA)	79-11-8	6	0.67	E	6	0.67	E	600	67	E	600	67	E	6	0.67	E	6	0.67	E	NA
NAPHTHALENE	91-20-3	10	25	E	10	25	E	1,000	2,500	E	1,000	2,500	E	[3,000] 1,000	[7,500] 2,500	E	[3,000] 1,000	[7,500] 2,500	E	30
NAPHTHYLAMINE, 1-	134-32-7	[0.041] 0.036	[0.33] 0.29	E	[0.19] 0.15	[1.5] 1.2	E	[4.1] 3.6	[33] 29	E	[19] 15	[150] 120	E	[41] 3.6	[330] 29	E	[190] 15	[1,500] 120	E	15

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[1] For other options see Section 250.308

All concentrations in mg/kg

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		TDS ≤ 2500 mg/L						TDS > 2500 mg/L												
		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
NAPHTHYLAMINE, 2-	91-59-8	[0.041] 0.036	[0.013] 0.012	E	[0.19] 0.15	[0.062] 0.049	E	[4.1] 3.6	[1.3] 1.2	E	[19] 15	[6.2] 4.9	E	[41] 36	[13] 12	E	[190] 150	[62] 49	E	NA
NAPROPAMIDE	15299-99-7	420	970	E	1,200	2,800	E	7,000	16,000	E	7,000	16,000	E	420	970	E	1,200	2,800	E	30
NITROANILINE, O-	88-74-4	[42] 0.011	[8] 0.002	E	[120] 0.044	[21] 0.0079	E	[4,200] 1.1	[750] 0.2	E	[12,000] 4.4	[2,100] 0.79	E	[42] 0.011	[8] 0.002	E	[120] 0.044	[21] 0.0079	E	NA
NITROANILINE, P-	100-01-6	[3.7] 3.3	[0.55] 0.49	E	[17] 14	[2.5] 2.1	E	[370] 330	[55] 49	E	[1,700] 1,400	[250] 210	E	[3.7] 3.3	[0.55] 0.49	E	[17] 14	[2.5] 2.1	E	NA
NITROBENZENE	98-95-3	[8.3] 0.12	[3.6] 0.052	E	[23] 0.63	[10] 0.27	E	[830] 12	[360] 5.2	E	[2,300] 63	[1,000] 27	E	[8,300] 12	[3,600] 5.2	E	[10,000] 63	[10,000] 27	C	NA
NITROGUANIDINE	556-88-7	70	7.8	E	70	7.8	E	7,000	780	E	7,000	780	E	70	7.8	E	70	7.8	E	NA
NITROPHENOL, 2-	88-75-5	[33] 28	[6.7] 5.7	E	[93] 78	[19] 16	E	[3,300] 2,800	[670] 570	E	[9,300] 7,800	[1,900] 1,600	E	[33,000] 2,800	[6,700] 570	E	[93,000] 7,800	[19,000] 1,600	E	NA
NITROPHENOL, 4-	100-02-7	6	4.1	E	6	4.1	E	600	410	E	600	410	E	[6,000] 600	[4,100] 410	E	[6,000] 600	[4,100] 410	E	NA
NITROPROPANE, 2-	79-46-9	0.0018	0.00029	E	0.0093	0.0015	E	0.18	0.029	E	0.93	0.15	E	0.018	0.0029	E	0.093	0.015	E	NA
NITROSODIETHYLAMINE, N-	55-18-5	0.000045	0.0000079	E	0.00058	0.0001	E	0.0045	[0.0008] 0.00079	E	0.058	0.01	E	0.00045	[0.00008] 0.000079	E	0.0058	0.001	E	NA
NITROSODIMETHYLAMINE, N-	62-75-9	0.00014	0.000019	E	0.0018	0.00024	E	0.014	0.0019	E	0.18	0.024	E	0.0014	0.00019	E	0.018	0.0024	E	NA
NITROSO-DI-N-BUTYLAMINE, N-	924-16-3	[0.014] 0.0031	[0.017] 0.0038	E	[0.063] 0.016	[0.078] 0.02	E	[1.4] 0.31	[1.7] 0.38	E	[6.3] 1.6	[7.8] 2	E	[14] 0.31	[17] 0.38	E	[63] 1.6	[78] 2	E	NA
NITROSODI-N-PROPYLAMINE, N-	621-64-7	[0.01] 0.0025	[0.0014] 0.00035	E	[0.049] 0.013	[0.0068] 0.0018	E	[1] 0.25	[0.14] 0.035	E	[4.9] 1.3	[0.68] 0.18	E	[10] 0.025	[1.4] 0.0035	E	[49] 0.13	[6.8] 0.018	E	NA
NITROSODIPHENYLAMINE, N-	86-30-6	[15] 1.9	[23] 3	E	[69] 9.6	[110] 15	E	[1,500] 190	[2,300] 300	E	[3,500] 960	[5,500] 1,500	E	[3,500] 190	[5,500] 300	E	[3,500] 960	[5,500] 1,500	E	30

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		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
NITROSO-N-ETHYLUREA, N-	759-73-9	[0.00084] 0.00079	[0.000097] 0.000091	E	[0.013] 0.01	[0.0015] 0.0012	E	[0.08] 0.079	[0.0097] 0.0091	E	[1.3] 1	[0.15] 0.12	E	[0.8] 0.79	[0.097] 0.091	E	[13] 10	[1.5] 1.2	E	NA
OCTYL PHTHALATE, DI-N-	117-84-0	[42] 35	10,000	C	[120] 97	10,000	C	300	10,000	C	300	10,000	C	300	10,000	C	300	10,000	C	5
OXAMYL (VYDATE)	23135-22-0	20	2.6	E	20	2.6	E	2,000	260	E	2,000	260	E	20	2.6	E	20	2.6	E	NA
PARAQUAT	1910-42-5	3	120	E	3	120	E	300	12,000	E	300	12,000	E	3	120	E	3	120	E	15
PARATHION	56-38-2	[25] 0.1	[150] 0.59	E	[70] 0.29	[410] 1.7	E	[2,000] 10	[10,000] 59	[C] E	[2,000] 29	[10,000] 170	[C] E	[25] 0.1	[150] 0.59	E	[70] 0.29	[410] 1.7	E	15
PCBS, TOTAL (POLYCHLORINATED BIPHENLYS) (AROCLORS)	1336-36-3	0.05	9.8	E	0.05	9.8	E	5	980	E	5	980	E	0.05	9.8	E	0.05	9.8	E	10
PCB-1016 (AROCLOR)	12674-11-2	[0.037] 0.24	[10] 66	E	[0.17] 0.68	[47] 190	E	[4] 24	[1,000] 6,600	E	[17] 25	[4,700] 6,900	E	[0.04] 0.24	[10] 66	E	[0.17] 0.68	[47] 190	E	10
PCB-1221 (AROCLOR)	11104-28-2	[0.037] 0.033	[0.18] 0.16	E	[0.17] 0.14	[0.83] 0.68	E	[3.7] 3.3	[18] 16	E	[17] 14	[83] 68	E	[0.037] 0.033	[0.18] 0.16	E	[0.17] 0.14	[0.83] 0.68	E	20
PCB-1232 (AROCLOR)	11141-16-5	[0.037] 0.033	[0.14] 0.13	E	[0.17] 0.14	[0.7] 0.54	E	[3.7] 3.3	[14] 13	E	[17] 14	[66] 54	E	[0.037] 0.033	[0.14] 0.13	E	[0.17] 0.14	[0.7] 0.54	E	20
PCB-1242 (AROCLOR)	53469-21-9	[0.037] 0.033	4	E	[0.17] 0.14	[20] 17	E	[3.7] 3.3	[440] 400	E	10	1,200	E	[0.037] 0.033	4	E	[0.17] 0.14	[20] 17	E	10
PCB-1248 (AROCLOR)	12672-29-6	[0.037] 0.033	[18] 16	E	[0.17] 0.14	[81] 67	E	[3.7] 3.3	[1,800] 1,600	E	5.4	2,600	E	[0.037] 0.033	[18] 16	E	[0.17] 0.14	[81] 67	E	10
PCB-1254 (AROCLOR)	11097-69-1	[0.037] 0.069	[75] 140	E	[0.17] 0.19	[340] 380	E	[3.7] 5.7	[7,500] 10,000	[E] C	5.7	10,000	C	[0.037] 0.069	[75] 140	E	[0.17] 0.19	[340] 380	E	5
PCB-1260 (AROCLOR)	11096-82-5	[0.037] 0.033	[170] 150	E	[0.17] 0.14	[770] 630	E	[3.7] 3.3	[17,000] 15,000	E	8	36,000	E	[0.037] 0.033	[170] 150	E	[0.17] 0.14	[770] 630	E	5

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		TDS ≤ 2500 mg/L						TDS > 2500 mg/L												
		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
PEBULATE	1114-71-2	[210] 170	[350] 290	E	[580] 490	[980] 830	E	9,200	10,000	C	9,200	10,000	C	[210] 170	[350] 290	E	[580] 490	[980] 830	E	30
PENTACHLOROBENZENE	608-93-5	[3.3] 2.8	[260] 220	E	[9.3] 7.8	[750] 620	E	74	5,900	E	74	5,900	E	74	5,900	E	74	5,900	E	10
PENTACHLOROETHANE	76-01-7	[0.81] 0.72	[3.9] 3.5	E	[3.8] 3	[19] 15	E	[81] 72	[390] 350	E	[380] 300	[1,900] 1,500	E	[0.81] 0.72	[3.9] 3.5	E	[3.8] 3	[19] 15	E	20
PENTACHLORO NITROBENZENE	82-68-8	[0.28] 0.25	[6] 5	E	1	[26] 20	E	[28] 25	[560] 500	E	44	870	E	44	870	E	44	870	E	15
PENTACHLOROPHENOL	87-86-5	0.1	5	E	0.1	5	E	10	500	E	10	500	E	100	5,000	E	100	5,000	E	10
PERFLUOROBUTANE SULFONATE (PFBS)	375-73-5	~~69~~ 1	~~NA~~ N/A	~~C~~	~~190~~ 2.9	~~NA~~ N/A	~~C~~	~~6,900~~ 100	~~NA~~ N/A	~~C~~	~~10,000~~ 290	~~NA~~ N/A	~~C~~	~~69~~ 1	~~NA~~ N/A	~~C~~	~~190~~ 2.9	~~NA~~ N/A	~~C~~	NA
PERFLUOROOCTANE SULFONATE (PFOS)	1763-23-1	0.007	~~NA~~ N/A	~~E~~	0.007	~~NA~~ N/A	~~E~~	0.7	~~NA~~ N/A	~~E~~	0.7	~~NA~~ N/A	~~E~~	0.007	~~NA~~ N/A	~~E~~	0.007	~~NA~~ N/A	~~E~~	NA
PERFLUOROOCTANOIC ACID (PFOA)	335-67-1	0.007	~~NA~~ N/A	~~E~~	0.007	~~NA~~ N/A	~~E~~	0.7	~~NA~~ N/A	~~E~~	0.7	~~NA~~ N/A	~~E~~	0.007	~~NA~~ N/A	~~E~~	0.007	~~NA~~ N/A	~~E~~	NA
PHENACETIN	62-44-2	[33] 30	[13] 12	E	[150] 120	[58] 46	E	[3,300] 3,000	[1,300] 1,200	E	[15,000] 12,000	[5,800] 4,600	E	[33,000] 30,000	[13,000] 12,000	E	76,000	29,000	E	NA
PHENANTHRENE	85-01-8	110	10,000	E	110	10,000	E	110	10,000	E	110	10,000	E	110	10,000	E	110	10,000	E	10
PHENOL	108-95-2	200	33	E	200	33	E	20,000	3,300	E	20,000	3,300	E	20,000	3,300	E	20,000	3,300	E	NA
PHENYL MERCAPTAN	108-98-5	[4,200] 3.5	[6,400] 5.3	E	[12] 9.7	[18] 15	E	[420] 350	[640] 530	E	[1,200] 970	[1,800] 1,500	E	[4.2] 3.5	[6.4] 5.3	E	[12] 9.7	[18] 15	E	30
PHENYLENEDIAMINE, M-	108-45-2	[25] 21	[3.5] 3	E	[70] 58	[9.9] 8.2	E	[2,500] 2,100	[350] 300	E	[7,000] 5,800	[990] 820	E	[25,000] 21,000	[3,500] 3,000	E	[70,000] 58,000	[9,900] 8,200	E	NA
PHENYLPHENOL, 2-	90-43-7	[38] 34	[550] 490	E	[180] 140	[2,600] 2,000	E	[3,800] 3,400	[55,000] 49,000	E	[18,000] 14,000	190,000	C	[38,000] 34,000	190,000	C	70,000	190,000	C	15
PHORATE	298-02-2	[0.83] 0.69	[1.8] 1.5	E	[2] 1.9	[4.9] 4.1	E	[83] 69	[180] 150	E	[230] 190	[490] 410	E	[0.83] 0.69	[1.8] 1.5	E	[2] 1.9	[4.9] 4.1	E	30

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		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
PHTHALIC ANHYDRIDE	85-44-9	[8,300] 4.2	[2,600] 1.3	E	[23,000] 18	[7,100] 5.6	E	[190,000] 420	[190,000] 130	[C] E	[190,000] 1,800	[190,000] 560	[C] E	[190,000] 420	[190,000] 130	[C] E	[190,000] 1,800	[190,000] 560	C	NA
PICLORAM	1918-02-1	50	7.4	E	50	7.4	E	5,000	740	E	5,000	740	E	50	7.4	E	50	7.4	E	NA
PROMETON	1610-18-0	40	39	E	40	39	E	4,000	3,900	E	4,000	3,900	E	40	39	E	40	39	E	NA
PRONAMIDE	23950-58-5	[310] 260	[190] 160	E	[880] 730	[540] 450	E	1,500	920	E	1,500	920	E	[310] 260	[190] 160	E	[880] 730	[540] 450	E	NA
PROPACHLOR	1918-16-7	0.01	0.0046	E	0.01	0.0046	E	1	0.46	E	1	0.46	E	1	0.46	E	1	0.46	E	NA
PROPANIL	709-98-8	[21] 17	[11] 8.7	E	[58] 49	[30] 25	E	[2,100] 1,700	[1,100] 870	E	[5,800] 4,900	[3,000] 2,500	E	[21] 17	[11] 8.7	E	[58] 49	[30] 25	E	NA
PROPANOL, 2- (ISOPROPYL ALCOHOL)	67-63-0	42	7.3	E	180	31	E	4,200	730	E	10,000	3,100	E	42	[7] 7.3	E	180	31	E	NA
PROPAZINE	139-40-2	1	0.5	E	1	0.5	E	100	50	E	100	50	E	1	0.5	E	1	0.5	E	NA
PROPHAM	122-42-9	10	2.4	E	10	2.4	E	1,000	240	E	1,000	240	E	10	2.4	E	10	2.4	E	NA
PROPYLBENZENE, N-	103-65-1	210	400	E	880	1,700	E	5,200	9,900	E	5,200	9,900	E	210	400	E	880	1,700	E	30
PROPYLENE OXIDE	75-56-9	[0.3] 0.27	[0.052] 0.047	E	[1.4] 1.1	[0.24] 0.19	E	[30] 27	[5.2] 4.7	E	[140] 110	[24] 19	E	[0.3] 0.27	[0.052] 0.047	E	[1.4] 1.1	[0.24] 0.19	E	NA
PYRENE	129-00-0	13	2,200	E	13	2,200	E	13	2,200	E	13	2,200	E	13	2,200	E	13	2,200	E	10
PYRETHRUM	8003-34-7	35	4.4	E	35	4.4	E	35	4.4	E	35	4.4	E	35	4.4	E	35	4.4	E	NA
PYRIDINE	110-86-1	[4.2] 3.4	[0.47] 0.39	E	[12] 9.7	[1.3] 1.1	E	[420] 350	[47] 39	E	[1,200] 970	[130] 110	E	[42] 35	[4.7] 3.9	E	[120] 97	[13] 11	E	NA
QUINOLINE	91-22-5	[0.024] 0.022	[0.081] 0.074	E	[0.11] 0.091	[0.37] 0.31	E	[2.4] 2.2	[8.1] 7.4	E	[11] 9.1	[37] 31	E	[24] 22	[81] 74	E	[110] 91	[370] 310	E	20
QUIZALOFOP (ASSURE)	76578-14-8	30	47	E	30	47	E	30	47	E	30	47	E	30	47	E	30	47	E	30
RDX	121-82-4	0.2	0.057	E	0.2	0.057	E	20	5.7	E	20	5.7	E	0.2	0.057	E	0.2	0.057	E	NA
RESORCINOL	108-46-3	[8,300] 6,900	[970] 800	E	[23,000] 19,000	[2,700] 2,200	E	190,000	[97,000] 80,000	E	190,000	190,000	C	[8,300] 6,900	[970] 800	E	[23,000] 19,000	[2,700] 2,200	E	NA
RONNEL	299-84-3	[210] 170	[330] 270	E	[580] 490	[910] 760	E	4,000	6,200	E	4,000	6,200	E	[210] 170	[330] 270	E	[580] 490	[910] 760	E	30
SIMAZINE	122-34-9	0.4	0.15	E	0.4	0.15	E	40	15	E	40	15	E	0.4	0.15	E	0.4	0.15	E	NA

[1] For other options see Section 250.308

All concentrations in mg/kg

E – Number calculated by the soil to groundwater equation [is] in section 250.308

C – Cap

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N/A – SOIL TO GROUNDWATER VALUES CAN NOT BE CALCULATED FOR THESE COMPOUNDS

[THMs – The values listed for trihalomethanes (THMs) are the total for all THMs combined.]

[HAAs – The values listed for haloacetic acids (HAAs) are the total for all HAAs combined.]

Appendix A
Table 3 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Soil
B. Soil to Groundwater Numeric Values[1]

REGULATED SUBSTANCE	CASRN	Used Aquifers												Nonuse Aquifers						Soil Buffer Distance (feet)
		TDS ≤ 2500 mg/L						TDS > 2500 mg/L												
		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
STRYCHNINE	57-24-9	[1.3] 1	[1.1] 0.81	E	[3.5] 2.9	[2.8] 2.4	E	[130] 100	[110] 81	E	[350] 290	[280] 240	E	[1,300] 1,000	[1,100] 810	E	[3,500] 2,900	[2,800] 2,400	E	NA
STYRENE	100-42-5	10	24	E	10	24	E	1,000	2,400	E	1,000	2,400	E	1,000	2,400	E	1,000	2,400	E	30
TEBUTHIURON	34014-18-1	50	83	E	50	83	E	5,000	8,300	E	5,000	8,300	E	50	83	E	50	83	E	30
TERBACIL	5902-51-2	9	2.2	E	9	2.2	E	900	220	E	900	220	E	9	2.2	E	9	2.2	E	NA
TERBUFOS	13071-79-9	0.04	0.055	E	0.04	0.055	E	4	5.5	E	4	5.5	E	0.04	0.055	E	0.04	0.055	E	30
TETRACHLOROBENZENE, 1,2,4,5-	95-94-3	[1.3] 1	[6] 4.6	E	[3.5] 2.9	[16] 13	E	58	270	E	58	270	E	58	270	E	58	270	E	20
TETRACHLORODIBENZO-P-DIOXIN, 2,3,7,8- (TCDD)	1746-01-6	0.000003	0.032	E	0.000003	0.032	E	0.0003	3.2	E	0.0003	3.2	E	0.0019	20	E	0.0019	20	E	5
TETRACHLOROETHANE, 1,1,1,2-	630-20-6	7	18	E	7	18	E	700	1,800	E	700	1,800	E	700	1,800	E	700	1,800	E	30
TETRACHLOROETHANE, 1,1,2,2-	79-34-5	[0.08] 0.084	0.026	E	0.43	0.13	E	[8] 8.4	2.6	E	43	13	E	[8] 8.4	2.6	E	43	13	E	NA
TETRACHLOROETHYLENE (PCE)	127-18-4	0.5	0.43	E	0.5	0.43	E	50	43	E	50	43	E	5	4.3	E	5	4.3	E	NA
TETRACHLOROPHENOL, 2,3,4,6-	58-90-2	[130] 100	[2,000] 1,600	E	[350] 290	[5,500] 4,500	E	[13,000] 10,000	[190,000] 160,000	[C] E	18,000	190,000	C	18,000	190,000	C	18,000	190,000	C	15
TETRAETHYL LEAD	78-00-2	[0.00042] 0.00035	[0.0052] 0.0043	E	[0.0012] 0.00097	[0.015] 0.012	E	[0.042] 0.035	[0.52] 0.43	E	[0.1] 0.097	[1.5] 1.2	E	[0.42] 0.35	[0.52] 4.3	E	[1] 0.97	[15] 12	E	15
TETRAETHYLDITHIO PYROPHOSPHATE	3689-24-5	[2.1] 1.7	[3.1] 2.5	E	[5.8] 4.9	[8.6] 7.3	E	[210] 170	[310] 250	E	[580] 490	[860] 730	E	[2.1] 1.7	[3.1] 2.5	E	[5.8] 4.9	[8.6] 7.3	E	30
TETRAHYDROFURAN	109-99-9	[2.6] 2.5	[0.57] 0.55	E	13	2.8	E	[260] 250	[57] 55	E	1,300	280	E	[2.6] 2.5	[0.57] 0.55	E	13	2.8	E	NA
THIOFANOX	39196-18-4	[1.3] 1	[0.14] 0.11	E	[3.5] 2.9	[0.39] 0.32	E	[130] 100	[14] 11	E	[350] 290	[39] 32	E	[1.3] 1	[0.14] 0.11	E	[3.5] 2.9	[0.39] 0.32	E	NA
THIRAM	137-26-8	[21] 52	[55] 140	E	[58] 150	[150] 390	E	[2,100] 3,000	[5,500] 7,800	E	3,000	7,800	E	[21] 52	[55] 140	E	[58] 150	[150] 390	E	20
TOLUENE	108-88-3	100	44	E	100	44	E	10,000	4,400	E	10,000	4,400	E	10,000	4,400	E	10,000	4,400	E	NA

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[1] For other options see Section 250.308

All concentrations in mg/kg

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N/A – SOIL TO GROUNDWATER VALUES CAN NOT BE CALCULATED FOR THESE COMPOUNDS

[THMs – The values listed for trihalomethanes (THMs) are the total for all THMs combined.]

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Appendix A

Table 3 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Soil

B. Soil to Groundwater Numeric Values[1]

REGULATED SUBSTANCE	CASRN	Used Aquifers												Nonuse Aquifers						Soil Buffer Distance (feet)
		TDS ≤ 2500 mg/L						TDS > 2500 mg/L												
		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
TOLUIDINE, M-	108-44-1	[4.6] 4.1	[2.1] 1.9	E	[21] 17	[9.7] 7.8	E	[460] 410	[210] 190	E	[2,100] 1,700	[970] 780	E	[4.6] 4.1	[2.1] 1.9	E	[21] 17	[9.7] 7.8	E	NA
TOLUIDINE, O-	95-53-4	[4.6] 4.1	[5.2] 4.7	E	[21] 17	[24] 19	E	[460] 410	[520] 470	E	[2,100] 1,700	[2,400] 1,900	E	[4,600] 4,100	[5,200] 4,700	E	10,000	10,000	C	NA
TOLUIDINE, P-	106-49-0	[2.4] 2.2	[2.2] 2	E	[11] 9.1	[10] 8.3	E	[240] 220	[220] 200	E	[1,100] 910	[1,000] 830	E	[2.4] 2.2	[2.2] 2	E	[11] 9.1	[10] 8.3	E	NA
TOXAPHENE	8001-35-2	0.3	1.2	E	0.3	1.2	E	30	120	E	30	120	E	0.3	1.2	E	0.3	1.2	E	20
TRIALLATE	2303-17-5	[54] 0.091	[280] 0.47	E	[150] 0.38	[770] 1.9	E	[400] 9.1	[2,000] 47	E	[400] 38	[2,000] 190	E	[54] 0.091	[280] 0.47	E	[150] 0.38	[770] 1.9	E	15
TRIBROMOMETHANE (BROMOFORM) (THM)	75-25-2	8	3.5	E	8	3.5	E	800	350	E	800	350	E	800	350	E	800	350	E	NA
TRICHLORO-1,2,2-TRIFLUOROETHANE, 1,1,2-	76-13-1	[6,300] 1,100	[10,000] 3,400	[C] E	[10,000] 4,400	10,000	C	10,000	10,000	C	10,000	10,000	C	10,000	10,000	C	10,000	10,000	C	20
TRICHLOROACETIC ACID (HAA)	76-03-9	[2] 6	[0.32] 0.97	E	[2] 6	[0.32] 0.97	E	[200] 600	[32] 97	E	[200] 600	[32] 97	E	[2] 6	[0.32] 0.97	E	[2] 6	[0.32] 0.97	E	NA
TRICHLOROBENZENE, 1,2,4-	120-82-1	7	27	E	7	27	E	700	2,700	E	700	2,700	E	[4,400] 700	[10,000] 2,700	[C] E	[4,400] 700	[10,000] 2,700	[C] E	20
TRICHLOROBENZENE, 1,3,5-	108-70-3	4	31	E	4	31	E	400	3,100	E	400	3,100	E	4	31	E	4	31	E	15
TRICHLOROETHANE, 1,1,1-	71-55-6	20	7.2	E	20	7.2	E	2,000	720	E	2,000	720	E	200	72	E	200	72	E	NA
TRICHLOROETHANE, 1,1,2-	79-00-5	0.5	0.15	E	0.5	0.15	E	50	15	E	50	15	E	5	1.5	E	5	1.5	E	NA
TRICHLOROETHYLENE (TCE)	79-01-6	0.5	0.17	E	0.5	0.17	E	50	17	E	50	17	E	5	1.7	E	5	1.7	E	NA
TRICHLOROPHENOL, 2,4,5-	95-95-4	[420] 350	[2,600] 2,100	E	[1,200] 970	[7,300] 5,900	E	[42,000] 35,000	190,000	C	[100,000] 97,000	190,000	C	100,000	190,000	C	100,000	190,000	C	15
TRICHLOROPHENOL, 2,4,6-	88-06-2	[4.2] 3.5	[12] 10	E	[12] 9.7	[34] 28	E	[420] 350	[1,200] 1,000	E	[1,200] 970	[3,400] 2,800	E	[4,200] 3,500	[12,000] 10,000	E	[12,000] 9,700	[34,000] 28,000	E	20
TRICHLOROPHENOXY ACETIC ACID, 2,4,5- (2,4,5-T)	93-76-5	7	1.5	E	7	1.5	E	700	150	E	700	150	E	7,000	1,500	E	7,000	1,500	E	NA

[1] For other options see Section 250.308

All concentrations in mg/kg

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Table 3 – Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Soil
B. Soil to Groundwater Numeric Values[1]

REGULATED SUBSTANCE	CASRN	Used Aquifers												Nonuse Aquifers						Soil Buffer Distance (feet)
		TDS ≤ 2500 mg/L						TDS > 2500 mg/L												
		Residential			Nonresidential			Residential			Nonresidential			Residential			Nonresidential			
		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		100 X GW MSC	Generic Value		
TRICHLOROPHENOXY PROPIONIC ACID, 2,4,5- (2,4,5-TP)(SILVEX)	93-72-1	5	22	E	5	22	E	500	2,200	E	500	2,200	E	5	22	E	5	22	E	20
TRICHLOROPROPANE, 1,1,2-	598-77-6	[21] 17	[3.6] 2.9	E	[58] 49	[9.9] 8.4	E	[2,100] 1,700	[360] 290	E	[5,800] 4,900	[990] 840	E	[21] 17	[3.6] 2.9	E	[58] 49	[9.9] 8.4	E	NA
TRICHLOROPROPANE, 1,2,3-	96-18-4	4	3.2	E	4	3.2	E	400	320	E	400	320	E	400	320	E	400	320	E	NA
TRICHLOROPROPENE, 1,2,3-	96-19-5	0.063	0.037	E	0.26	0.15	E	6.3	3.7	E	26	15	E	0.063	0.037	E	0.26	0.15	E	NA
TRIETHYLAMINE	121-44-8	1.5	0.36	E	6.2	1.5	E	150	36	E	620	150	E	1.5	0.36	E	6.2	1.5	E	NA
TRIETHYLENE GLYCOL	112-27-6	[8,300] 6,900	[1,000] 870	E	10,000	[2,900] 2,400	E	10,000	10,000	C	10,000	10,000	C	[8,300] 6,900	[1,000] 870	E	10,000	[2,900] 2,400	E	NA
TRIFLURALIN	1582-09-8	1	1.9	E	1	1.9	E	100	190	E	100	190	E	1	1.9	E	1	1.9	E	30
TRIMETHYLBENZENE, 1,3,4- (TRIMETHYLBENZENE, 1,2,4-)	95-63-6	[1.5] 13	[8.4] 73	E	[6.2] 53	[35] 300	E	[150] 1,300	[840] 7,300	E	[620] 5,300	[3,500] 10,000	[E] C	[150] 1,300	[840] 7,300	E	[620] 5,300	[3,500] 10,000	[E] C	15
TRIMETHYLBENZENE, 1,3,5-	108-67-8	[42] 13	[74] 23	E	[120] 53	[210] 93	E	[4,200] 1,300	[7,400] 2,300	E	4,900	8,600	E	[42] 13	[74] 23	E	[120] 53	[210] 93	E	30
TRINITROGLYCEROL (NITROGLYCERIN)	55-63-0	0.5	0.2	E	0.5	0.2	E	50	20	E	50	20	E	50	20	E	50	20	E	NA
TRINITROTOLUENE, 2,4,6-	118-96-7	0.2	0.023	E	0.2	0.023	E	20	2.3	E	20	2.3	E	0.2	0.023	E	0.2	0.023	E	NA
VINYL ACETATE	108-05-4	42	5	E	180	21	E	4,200	500	E	10,000	2,100	E	42	5	E	180	21	E	NA
VINYL BROMIDE (BROMOETHENE)	593-60-2	0.15	0.073	E	0.78	0.38	E	15	7.3	E	78	38	E	1.5	0.73	E	7.8	3.8	E	NA
VINYL CHLORIDE	75-01-4	0.2	0.027	E	0.2	0.027	E	20	2.7	E	20	2.7	E	2	0.27	E	2	0.27	E	NA
WARFARIN	81-81-2	[1.3] 1	[3.1] 2.4	E	[3.5] 2.9	[8.4] 6.9	E	[130] 100	[310] 240	E	[350] 290	[840] 690	E	[1,300] 1,000	[3,100] 2,400	E	1,700	4,100	E	30
XYLENES (TOTAL)	1330-20-7	1,000	990	E	1,000	990	E	10,000	10,000	C	10,000	10,000	C	10,000	10,000	C	10,000	10,000	C	NA
ZINEB	12122-67-7	[210] 170	[33] 27	E	[580] 490	[92] 78	E	1,000	160	E	1,000	160	E	[210] 170	[33] 27	E	[580] 490	[92] 78	E	NA

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[1] For other options see Section 250.308

All concentrations in mg/kg
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N/A – SOIL TO GROUNDWATER VALUES CAN NOT BE CALCULATED FOR THESE COMPOUNDS
[THMs – The values listed for trihalomethanes (THMs) are the total for all THMs combined.]
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Appendix A

Table 4 – Medium-Specific Concentrations (MSCs) for Inorganic Regulated Substances in Soil

A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential MSC 0-15 feet		Nonresidential MSCs			
				Surface Soil 0-2 feet		Subsurface Soil 2-15 feet	
ALUMINUM	7429-90-5	190,000	C	190,000	C	190,000	C
ANTIMONY	7440-36-0	88	G	1,300	G	190,000	C
ARSENIC	7440-38-2	12	G	61	G	190,000	C
BARIUM AND COMPOUNDS	7440-39-3	44,000	G	190,000	C	190,000	C
BERYLLIUM	7440-41-7	440	G	6,400	G	190,000	C
BORON AND COMPOUNDS	7440-42-8	44,000	G	190,000	C	190,000	C
CADMIUM	7440-43-9	110	G	1,600	G	190,000	C
CHROMIUM III	16065-83-1	190,000	C	190,000	C	190,000	C
CHROMIUM VI	18540-29-9	**[4] 37**	G	**[220] 180**	G	**[20,000] 140,000**	N
COBALT	7440-48-4	66	G	960	G	190,000	N
COPPER	7440-50-8	**[8,100] 7,200**	G	**[120,000] 100,000**	G	190,000	C
CYANIDE, FREE	57-12-5	130	G	1,900	G	190,000	C
FLUORIDE	16984-48-8	8,800	G	130,000	G	190,000	C
IRON	7439-89-6	150,000	G	190,000	C	190,000	C
LEAD	7439-92-1	**[500] ~~420~~**	U	**[1,000] ~~2,500~~**	**[S] ~~A~~**	190,000	C
LITHIUM	7439-93-2	440	G	6,400	G	190,000	C
MANGANESE	7439-96-5	**[10,000] 31,000**	G	**[150,000] 190,000**	**[G] C**	190,000	C
MERCURY	7439-97-6	35	G	510	G	190,000	C
MOLYBDENUM	7439-98-7	1,100	G	16,000	G	190,000	C
NICKEL	7440-02-0	4,400	G	64,000	G	190,000	C
PERCHLORATE	7790-98-9	150	G	2,200	G	190,000	C
SELENIUM	7782-49-2	1,100	G	16,000	G	190,000	C
SILVER	7440-22-4	1,100	G	16,000	G	190,000	C
STRONTIUM	7440-24-6	130,000	G	190,000	C	190,000	C
THALLIUM	7440-28-0	**[2] 2.2**	G	32	G	190,000	C
TIN	7440-31-5	130,000	G	190,000	C	190,000	C
VANADIUM	7440-62-2	15	G	220	G	190,000	C
ZINC	7440-66-6	66,000	G	190,000	C	190,000	C

All concentrations in mg/kg
R – Residential
NR – Non-Residential
G – Ingestion
N – Inhalation
C- Cap
U – **[UBK Model]** **~~IEUBK Model~~**
[S – SEGH Model] **~~A – Adult Lead Model~~**
NA – Not Applicable

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Table 4 – Medium-Specific Concentrations (MSCs) for Inorganic Regulated Substances in Soil
B. Soil to Groundwater Numeric Values[1]

REGULATED SUBSTANCE	CASRN	Used Aquifers								Nonuse Aquifers				Soil Buffer Distance (feet)
		TDS ≤ 2500 mg/L				TDS > 2500 mg/L								
		R		NR		R		NR		R		NR		
		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	
[ALUMINUM]	[7429-90-5]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
ANTIMONY	7440-36-0	0.6	27	0.6	27	60	2,700	60	2,700	600	27,000	600	27,000	15
ARSENIC	7440-38-2	1	29	1	29	100	2,900	100	2,900	1,000	29,000	1,000	29,000	15
BARIUM AND COMPOUNDS	7440-39-3	200	8,200	200	8,200	20,000	190,000	20,000	190,000	190,000	190,000	190,000	190,000	15
BERYLLIUM	7440-41-7	0.4	320	0.4	320	40	32,000	40	32,000	400	190,000	400	190,000	10
BORON AND COMPOUNDS	7440-42-8	600	1,900	600	1,900	60,000	190,000	60,000	190,000	190,000	190,000	190,000	190,000	30
CADMIUM	7440-43-9	0.5	38	0.5	38	50	3,800	50	3,800	500	38,000	500	38,000	15
CHROMIUM (III)	16065-83-1	10	190,000	10	190,000	1,000	190,000	1,000	190,000	10,000	190,000	10,000	190,000	5
CHROMIUM (VI)	18540-29-9	10	190	10	190	1,000	19,000	1,000	19,000	10,000	190,000	10,000	190,000	15
COBALT	7440-48-4	1	[59] 45	[4] 2.9	[160] 130	[130] 100	[5,900] 4,500	[350] 290	[16,000] 13,000	[1,300] 1,000	[59,000] 45,000	[3,500] 2,900	[160,000] 130,000	15
COPPER	7440-50-8	[NA] 100	[NA] 43,000	[NA] 100	[NA] 43,000	[NA] 10,000	[NA] 190,000	[NA] 10,000	[NA] 190,000	[NA] 100,000	[NA] 190,000	[NA] 100,000	[NA] 190,000	[NA] 10
CYANIDE, FREE	57-12-5	20	200	20	200	2,000	20,000	2,000	20,000	20,000	190,000	20,000	190,000	20
FLUORIDE	16984-48-8	400	44	400	44	40,000	4,400	40,000	4,400	190,000	44,000	190,000	44,000	NA
[IRON]	[7439-89-6]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
LEAD	7439-92-1	0.5	450	0.5	450	50	45,000	50	45,000	500	190,000	500	190,000	10
LITHIUM	7439-93-2	[8] 6.9	[2,500] 2,100	[23] 19	[6,900] 5,700	[830] 690	190,000	[2,300] 1,900	190,000	[8,300] 6,900	190,000	[23,000] 19,000	190,000	10
MANGANESE	7439-96-5	30	2,000	30	2,000	3,000	190,000	3,000	190,000	30,000	190,000	30,000	190,000	15
MERCURY	7439-97-6	0.2	10	0.2	10	20	1,000	20	1,000	200	10,000	200	10,000	15
MOLYBDENUM	7439-98-7	4	650	4	650	400	65,000	400	65,000	4,000	190,000	4,000	190,000	15
NICKEL	7440-02-0	10	650	10	650	1,000	65,000	1,000	65,000	10,000	190,000	10,000	190,000	15
PERCHLORATE	7790-98-9	1.5	0.17	1.5	0.17	150	17	150	17	1,500	170	1,500	170	NA
SELENIUM	7782-49-2	5	26	5	26	500	2,600	500	2,600	5,000	26,000	5,000	26,000	20
SILVER	7440-22-4	10	84	10	84	1,000	8,400	1,000	8,400	10,000	84,000	10,000	84,000	20

[1] For other options see Section 250.308

All concentrations in mg/kg

R – Residential

NR – Non-Residential

NA – Not Applicable

Appendix A

Table 4 – Medium-Specific Concentrations (MSCs) for Inorganic Regulated Substances in Soil

B. Soil to Groundwater Numeric Values[1]

REGULATED SUBSTANCE	CASRN	Used Aquifers								Nonuse Aquifers				Soil Buffer Distance (feet)
		TDS ≤ 2500 mg/L				TDS > 2500 mg/L								
		R		NR		R		NR		R		NR		
		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	
STRONTIUM	7440-24-6	400	44	400	44	40,000	4,400	40,000	4,400	190,000	44,000	190,000	44,000	NA
THALLIUM	7440-28-0	0.2	14	0.2	14	20	1,400	20	1,400	200	14,000	200	14,000	15
TIN	7440-31-5	[2,500] 2,100	190,000	[7,000] 5,800	190,000	190,000	190,000	190,000	190,000	190,000	190,000	190,000	190,000	10
VANADIUM	7440-62-2	[0.29] 0.24	[290] 240	[0.82] 0.68	[820] 680	[29] 24	[29,000] 24,000	[82] 68	[82,000] 68,000	[290] 240	190,000	[820] 680	190,000	5
ZINC	440-66-6	200	12,000	200	12,000	20,000	190,000	20,000	190,000	190,000	190,000	190,000	190,000	15

[1] For other options see Section 250.308

All concentrations in mg/kg

R – Residential

NR – Non-Residential

NA – Not Applicable

Appendix A
Table 5 – Physical and Toxicological Properties
A. Organic Regulated Substances

lated Substance	CAS	RfDo (mg/kg-d)		CSFo (mg/kg-d)⁻¹		RfCi (mg/m³)		IUR (µg/m³)⁻¹		Koc	VOC?	Aqueous Sol (mg/L)	Aqueous Sol Reference¹	TF Vol from Surface Soil	TF Vol from SubSurface Soil	Organic Liquid	Boiling Point (degrees C)
NE	83-32-9	0.06	I							4900	X	3.8	1,5,6	17220	20833		279
LENE	208-96-8	0.06	S¹							4500	X	16.1	5,6,7	16493	19776		280
	30560-19-1	[0.004] 0.0012	[I] O	[0.0087]	[I]					3		818000	6				340
DE	75-07-0					0.009	I	0.0000022	I	4.1	X	1000000	1	[13100] 13010	[15100] 14945	X	20
	67-64-1	0.9	I			31	D			0.31	X	1000000	1	[13100] 13007	[15000] 14942	X	56
E	75-05-8					0.06	I			0.5	X	1000000	1	[13100] 13020	[15000] 14958	X	82
NE	98-86-2	0.1	I							170		5500	1			X	203
-FLUORENE, 2- (2AAF)	53-96-3			3.8	C			0.0013	C	1600		10.13	7				303
	107-02-8	0.0005	I			0.00002	I			0.56	X	208000	1,2,4	[13100] 13012	[15100] 14948	X	53
	79-06-1	0.002	I	0.5	I	0.006	I	0.0001	I	25	X	2151000	4	[13000] 12981	[15000] 14906		193
	79-10-7	0.5	I			0.001	I			29	X	1000000	2	[13000] 12978	[14900] 14902	X	141
LE	107-13-1	0.04	D	0.54	I	0.002	I	0.000068	I	11	X	73500	1	[13100] 13004	[15100] 14939	X	77
	15972-60-8	0.01	I	0.056	C					110		140	2				378
	116-06-3	0.001	I							22		6000	2				287
LFONE	1646-88-4	0.001	I							10		8000	5				317
LFOXIDE	1646-87-3	0.001	M							0.22		330000	5				307
	309-00-2	0.00003	I	17	I			0.0049	I	48000		0.02	4,5,6				330
OL	107-18-6	0.005	I			0.0001	X			3.2	X	1000000	2	[13100] 13003	[15000] 14937	X	97
	834-12-8	0.009	I							389		185	5				345
YL, 4-	92-67-1			21	C			0.006	C	110		1200	5				302
	61-82-5			0.94	C			0.00027	C	120		280000	4				258
	7664-41-7	[0.97] 0.85	H			[0.1] 0.5	I			3	X	310000	2,5,7	[13100] 13098	[15000] 15059	X	-33
ULFAMATE	7773-06-0	0.2	I							3		2160000	10				603
	62-53-3	0.007	P	0.0057	I	0.001	I	0.0000016	C	190	X	33800	1	[13000] 12959	[14900] 14876	X	184
	120-12-7	0.3	I							21000	X	0.066	1,5,6,7,8,9	30838	44562		340
	1912-24-9	0.035	I	0.23	C					130		70	2,4,5				313

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Value Appendix

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Appendix A
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A. Organic Regulated Substances

lated Substance	CAS	RfDo (mg/kg-d)		CSFo $(mg/kg\text{-}d)^{-1}$		RfCl (mg/m^3)		IUR $(\mu g/m^3)^{-1}$		Koc	VOC?	Aqueous Sol (mg/L)	Aqueous Sol Reference[1]	TF Vol from Surface Soil	TF Vol from SubSurface Soil	Organic Liquid	Boiling Point (degrees C)
THYL (GUTHION)	86-50-0	[0.003] 0.0015	[D] O			0.01	D			407.4		31.5	1, 2				421
)POXUR)	114-26-1	0.004	I							31		2000	2,4,5				decomp.
	17804-35-2	0.05	I	0.0024	O					1,900		2	5				520
	25057-89-0	0.03	I							13		500	2				415
	71-43-2	0.004	I	0.055	I	0.03	I	0.0000078	I	58	X	1780.5	1,2,3,4	[13100] 13053	15000	X	81
	92-87-5	0.003	I	230	I			0.067	I	530,000		520	1,2,4				400
HRACENE	56-55-3			0.7	X			0.00011	C	350000		0.011	1,5,6				438
ENE	50-32-8	0.0003	I	[7.3] 1	I	0.000002	I	[0.0011] 0.0006	[C] I	910000		0.0038	1,5,6				495
)RANTHENE	205-99-2			1.2	C			0.00011	C	550000		0.0012	5,6,7				357
ERYLENE	191-24-2	0.06	S^1							2800000		0.00026	1,5,6				500
)RANTHENE	207-08-9			1.2	C			0.00011	C	4400000		0.00055	5,6,7				480
)	65-85-0	4	I							32	X	2700	2,3,4,5	12985	14913		249
ORIDE	98-07-7			13	I					920	X	53	1,5,13	13494	15606	X	221
HOL	100-51-6	0.1	P							100		40000	1,2,3			X	205
RIDE	100-44-7	0.002	P	0.17	I	0.001	P	0.000049	C	190	X	493	1	[13000] 12940	[15000] 14846	X	179
LACTONE	57-57-8			14	C			0.004	C	4	X	370000	2	[13100] 13008	[15000] 14937	X	162
	319-84-6	0.008	D	6.3	I			0.0018	I	1800		1.7	4,5,6,7				288
	319-85-7			1.8	I			0.00053	I	2300		0.1	6				304
(LINDANE)	58-89-9	0.0003	I	1.1	C			0.00031	C	1400		7.3	4,5,6				323
	92-52-4	0.05	I	0.008	[X] I	0.0004	X			1,700	X	7.2	1	14027	16325		255
) HANE	111-91-1	0.003	P							61		100500	4,6,7,9,10,11			X	218
)ETHYL)ETHER	111-44-4			1.1	I			0.00033	I	76	X	10200	1,4,5	[13000] 12942	[14900] 14849	X	179
)-ISOPROPYL)ETHER	108-60-1	0.04	I	0.07	H			0.00001	H	62	X	1700	5	[13000] 12947	[14900] 14856	X	189
IETHYL)ETHER	542-88-1			220	I			0.062	I	16	X	22000	6	[13100] 12992	[15100] 14922	X	105
EXYL]PHTHALATE	117-81-7	0.02	I	0.014	I			0.0000024	C	87000		0.285	4,5,6			X	384
	80-05-7	0.05	I							1,500		120	4				220

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lated Substance	CAS	RfDo (mg/kg-d)		CSFo (mg/kg-d)⁻¹		RfCi (mg/m³)		IUR (µg/m³)⁻¹		Koc	VOC?	Aqueous Sol (mg/L)	Aqueous Sol Reference¹	TF Vol from Surface Soil	TF Vol from SubSurface Soil	Organic Liquid	Boiling Point (degrees C)
	314-40-9	0.1	M							58		815	2				421
ENE	108-86-1	0.008	I			0.06	I			268	X	445	1,2	12954	14866	X	156.1
ROMETHANE	74-97-5	0.01	M			0.04	X			27	X	16700	4	[13100] 13007	[15000] 14942	X	68
OROMETHANE	75-27-4	0.02	I	0.062	I			0.000037	C	93	X	4500	6	[13100] 12984	[15000] 14910	X	87
ANE	74-83-9	0.0014	I			0.005	I			170	X	17500	2	[13100] 13039	[15000] 14981	X	4
	1689-84-5	[0.02] 0.015	[I] O	0.103	O					300		130	2				329
OCTANOATE	1689-99-2	[0.02] 0.015	[I] O	0.103	O					18,000		0.08	12				414
,3-	106-99-0			[3.4] 0.6	C	0.002	I	0.00003	I	120	X	735	1	[13200] 13115	[15000] 15041	X	-4.5
IOL, N-	71-36-3	0.1	I							3.2	X	74000	1	[13000] 12998	[14900] 14930	X	118
	2008-41-5	0.05	I							540	X	45	2	[13200] 13430	[15200] 15519	X	138
NE, N-	104-51-8	0.05	P							2,500	X	15	1,6,7	[13100] 12943	[15100] 14851	X	183
NE, SEC-	135-98-8	0.1	X							890	X	17	1,6,7	[13100] 12983	[15000] 14910	X	174
NE, TERT-	98-06-6	0.1	X							680	X	30	1,6,7	[13100] 12979	[15000] 14904	X	169
PHTHALATE	85-68-7	0.2	I	0.0019	P					34000		2.69	4,5,6			X	370
	133-06-2	0.13	I	0.0023	C			0.00000066	C	200		0.5	4				259
	63-25-2	0.1	I							190		120	2,4,5				315
	86-74-8			0.02	H					2,500		1.2	1,5,6				355
I	1563-66-2	0.005	I							43		700	2				311
ILFIDE	75-15-0	0.1	I			0.7	I			300	X	2100	1,2,3	[13100] 13022	[15100] 14961	X	46
RACHLORIDE	56-23-5	0.004	I	0.07	I	0.1	I	0.000006	I	160	X	795	1,2,3	[13100] 13117	[15000] 15083	X	77
	5234-68-4	0.1	I							260		170	5,6,8				407
I	133-90-4	0.015	I							20		700	2				210
	57-74-9	0.0005	I	0.35	I	0.0007	I	0.0001	I	98000		0.056	4,5,7				351

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IFLUOROETHANE, 1-	75-68-3					50	I			22	X	1400	4	[13100] 13117	[15000] 15041	X	-9
OPENE, 3- (ALLYL	107-05-1			0.021	C	0.001	I	0.000006	C	48	X	3300	1,3,5,7,10	[13100] 13142	[15000] 15116	X	45
ALDEHYDE	107-20-0			[0.3] 0.27	X					3.2	X	1000000	9	[13000] 13004	[14900] 14938	X	85
OPHENONE, 2-	532-27-4					0.00003	I			76		1100	3				247
NE, P-	106-47-8	0.004	I	0.2	P					460	X	3900	1	13139	15127		232
ENE	108-90-7	0.02	I			0.05	P			200	X	490	3	[13100] 12992	[15000] 14922	X	132
ILATE	510-15-6	0.02	I	0.11	C			0.000031	C	2600		13	4				415
NE, 1-	109-69-3	0.04	P							580	X	680	1,2,3,4	[13200] 13007	[15000] 14942	X	79
OMOMETHANE	124-48-1	0.02	I	0.084	I			[0.000027]	[C]	83	X	4200	4,6,7,9	[13100] 12973	[15100] 14895	X	116
JOROMETHANE	75-45-6					50	I			59	X	2899	4	[13200] 13141	[15000] 15113	X	-41
NE	75-00-3	[0.4]	[N]	[0.0029]	[N]	10	I			42	X	5700	1	[13100] 13101	[15000] 15038	X	12
A	67-66-3	0.01	I	[0.019] 0.031	C	[0.098] 0.3	[D] C	0.000023	I	56	X	8000	1,2,3	[13100] 13044	[15000] 14988	X	61
ITHALENE, 2-	91-58-7	0.08	I							8500	X	11.7	1	19021	23532		256
OBENZENE, P-	100-00-5	[0.001] 0.0007	P	[0.0063] 0.06	P	[0.0006] 0.002	P			480	X	220	1	13190	15196		242
IOL, 2-	95-57-8	0.005	I							400	X	24000	1,3,4	[12900] 13053	[14900] 15009	X	175
IE	126-99-8	0.02	H			0.02	I	0.0003	I	50	X	1736	9	[13100] 13116	[15000] 15075	X	59
PANE, 2-	75-29-6					[0.1] 0.1001	H			260	X	3100	1,3,5	[13200] 13065	[15000] 15002	X	47
ONIL	1897-45-6	0.015	I	[0.0031] 0.017	C			[0.00000089]	[C]	980		0.6	2				350
IENE, O-	95-49-8	0.02	I							760	X	422	1,4,5	[13100] 12941	[15000] 14848	X	159
IENE, P-	106-43-4	0.02	X							375	X	106	12	[13000] 12961	[14900] 14877	X	162
OS	2921-88-2	0.001	D							4600		1.12	2,4,6,7				377

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Table 5 – Physical and Toxicological Properties
A. Organic Regulated Substances

ılated Substance	CAS	RfDo (mg/kg-d)		CSFo (mg/kg-d)$^{-1}$		RfCi (mg/m^3)		IUR (µg/m^3)$^{-1}$		Koc	VOC?	Aqueous Sol (mg/L)	Aqueous Sol Reference[1]	TF Vol from Surface Soil	TF Vol from SubSurface Soil	Organic Liquid	Boiling Point (degrees C)
RON	64902-72-3	[0.05] 0.02	[I] O							11		192	2,5,6,8,9				531
ꞁIMETHYL (DACTHAL)	1861-32-1	0.01	I							6,500		0.5	2,5,7				360
	218-01-9			0.12	C			0.000011	C	490000		0.0019	1				448
	1319-77-3	0.1	D			0.06	C			25	X	20000	2	[13000] 12976	[14900] 14899	X	139
TRO-O-, 4,6-	534-52-1	[0.0001] 0.00008	[P] X							257	X	150	4	13025	14970		312
ΛETHYLPHENOL, 2-)	95-48-7	0.05	I							22	X	2500	3,5,6	[13000] 12974	[14900] 14896		191
IETHYLPHENOL, 3-)	108-39-4	0.05	I							35		2500	2			X	202
ETHYLPHENOL, 4-)	106-44-5	0.005	H							49		22000	6				202
ⱶLORO-M-	59-50-7	0.1	X							780		3846	2				235
:HYDE	4170-30-3	0.001	S^2	1.9	S^2					5.6	X	180000	3	[13000] 12998	[14900] 14931	X	104
:HYDE, TRANS-	123-73-9	0.001	P	1.9	H					6.1	X	158000	1	[13100] 13006	[15100] 14940	X	104
PROPYL BENZENE)	98-82-8	0.1	I			0.4	I			2800	X	50	1,5,6	[13100] 12940	[15100] 14846	X	152
	21725-46-2	0.002	[M] H	0.84	H					199		171	2,5				369
IE	110-82-7					6	I			479	X	55	1,2,4,5,6	[13100] 13140	[15100] 15112	X	81
IONE	108-94-1	5	I			0.7	P			66	X	36500	1,2,4,5	[13000] 12949	[14900] 14858	X	157
	68359-37-5	0.025	I							130,000		0.001	2				448
	66215-27-8	[0.0075] 0.5	[I] O							1,200		11000	12				222
	72-54-8	0.003	X	0.24	I			0.000069	C	44000		0.16	5,6,7				350
	72-55-9	0.0003	X	0.34	I			0.000097	C	87000		0.04	5				348
	50-29-3	0.0005	I	0.34	I			0.000097	I	240000		0.0055	5,6,7				260
XYL)ADIPATE	103-23-1	0.6	I	0.0012	I					47,000,000		200	5			X	214
	2303-16-4			0.061	H					190		40	2,4,6,8			X	328
ꞁENE, 2,4-	95-80-7			4	C			0.0011	C	36		7470	4				292
	333-41-5	0.0007	D							500		50	2,4,6,8			X	306
ANTHRACENE	53-70-3			4.1	C			0.0012	C	1800000		0.0006	1,5,6				524

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ꞩources:
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Appendix A
Table 5 – Physical and Toxicological Properties
A. Organic Regulated Substances

lated Substance	CAS	RfDo (mg/kg-d)		CSFo (mg/kg-d)$^{-1}$		RfCI (mg/m^3)		IUR (µg/m^3)$^{-1}$		Koc	VOC?	Aqueous Sol (mg/L)	Aqueous Sol Reference[1]	TF Vol from Surface Soil	TF Vol from SubSurface Soil	Organic Liquid	Boiling Point (degrees C)
AN	132-64-9	0.001	X							10233	X	4.48	1,6,7,9	23885	31445		287
HLOROPROPANE, 1,2-	96-12-8	0.0002	P	0.8	P	0.0002	I	0.006	P	140	X	1000	4	[13000] 12946	[15000] 14856	X	196
ZENE, 1,4-	106-37-6	0.01	I							1,600		20	1				220
ANE, 1,2- (ETHYLENE	106-93-4	0.009	I	2	I	0.009	I	0.0006	I	54	X	4150	1,2,3,5	[13100] 12972	[15100] 14893	X	131
HANE	74-95-3	0.01	H			0.004	X			110	X	11400	1	[13100] 12948	[15100] 14868	X	96
HALATE, N-	84-74-2	0.1	I							1600		400	1,2,3			X	340
	1918-00-9	0.03	I							0.27		5600	4,5,6,8,10				329
ETIC ACID	76-43-6	0.004	I	0.05	I					8.1	X	1000000	1	[12900] 12994	[14900] 14924	X	194
BUTENE, 1,4-	764-41-0							0.0042	P	180	X	850	9	[13100] 12943	[15000] 14851	X	156
BUTENE, TRANS-1,4-	110-57-6							0.0042	[S]P	215	X	850	9	[12900] 12940	[14800] 14847	X	155
NZENE, 1,2-	95-50-1	0.09	I			0.2	H			350	X	147	1,4,5,6,7	[13100] 12946	[15100] 14855	X	180
NZENE, 1,3-	541-73-1	0.09	M							360	X	106	1	[13100] 12942	[15100] 14849	X	173
NZENE, P-	106-46-7	0.07	D	0.0054	C	0.8	I	0.000011	C	510	X	82.9	1	[12900] 12943	[14900] 14850		174
NZIDINE, 3,3'-	91-94-1			0.45	I			0.00034	C	22000		3.11	4,5,6				368
LUOROMETHANE	75-71-8	0.2	I			0.1	X			360	X	280	1	[13200] 13115	[15000] 15041	X	-30
HANE, 1,1-	75-34-3	0.2	P	0.0057	C	0.5	H	0.0000016	C	52	X	5000	2	[13100] 13051	[15000] 14998	X	57
HANE, 1,2-	107-06-2	0.006	X	0.091	I	0.007	P	0.000026	I	38	X	8412	1,2,3,4	[13100] 13010	[15000] 14945	X	83
HYLENE, 1,1-	75-35-4	0.05	I			0.2	I			65	X	2500	1,4,5	[13100] 13145	[15000] 15119	X	32
HYLENE, CIS-1,2-	156-59-2	0.002	I							49	X	3500	1	[13100] 13037	[15000] 14979	X	60
HYLENE, TRANS-1,2-	156-60-5	0.02	I			[0.06]	[P]			47	X	6300	1	[13100] 13053	15000	X	48
THANE (METHYLENE	75-09-2	0.006	I	0.002	I	0.6	I	0.00000001	I	16	X	20000	1,2,3	[13100] 13071	[15000] 15023	X	40
ENOL, 2,4-	120-83-2	0.003	I							160		4500	1				210

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lated Substance	CAS	RfDo (mg/kg-d)		CSFo (mg/kg-d)$^{-1}$		RfCl (mg/m^3)		IUR (µg/m^3)$^{-1}$		Koc	VOC?	Aqueous Sol (mg/L)	Aqueous Sol Reference[1]	TF Vol from Surface Soil	TF Vol from SubSurface Soil	Organic Liquid	Boiling Point (degrees C)
ENOXYACETIC ACID, 2,4-	94-75-7	0.01	I							59		677	4,5,6,7,10				215
OPANE, 1,2-	78-87-5	[0.09] 0.04	[D] P	[0.036] 0.037	[C] P	0.004	I	[0.00001] 0.0037	[C]P	47	X	2700	1,3,4	[13100] 13016	[15000] 14954	X	96
OPENE, 1,3-	542-75-6	0.03	I	0.1	I	0.02	I	0.000004	I	27	X	2700	6	[13100] 13038	[15000] 14981	X	108
OPIONIC ACID, 2,2-	75-99-0	0.03	I							62	X	500000	5	[13000] 12949	[14900] 14860	X	190
	62-73-7	0.0005	I	0.29	I	0.0005	I	0.000083	C	50		10000	2,4,5			X	234
TADIENE	77-73-6	0.008	P			0.0003	X			810	X	40	5	[13000] 12957	[14900] 14870		167
	60-57-1	0.00005	I	16	I			0.0046	I	11000		0.17	4,5,6				385
MINE	111-42-2	0.002	P			0.0002	P			4		1000000	2,3,9			X	269
HALATE	84-66-2	0.8	I							81		1080	4,5,6			X	298
RON	35367-38-5	0.02	I							1,000		0.2	2				201
METHYLPHOSPHONATE	1445-75-6	0.08	I							10	X	160000	9	[13000] 12978	[14900] 14903	X	190
	60-51-5	[0.0002] 0.0022	[I] O							110		25000	4				361
ENZIDINE, 3,3-	119-90-4			1.6	P					1,300		60	9				331
	70-38-2	0.3	M							27,000		0.036	13				353
NOAZOBENZENE, P-	60-11-7			4.6	C			0.0013	C	1000		13.6	7				335
LINE, N,N-	121-69-7	0.002	I	0.027	P					180	X	1200	5,6,7,9	[13000] 12944	[14900] 14852	X	192
ZIDINE, 3,3-	119-93-7			11	P					22,000		1300	10				300
THYLPHOSPHONATE	756-79-6	0.06	P	0.0017	P					5	X	1000000	14	[13000] 12998	[14900] 14930	X	181
ENOL, 2,4-	105-67-9	0.02	I							130		7869	1,4,6,7			X	211
ENE, 1,3-	99-65-0	0.0001	I							150		523	3,5,6,7				291
IOL, 2,4-	51-28-5	0.002	I							0.79		5600	2,4,5,6,7				332
ENE, 2,4-	121-14-2	0.002	I	0.31	C			0.000089	C	51		270	4,5,6				300
ENE, 2,6- (2,6-DNT)	606-20-2	0.0003	X	1.5	P					74		200	6				300
	88-85-7	0.001	I							120		50	5				223
	123-91-1	0.03	I	0.1	I	[0.11] 0.03	[D] I	[0.0000077] 0.000005	[C]I	7.8	X	1000000	5	[13000] 12996	[14900] 14928	X	101
	957-51-7	0.03	I							200		260	5				210

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lated Substance	CAS	RfDo (mg/kg-d)		CSFo (mg/kg-d)-1		RfCi (mg/m3)		IUR (µg/m3)-1		Koc	VOC?	Aqueous Sol (mg/L)	Aqueous Sol Reference[1]	TF Vol from Surface Soil	TF Vol from SubSurface Soil	Organic Liquid	Boiling Point (degrees C)
NE	122-39-4	[0.025] 0.1	[I] O							190		300	3				302
RAZINE, 1,2-	122-66-7			0.8	I			0.00022	I	660	X	0.252	6	13375	15446		309
	85-00-7	0.0022	I							2.6		700000	5				355
	298-04-4	0.00004	I							1000		25	4,5,6			X	332
	505-29-3	0.01	I							22.7	X	3000	15	[13000] 12976	[14900] 14899		199
	330-54-1	0.002	I							300		42	2,4,5				354
	115-29-7	0.006	I							2,000		0.48	4				401
I (ALPHA)	959-98-8	0.006	S3							2000		0.5	6				401
II (BETA)	33213-65-9	0.006	S3							2300		0.45	6				390
SULFATE	1031-07-8	0.006	S3							2300		0.117	7,9				409
	145-73-3	0.02	I							120		100000	2				350
	72-20-8	0.0003	I							11000		0.23	4,6,7,9				245
YDRIN	106-89-8	0.006	P	0.0099	I	0.001	I	0.0000012	I	35	X	65800	1,3,4	[13000] 12972	[14900] 14893	X	118
	16672-87-0	0.005	I							2		1240000	12				201
	563-12-2	0.0005	I							8700		0.85	4,6,9,10			X	415
NOL, 2- (EGEE)	110-80-5	0.09	P			0.2	I			12	X	1000000	2	[13200] 13100	[15000] 15040	X	136
TE	141-78-6	0.9	I			0.07	P			59	X	80800	1,2,3,4,5,6	[13100] 12963	[15000] 14881	X	77
ATE	140-88-5	0.005	P	0.048	H	0.008	P			110	X	15000	1,2,6	[13100] 12951	[15100] 14863	X	100
NE	100-41-4	0.1	I	0.011	C	1	I	0.0000025	C	220	X	161	1,3,4	[13100] 13004	15000	X	136
PYLTHIOCARBAMATE, S-	759-94-4	[0.025] 0.05	[I]O							240	X	365	2	[12900] 13056	[14900] 15014	X	127
	60-29-7	0.2	I							68	X	60400	1	[13100] 12982	[15100] 14908	X	35
CRYLATE	97-63-2	0.09	H			0.3	P			22	X	4635.5	9,10	[13100] 12991	[15000] 14921	X	117
LORHYDRIN	107-07-3	0.02	P							1	X	1000000	9	[13000] 13006	[14900] 14941	X	128
YCOL	107-21-1	2	I			0.4	C			4.4	X	1000000	2	[13100] 13004	[15100] 14938	X	198
IOUREA (ETU)	96-45-7	0.00008	I	0.045	C			0.000013	C	0.23		20000	2				347

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lated Substance	CAS	RfDo (mg/kg-d)		CSFo (mg/kg-d)-1		RfCl (mg/m3)		IUR (µg/m3)-1		Koc	VOC?	Aqueous Sol (mg/L)	Aqueous Sol Reference1	TF Vol from Surface Soil	TF Vol from SubSurface Soil	Organic Liquid	Boiling Point (degrees C)
OPHENYL PHORO	2104-64-5	0.00001	I							1,200		3.1	4				215
	22224-92-6	0.00025	I							300		329	2				390
E (PYDRIN)	51630-58-1	0.025	I							4,400		0.085	5			X	300
N	2164-17-2	0.013	I							68		97.5	2,5,6,8				318
NE	206-44-0	0.04	I							49000		0.26	1,5,6				375
	86-73-7	0.04	I							7900	X	1.9	1	20165	25294		298
HLOROMETHANE	75-69-4	0.3	I			0.7	H			130	X	1090	1,4,5,6	[13100] 13107	[15000] 15060	X	24
	944-22-9	0.002	I							1100		13	5,6,8			X	324
'DE	50-00-0	0.2	I	0.021	C	[0.0098] 0.009	[D] C	0.000013	I	3.6	X	55000	1	[13100] 13046	[15100] 14990	X	-21
	64-18-6	0.9	P			0.0003	X			0.54	X	1000000	2	[13000] 12940	[14900] 14846	X	101
	39148-24-8	[3] 2.5	[I] O							310		120000	2				464
	110-00-9	0.001	I							130	X	10000	1	[13100] 13019	[15000] 14956	X	31
	98-01-1	0.003	I	0.0349	O	0.05	H			6.3	X	91000	1,2,3	[13000] 12998	[14900] 14930	X	162
	1071-83-6	0.1	I							3500		12000	1,5,6				417
	76-44-8	0.0005	I	4.5	I			0.0013	I	6800		0.18	4,6,7				310
EPOXIDE	1024-57-3	0.000013	I	9.1	I			0.0026	I	21000		0.311	4,6,7,9				341
BENZENE	118-74-1	0.0008	I	1.6	I			0.00046	I	3800		0.006	1,4,5				319
BUTADIENE	87-68-3	0.001	P	0.078	I			0.000022	I	4700		2.89	4,5,6,7			X	215
CYCLOPENTADIENE	77-47-4	0.006	I			0.0002	I			7200		1.8	5,6,7			X	239
ETHANE	67-72-1	0.0007	I	0.04	I	0.03	I	[0.00001] 0.000011	C	2200	X	50	1	[13000] 14825	[15000] 17421		187
	110-54-3	0.06	H			0.7	I			3600	X	9.5	1,5,6	[13100] 13105	[15000] 15066	X	69
	51235-04-2	0.033	I							41		330000	1,2				408
((SAVEY)	78587-05-0	0.025	I							6,500		0.5	2				539
	2691-41-0	0.05	I							4		5	16				436
YDRAZINE SULFATE	302-01-2			3	I	0.00003	P	0.0049	I	0.0053	X	1000000	2	[13000] 13026	[15000] 14966	X	114
NE	123-31-9	0.04	P	0.06	P					10		70000	2,3,5				285

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lated Substance	CAS	RfDo (mg/kg-d)		CSFo $(mg/kg\text{-}d)^{-1}$		RfCi (mg/m^3)		IUR $(\mu g/m^3)^{-1}$		Koc	VOC?	Aqueous Sol (mg/L)	Aqueous Sol Reference[1]	TF Vol from Surface Soil	TF Vol from SubSurface Soil	Organic Liquid	Boiling Point (degrees C)
CD]PYRENE	193-39-5			1.2	C			0.00011	C	31000000		0.082	5				536
	36734-19-7	0.04	I	0.0439	O					1.100		13	2				545
OHOL	78-83-1	0.3	I							60	X	81000	1,2,3,4,5	[13000] 12954	[14900] 14866	X	108
	78-59-1	0.2	I	0.00095	I	2	C			31		12000	2,4,5			X	215
ETHYLPHOSPHONATE	1832-54-8	0.1	I							1.84		50000	13			X	230
	143-50-0	0.0003	I	10	I			0.0046	C	55000		7.6	4				350
	121-75-5	0.02	I							1300		143	4			X	351
AZIDE	123-33-1	0.5	I							2.8		6000	4				260
	12427-38-2	0.005	I	0.0601	O					1		23	9,13				351
IDE	78-48-8	[0.00003] ~~0.001~~ 0.0005	[I] O D							53,000		2.3	8,10,12			X	392
NITRILE	126-98-7	0.0001	I			0.03	P			21	X	25700	1	[13100] 12994	[15100] 14925	X	90
HOS	10265-92-6	0.00005	I							5		2000000	5				223
	67-56-1	[0.5] 2	I			[4] 20	[C] I			2.8	X	1000000	2	[13100] 13025	[15100] 14964	X	65
	16752-77-5	0.025	I							20		58000	2				228
OR	72-43-5	0.005	I							63000		0.045	4,5,6				346
ANOL, 2-	109-86-4	0.005	P			0.02	I			1	X	1000000	2	[13100] 13141	[15000] 15116	X	124
ATE	79-20-9	1	[H] X							30	X	243500	4,5,6	[13100] 12982	[15100] 14908	X	57
LATE	96-33-3	0.03	H			0.02	P			55	X	52000	1,2,5	[13100] 12971	[15100] 14892	X	70
RIDE	74-87-3			0.013	H	0.09	I	0.0000018	H	6	X	6180	1,2,3,4	[13200] 13103	[15000] 15038	X	-24
L KETONE	78-93-3	0.6	I			5	I			32	X	275000	1,2,3,4,5	[13100] 12974	[15100] 14897	X	80
AZINE	60-34-4	0.001	P			0.00002	X	0.001	X	1	X	1000000	2	[1300] 13011	[14900] 14947	X	88
UTYL KETONE	108-10-1	0.08	H			3	I			17	X	19550	1,2,4,5	[13100] 12983	[15100] 14910	X	117
YANATE	624-83-9					0.001	C			10	X	100000	7	[13000] 13021	[15000] 14959	X	40

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TYL KETONE (2-	591-78-6	0.005	I			0.03	I			54	X	17500	1	[13100] 12955	[15100] 14868	X	128
·ACRYLATE	80-62-6	1.4	I			0.7	I			10	X	15600	1	[13100] 13001	[15100] 14934	X	100
·ANESULFONATE	66-27-3			0.099	C			0.000028	C	5.2		200000	2			X	203
·THION	298-00-0	0.00025	I							790		25	4,5,6				348
·ENE (MIXED ISOMERS)	25013-15-4	0.006	H			0.04	H			2,200	X	89	9	[13100] 12945	[15000] 14853	X	163
·-BUTYL ETHER (MTBE)	1634-04-4			0.0018	C	3	I	0.00000026	C	12	X	45000	1,2,4,6	[13100] 13014	[15100] 14950	X	55
·ROPHENOXYACETIC	94-74-6	0.0005	I							112		1000	5,6,8,9				287
·IS(2-CHLOROANILINE),	101-14-4	0.002	P	0.1	P			0.00043	C	3,000		13.9	10				379
·THALENE, 2-	91-57-6	0.004	I			0.003	S^{4}			16000	X	25	1	12955	14870		241
·ENE, ALPHA	98-83-9	0.07	H							660	X	560	9	[13100] 12942	[15100] 14850	X	165
·R	51218-45-2	0.15	I							182	X	530	1,5	[13000] 13035	[15000] 14985	X	100
	21087-64-9	0.025	I							95		1200	1,5				367
	7786-34-7	0.000025	O							44	X	600000	6	12947	14856		
·OACETIC ACID	79-11-8	0.002	H							0.24	X	858000	17	[13000] 13008	[14900] 14943		189
·E	91-20-3	0.02	I	0.12	C	0.003	I	0.000034	C	950	X	30	3	13284	15323		218
·INE, 1-	134-32-7			1.8	[S]^{5} C			[0.00051]	[S]	3200	X	1690	2	15517	18386		301
·INE, 2-	91-59-8			1.8	C			[0.00051]	[C]	87		6.4	6				306
·E	15299-99-7	[0.1] 0.12	[I] O							880		70	2				399
·, O-	88-74-4	0.01	X			0.00005	X			27	X	1200	6	12967	14886		284
·, P-	100-01-6	0.004	P	0.02	P	0.006	P			15		800	2				332
·IE	98-95-3	0.002	I			0.009	I	0.00004	I	130	X	2000	2	12940	14847	X	211
·INE	556-88-7	0.1	I							0.13		4400	9				231
·L, 2-	88-75-5	0.008	S^{6}							37	X	2100	1,2,3,4,5,6	12966	14884		215
·L, 4-	100-02-7	0.008	[N] M							230	X	16000	2	12960	14878		279

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ılated Substance	CAS	RfDo (mg/kg-d)		CSFo (mg/kg-d)$^{-1}$		RfCi (mg/m^{3})		IUR (μg/m^{3})$^{-1}$		Koc	VOC?	Aqueous Sol (mg/L)	Aqueous Sol Reference[1]	TF Vol from Surface Soil	TF Vol from SubSurface Soil	Organic Liquid	Boiling Point (degrees C)
NE, 2-	79-46-9					0.02	I	0.0027	H	20	X	16700	1,3,4,5	[13000] 12984	[14900] 14911	X	120
HYLAMINE, N-	55-18-5			150	I			0.043	I	26	X	93000	10	[13000] 12974	[14900] 14896	X	176
ETHYLAMINE, N-	62-75-9	0.000008	P	51	I	0.00004	X	0.014	I	8.5	X	1000000	2	[13000] 13001	[14900] 14934	X	154
I-BUTYLAMINE, N-	924-16-3			5.4	I			0.0016	I	450	X	1200	9, 10, 11	13008	14946	X	235
-PROPYLAMINE, N-	621-64-7			7	I			0.002	C	11	X	9900	6	12986	14914	X	206
IENYLAMINE, N-	86-30-6			0.0049	I			0.0000026	C	580	X	35	1	13148	15140		269
THYLUREA, N-	759-73-9			27	C			0.0077	C	2		13000	9				223
LATE, DI-N-	117-84-0	0.01	P							980000000		3	5			X	234
ATE)	23135-22-0	0.025	I							7.1		280000	2				334
	1910-42-5	0.0045	I							16200		660000	6,8				352
	56-38-2	[0.006] 0.00003	[H] O							2300		20	2,4,5,6,7			X	375
(POLYCHLORINATED AROCLORS)	1336-36-3			2	I			0.0001	I	78100		0.0505	10,13				360
OCLOR)	12674-11-2	0.00007	I	[2]	[S]			[0.00057]	[S]	110000		0.25	5			X	325
ROCLOR)}	{11104-28-2}			{2}	{S}^{7}			[0.00057] 0.0001	{S}^{7}	{1900}	X	{0.59}	{5}	13810	16032	{X}	{275}
ROCLOR)}	{11141-16-5}			{2}	{S}^{7}			[0.00057] 0.0001	{S}^{7}	{1500}		{1.45}	{7}			{X}	{290}
ROCLOR)}	{53469-21-9}			{2}	{S}^{7}			[0.00057] 0.0001	{S}^{7}	{48000}		{0.1}	{5}			{X}	{325}
ROCLOR)}	{12672-29-6}			{2}	{S}^{7}			[0.00057] 0.0001	{S}^{7}	{190000}		{0.054}	{7,9,11}			{X}	{340}
OCLOR)	11097-69-1	0.00002	I	[2]	[S]			[0.00057]	[S]	810000		0.057	5			X	365
ROCLOR)}	{11096-82-5}			{2}	{S}^{7}			[0.00057] 0.0001	{S}^{7}	{1800000}		{0.08}	{5}				{385}
	1114-71-2	0.05	H							630		92	5			X	303
OBENZENE	608-93-5	0.0008	I							32000		0.74	1,5,6,7				277
OETHANE	76-01-7			0.09	P					1905	X	480	1,3	[13100] 13120	[15100] 15102	X	160
ONITROBENZENE	82-68-8	0.003	I	0.26	H					7900		0.44	4,6,8				328
OPHENOL	87-86-5	0.005	I	0.4	I			[0.0000046] 0.0000051	C	20000		14	1,2,4,5				310

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ıUTANE SULFONATE	375-73-5	~~0.02~~0.0003	P							61.7		56600	9			X	211
ːCTANE SULFONATE	1763-23-1	0.00002	M	0.07	M					2.57		680	19,20,21,22,23				258
ːCTANOIC ACID (PFOA)	335-67-1	0.00002	M							2.06		9500	24				192
	62-44-2			0.0022	C			0.00000063	C	110		763	2,3,9				341
ːNE	85-01-8	0.3	S^{8}							38000	X	1.1	1,4,5	41808	70721		341
	108-95-2	0.3	I			0.2	C			22	X	84300	1,2,3,4	[13000] 12977	[14900] 14901		182
ːAPTAN	108-98-5	0.001	P							562	X	653	5,9	[13000] 13039	[15000] 14989	X	170
ıAMINE, M-	108-45-2	0.008	I							12		351000	3				286
OL, 2-	90-43-7			[0.0019] 0.00194	H					5,700		700	5				280
	298-02-2	0.0002	[H] O							810		50	2			X	319
HYDRIDE	85-44-9	2	I			0.02	C			79	X	6170	2	13018	14956		285
	1918-02-1	0.07	I							15		430	2				373
INATED BIPHENYLS (PCBS)]	[1336-36-3]			[2]	[I]			[0.00057]	[I]			[0.0505]	[10,13]				[360]
	1610-18-0	0.015	I							346		750	2,5				347
	23950-58-5	0.075	I							200		15	2				321
ƛ	1918-16-7	0.013	I							139	X			12952	14865		110
	709-98-8	0.005	I							160		225	2				355
- (ISOPROPYL ALCOHOL)	67-63-0	2	P			0.2	P			25	X	1000000	2	[13000] 12981	[14900] 14906	X	82
	139-40-2	0.02	I							155		8.6	1,5			X	318
	122-42-9	0.02	I							51		250	5				257
ENE, N-	103-65-1	0.1	X			1	X			720	X	52	6	[13100] 12971	[15100] 14891	X	159
ːXIDE	75-56-9	0.001	O	0.24	I	0.03	I	0.0000037	I	25	X	405000	1	[13100] 13239	[15000] 15057	X	34
	129-00-0	0.03	I							68000		0.132	1				393
	8003-34-7	0.044	O							5.62	X	0.35	13			X	170
	110-86-1	0.001	I							0.0066	X	1000000	2	[13100] 13142	[15000] 15114	X	115
	91-22-5			3	I					1,300		60000	1,3,5			X	238

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(ASSURE)	76578-14-8	0.009	I							580		0.3	2				220
	121-82-4	[0.003] 0.004	I	[0.11] 0.08	I					70		59.9	1,9				353
	108-46-3	2	TE							2		717000					280
	299-84-3	0.05	H							580		40	2				349
	122-34-9	0.005	I	0.12	H					110		5	5				225
	57-24-9	0.0003	I							280		143	5				270
	100-42-5	0.2	I			1	I			910	X	300	5	[13100] 12942	[15100] 14850	X	145
N	34014-18-1	0.07	I							620		2500	2				394
	5902-51-2	0.013	I							53		710	2				398
	13071-79-9	0.000025	H							510		5	6			X	332
OBENZENE, 1,2,4,5-	95-94-3	0.0003	I							1,800		0.583	1,5,6,7				245
ODIBENZO-P-DIOXIN,)	1746-01-6	0.0000000007	[D] I	130000	C	0.00000004	C	38	C	4300000		0.0000193	6				412
OETHANE, 1,1,1,2-	630-20-6	0.03	I	0.026	I			0.0000074	I	980	X	1100	1	[13000] 12990	[14600] 14921	X	131
OETHANE, 1,1,2,2-	79-34-5	0.02	I	0.2	I			0.000058	I	79	X	2860	2	[13100] 12957	[15100] 14871	X	147
OETHYLENE (PCE)	127-18-4	0.006	I	0.0021	I	0.04	I	0.00000026	I	300	X	162	1,2,3,4,5	[13100] 13017	[15000] 14955	X	121
OPHENOL, 2,3,4,6-	58-90-2	0.03	I							6200		183	6				288
LEAD	78-00-2	0.0000001	I							4900		0.8	5			X	202
DITHIOPYROPHOSPHATE	3689-24-5	0.0005	I							550		25	2			X	349
FURAN	109-99-9	0.9	I	0.0076	[N] I	2	I	0.00000194	[N] I	43	X	300000	1,6,7	[13100] 12970	[15100] 14891	X	66
	39196-18-4	0.0003	H							0.022		5200	9				280
	137-26-8	[0.005] 0.015	[I] O							1000		30	4				339
	108-88-3	0.08	I			5	I			130	X	532.4	1,2,3,4	[13100] 13016	[15000] 14953	X	111
-	108-44-1			0.016	S^9			0.000051	S	140		15030	6			X	203
-	95-53-4			0.016	P			0.000051	C	410		15000	1,3,5			X	200
-	106-49-0	0.004	X	0.03	P					320		7410	1,2,3				200
	8001-35-2	[0.0004] 0.00009	[M] P	1.1	I			0.00032	I	1500		3	2,4,5				432

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	2303-17-5	[0.013] 0.025	[I] O	0.717	O					2,000		4	5			X	343
THANE (BROMOFORM)	75-25-2	0.02	I	0.0079	I			0.0000011	I	130	X	3050	1,2,3,4	[13100] 12942	[15100] 14849	X	149
,2,2-TRIFLUOROETHANE,	76-13-1	30	I			[30] 5	[H] P			1,200	X	170	1	[13100] 13064	[15000] 15014	X	48
CETIC ACID	76-03-9	0.02	I	0.07	I					20	X	1200000	2,3,5,9	13291	15077		196
ENZENE, 1,2,4-	120-82-1	0.01	I	0.029	P	0.002	P			1500	X	44.4	1,4,6,7	13217	15233	X	213
ENZENE, 1,3,5-	108-70-3	0.006	M			0.002	S10			3100	X	5.8	5	15677	18611		208
THANE, 1,1,1-	71-55-6	2	I			5	I			100	X	1495	1,4,5,6	[13100] 13116	[15000] 15082	X	74
THANE, 1,1,2-	79-00-5	0.004	I	0.057	I	0.0002	X	0.000016	I	76	X	4420	1	[13100] 12982	[15100] 14909	X	114
THYLENE (TCE)	79-01-6	0.0005	I	[0.05] 0.046	I	0.002	I	0.000004	I	93	X	1100	1	[13100] 13070	[15000] 15022	X	87
HENOL, 2,4,5-	95-95-4	0.1	I							2400		1000	1,2,4				246
HENOL, 2,4,6-	88-06-2	0.001	P	0.011	I			0.0000031	I	1100		850	1,2,4,5				246
HENOXYACETIC ACID,	93-76-5	0.01	I							43		278	2,4,5				279
HENOXYPROPIONIC ,4,5-TP)(SILVEX)	93-72-1	0.008	I							1700		140	2				353
ROPANE, 1,1,2-	598-77-6	0.005	I							24	X	2700	14	[13100] 13145	[15000] 15119	X	117
ROPANE, 1,2,3-	96-18-4	0.004	I	30	I	0.0003	I			280	X	1896	1,4,6	[13100] 12974	[15100] 14896	X	157
ROPENE, 1,2,3-	96-19-5	0.003	X			0.0003	P			190	X	2700	14	[13100] 13047	[15000] 14992	X	142
NE	121-44-8					0.007	I			51	X	55000	1,4	[13100] 12951	[15100] 14862	X	90
GLYCOL	112-27-6	2	P							6		1000000	12			X	285
	1582-09-8	0.0075	I	0.0077	I					720		4	2,5,6,7				382
NZENE, 1,3,4- ENZENE, 1,2,4-)	95-63-6	0.01	I			[0.007] 0.06	[P] I			2,200	X	56	1	[13100] 12978	[15000] 14904	X	169
NZENE, 1,3,5-	108-67-8	0.01	[X] I			0.06	I			660	X	48.9	1	[13100] 12961	[15100] 14876	X	165
CEROL RIN)	55-63-0	0.0001	P	0.017	P					116	X	1800	2,3,5	[13000] 12941	[15000] 14848	X	190
UENE, 2,4,6-	118-96-7	0.0005	I	0.03	I					1		100	2				240

[1]Aqueous solubility references are keyed to the numbered list found at §250.304(f). Where there are multiple sources cited. The table value is the median of the values in the individual references.

Sources:
EPA [Cancer [N = EPA NCEA Provisional Values] O =
r] EPA Office of Pesticide Programs Human
Health Benchmarks for Pesticides
imal Risk Level P = EPA Provisional Peer-Reviewed Toxicity Value
cts Assessment ~~S = surrogate~~
(HEAST)
isk information [T = TEF]

ng Water TE = TERA ITER Peer-Reviewed Value
d Health X = EPA Provisional Peer-Reviewed Toxicity
Value Appendix

S^1 Acenaphthene surrogate
S^2 Trans-Crotonaldehyde surrogate
S^3 Endosulfan surrogate
S^4 Naphthalene surrogate
S^5 2-Naphthylamine surrogate
S^6 4-Nitrophenol surrogate
S^7 Total PCBS surrogate
S^8 Anthracene surrogate
S^9 O-Toluidine surrogate
S^{10} 1,2,4-Trichlorobenzene surrogate

Appendix A
Table 5 – Physical and Toxicological Properties
A. Organic Regulated Substances

lated Substance	CAS	RfDo (mg/kg-d)		CSFo $(mg/kg\text{-}d)^{-1}$		RfCi (mg/m^3)		IUR $(\mu g/m^3)^{-1}$		Koc	VOC?	Aqueous Sol (mg/L)	Aqueous Sol Reference[1]	TF Vol from Surface Soil	TF Vol from SubSurface Soil	Organic Liquid	Boiling Point (degrees C)
TE	108-05-4	1	H			0.2	I			2.8	X	20000	1	[13200] 13017	[15000] 14955	X	73
DE (BROMOETHENE)	593-60-2					0.003	I	0.000032	H	150	X	4180	12	[13100] 13086	[15000] 15043	X	16
IDE	75-01-4	0.003	I	1.5	I	0.1	I	[0.000009] 0.0000088	I	10	X	2700	1	[13200] 13109	[15000] 15040	X	-13
	81-81-2	0.0003	I							910		17	4				356
TAL)	1330-20-7	0.2	I			0.1	I			350	X	175	13	[13100] 12982	[15000] 14909	X	140
	12122-67-7	0.05	I							19		10	4				474

[1] Aqueous solubility references are keyed to the numbered list found at §250.304(f). Where there are multiple sources cited. The table value is the median of the values in the individual references.

ources:
PA [Cancer
r]
imal Risk Level
cts Assessment
(HEAST)
isk information

ng Water
d Health

[N = EPA NCEA Provisional Values] O = EPA Office of Pesticide Programs Human Health Benchmarks for Pesticides
P = EPA Provisional Peer-Reviewed Toxicity Value
~~S = surrogate~~
[T = TEF]

TE = TERA ITER Peer-Reviewed Value
X = EPA Provisional Peer-Reviewed Toxicity Value Appendix

S^{1} Acenaphthene surrogate
S^{2} Trans-Crotonaldehyde surrogate
S^{3} Endosulfan surrogate
S^{4} Naphthalene surrogate
S^{5} 2-Naphthylamine surrogate
S^{6} 4-Nitrophenol surrogate
S^{7} Total PCBS surrogate
S^{8} Anthracene surrogate
S^{9} O-Toluidine surrogate
S^{10} 1,2,4-Trichlorobenzene surrogate

Appendix A
Table 5 – Physical and Toxicological Properties
B. Inorganic Regulated Substances

Regulated Substance	CAS	RfDo (mg/kg-d)		CSFo $(mg/kg-d)^{-1}$		RfCi (mg/m^3)		IUR $(ug/m^3)^{-1}$		Kd
ALUMINUM	7429-90-5	1	P			0.005	P			9.9
ANTIMONY	7440-36-0	0.0004	I							45
ARSENIC	7440-38-2	0.0003	I	1.5	I	0.000015	C	0.0043	I	29
BARIUM AND COMPOUNDS	7440-39-3	0.2	I			0.0005	H			41
BERYLLIUM	7440-41-7	0.002	I			0.00002	I	0.0024	I	790
BORON AND COMPOUNDS	7440-42-8	0.2	I			0.02	H			3
CADMIUM	7440-43-9	0.0005	I			0.00001	D	0.0018	I	75
CHROMIUM III	16065-83-1	1.5	I							1,800,000
CHROMIUM VI	18540-29-9	0.003	I	**[0.42] 0.5**	C	0.000008	I	**[0.084] 0.012**	I	19
COBALT	7440-48-4	0.0003	P			0.000006	P	0.009	P	45
COPPER	7440-50-8	**[0.037] 0.0325**	H							430
CYANIDE, FREE	57-12-5	0.0006	I			0.0008	I			9.9
FLUORIDE	16984-48-8	0.04	C			0.013	C			
IRON	7439-89-6	0.7	P							25
LEAD	7439-92-1			0.0085	C			0.000012	C	900
LITHIUM	7439-93-2	0.002	P							300
MANGANESE	7439-96-5	**[0.047] 0.14**	I			0.00005	I			65
MERCURY	7439-97-6	0.00016	C			0.0003	I			52
MOLYBDENUM	7439-98-7	0.005	I			**0.002**	**D**			20
NICKEL	7440-02-0	0.02	I			0.00009	D	0.00024	Is	65
NITRATE NITROGEN	14797-55-8	1.6	I							
NITRITE NITROGEN	14797-65-0	0.1	I							
PERCHLORATE	7790-98-9	0.0007	I							0
SELENIUM	7782-49-2	0.005	I			0.02	C			5
SILVER	7440-22-4	0.005	I							8.3
STRONTIUM	7440-24-6	**[0.06] 0.6**	I							
THALLIUM	7440-28-0	0.00001	X							71
TIN	7440-31-5	0.6	H							250
VANADIUM	7440-62-2	0.00007	P			0.0001	D			1,000
ZINC	7440-66-6	0.3	I							62

Toxicity Value Sources:
C = California EPA Cancer Potency Factor
D = ATSDR Minimal Risk Level
H = Health Effects Assessment Summary Table (HEAST)
I = Integrated Risk Information System (IRIS)
P = EPA Provisional Peer-Reviewed Toxicity Value
X = EPA Provisional Peer-Reviewed Toxicity Value Appendix
~~**s = surrogate**~~

Appendix A

Table 6 – Threshold of Regulation Compounds

REGULATED SUBSTANCE	*CASRN*	*ALL AQUIFER GROUNDWATER MSC* (μg/L)	*Residential Soil MSC (mg/kg)* *0-15 feet*	*Non-Residential Soil MSCs*		*Soil to Groundwater*[1] *(mg/kg)*
				Surface Soil (mg/kg) *0-2 feet*	*Subsurface Soil (mg/kg)* *2-15 feet*	
ACETIC ACID	64-19-7	5	100	100	100	0.5
ACETIC ANHYDRIDE	108-24-7	5	100	100	100	0.5
AMYL ACETATE, N-	628-63-7	5	100	100	100	0.5
AMYL ACETATE, SEC-	626-38-0	5	100	100	100	0.5
ANTU (ALPHA-NAPHTHYLTHIOUREA)	86-88-4	5	100	100	100	0.5
BHC, DELTA	319-86-8	5	100	100	100	0.5
BROMOPHENYL PHENYL ETHER, 4-	101-55-3	5	100	100	100	0.5
BUTYL ACETATE, N-	123-86-4	5	100	100	100	0.5
BUTYL ACETATE, SEC-	105-46-4	5	100	100	100	0.5
BUTYL ACETATE, TERT-	540-88-5	5	100	100	100	0.5
BUTYLAMINE, N-	109-73-9	5	100	100	100	0.5
CALCIUM CHROMATE	13765-19-0	5	100	100	100	0.5
CALCIUM CYANAMIDE	156-62-7	5	100	100	100	0.5
CARBONYL FLUORIDE	353-50-4	5	100	100	100	0.5
CATECHOL	120-80-9	5	100	100	100	0.5
CHLOROETHYL VINYL ETHER, 2-	110-75-8	5	100	100	100	0.5
CHLOROPHENYL PHENYL ETHER, 4-	7005-72-3	5	100	100	100	0.5
DECABORANE	17702-41-9	5	100	100	100	0.5
DIETHYLAMINE	109-89-7	5	100	100	100	0.5
DIGLYCIDYL ETHER (DGE)	7/5/2238	5	100	100	100	0.5
DIMETHYL PHTHALATE	131-11-3	5	100	100	100	0.5
DIMETHYL SULFATE	77-78-1	5	100	100	100	0.5
DIMETHYLPHENETHYLAMINE, ALPHA, ALPHA-	122-09-8	5	100	100	100	0.5
DIOXATHION	78-34-2	5	100	100	100	0.5
ETHYL METHANESULFONATE	62-50-0	5	100	100	100	0.5
ETHYLAMINE	75-04-7	5	100	100	100	0.5
[ETHYLENE CHLORHYDRIN]	**[107-07-3]**	**[5]**	**[100]**	**[100]**	**[100]**	**[0.5]**
FAMPHUR	52-85-7	5	100	100	100	0.5

Appendix A

Table 6 – Threshold of Regulation Compounds

REGULATED SUBSTANCE	*CASRN*	*ALL AQUIFER GROUNDWATER MSC (µg/L)*	*Residential Soil MSC (mg/kg) 0-15 feet*	*Non-Residential Soil MSCs*		*Soil to Groundwater[1] (mg/kg)*
				Surface Soil (mg/kg) 0-2 feet	*Subsurface Soil (mg/kg) 2-15 feet*	
FENSULFOTHION	115-90-2	5	100	100	100	0.5
HEXACHLOROPROPENE	1888-71-7	5	100	100	100	0.5
IODOMETHANE	74-88-4	5	100	100	100	0.5
ISOAMYL ACETATE	123-92-2	5	100	100	100	0.5
ISOBUTYL ACETATE	110-19-0	5	100	100	100	0.5
ISODRIN	465-73-6	5	100	100	100	0.5
ISOPHORONE DIISOCYANATE	4098-71-9	5	100	100	100	0.5
ISOSAFROLE	120-58-1	5	100	100	100	0.5
LITHIUM HYDRIDE	7580-67-8	5	100	100	100	0.5
MANGANESE CYCLOPENTADIENYL TRICARBONYL	12079-65-1	5	100	100	100	0.5
METHYL ISOAMYL KETONE	110-12-3	5	100	100	100	0.5
METHYL MERCAPTAN	74-93-1	5	100	100	100	0.5
METHYLAMINE	74-89-5	5	100	100	100	0.5
[MEVINPHOS]	**[7786-34-7]**	**[5]**	**[100]**	**[100]**	**[100]**	**[0.5]**
MONOCROTOPHOS	6923-22-4	5	100	100	100	0.5
NAPHTHOQUINONE, 1,4-	130-15-4	5	100	100	100	0.5
NITRIC ACID	7697-37-2	5	100	100	100	0.5
NITROQUINOLINE-1-OXIDE, 4-	56-57-5	5	100	100	100	0.5
OSMIUM TETROXIDE	20816-12-0	5	100	100	100	0.5
PENTABORANE	19624-22-7	5	100	100	100	0.5
PERCHLOROMETHYL MERCAPTAN	594-42-3	5	100	100	100	0.5
PICOLINE, 2-	109-06-8	5	100	100	100	0.5
PROPANOL, 1-	71-23-8	5	100	100	100	0.5
PROPIONIC ACID	79-09-4	5	100	100	100	0.5
PROPIONITRILE (ETHYL CYANIDE)	107-12-0	5	100	100	100	0.5
PROPYLENE IMINE	75-55-8	5	100	100	100	0.5
[PYRETHRUM]	**[8003-34-7]**	**[5]**	**[100]**	**[100]**	**[100]**	**[0.5]**
QUINONE (p-BENZOQUINONE)	106-51-4	5	100	100	100	0.5

Appendix A

Table 6 – Threshold of Regulation Compounds

REGULATED SUBSTANCE	*CASRN*	*ALL AQUIFER GROUNDWATER MSC (µg/L)*	*Residential Soil MSC (mg/kg) 0-15 feet*	*Non-Residential Soil MSCs*		*Soil to Groundwater[1] (mg/kg)*
				Surface Soil (mg/kg) 0-2 feet	*Subsurface Soil (mg/kg) 2-15 feet*	
SELENIUM HEXAFLUORIDE	7783-79-1	5	100	100	100	0.5
SODIUM BISULFITE	7631-90-5	5	100	100	100	0.5
SULFIDE	18496-25-8	5	100	100	100	0.5
SULFUR MONOCHLORIDE	10025-67-9	5	100	100	100	0.5
SULFURIC ACID	7664-93-9	5	100	100	100	0.5
TELLURIUM	13494-80-9	5	100	100	100	0.5
TELLURIUM HEXAFLUORIDE	7783-80-4	5	100	100	100	0.5
TEPP (TETRAETHYL PYROPHOSPHATE)	107-49-3	5	100	100	100	0.5
TETRANITROMETHANE	509-14-8	5	100	100	100	0.5
THIONAZIN	297-97-2	5	100	100	100	0.5
TRIETHYLPHOSPHOROTHIOATE, O,O,O-	126-68-1	5	100	100	100	0.5

[1] The value in the table is 100 time the groundwater MSC.
The option to use the SPLP is also available to calculate the soil to groundwater numeric value (See §250.310)

APPENDIX A

Table 7

DEFAULT VALUES FOR CALCULATING MEDIUM-SPECIFIC CONCENTRATIONS FOR LEAD

{Input Values Used in UBK Model for Lead
(for residential exposure scenario)

Geometric Standard Deviation (GSD)	1.42 (default)	Drinking water intake	Model default
Outdoor air lead concentration	0.2 μg/m³ (default)	Soil lead level	495 μg/g
Indoor air lead concentration (% of outdoor)	30	Indoor dust lead level	495 μg/g
Time spent outdoors	Model default	Soil/dust ingestion weighting factor (%)	45
Ventilation rate	Model default	Paint lead intake	Model default
Lung absorption	Model default	Maternal contribution method	Infant model
Dietary lead intake	Model default	Mother's blood lead at birth	7.5 μg/dL blood (model default)
GI method/bioavailability	Non-linear	Target blood lead level	10 μg/dL blood
Lead concentration in drinking water	4.00 μg/L (default)}		

{Input Values Used in SEGH Equation
(for nonresidential exposure scenario)

Concentration of lead in soil (S)	987 μg/g
Target blood lead level in adults (T)	20 μg/dL blood
Geometric standard deviation of blood lead distribution (G)	1.4
Baseline blood lead level in target population (B)	4 μg/dL blood
Number of standard deviations corresponding to degree of protection required for the target population (n)	1.645 (for 95% of population)
Slope of blood lead to soil lead relationship (δ)	7.5 μg/dL blood per μg/g soil}

{REFERENCE

WIXSON, B.G. (1991). The Society for Environmental Geochemistry and Health (SEGH) Task Force Approach to the Assessment of Lead in Soil. Trace Substances in Environmental Health . 11-20.}

~~Input Values Used in IEUBK Model for Lead~~ ~~(for residential exposure scenario)~~		
~~Parameter~~	~~Value~~	
~~Outdoor Air Pb Concentration (µg/m³)~~	~~Constant Value: 0.1~~	
~~Dietary Lead Intake (µg/day)~~	~~Age (Years)~~	~~Input~~
	~~0-1~~	~~2.26~~
	~~1-2~~	~~1.96~~
	~~2-3~~	~~2.13~~
	~~3-4~~	~~2.04~~
	~~4-5~~	~~1.95~~
	~~5-6~~	~~2.05~~
	~~6-7~~	~~2.22~~
~~Water Consumption (L/day)~~	~~Age (Years)~~	~~Input~~
	~~0-1~~	~~0.2~~
	~~1-2~~	~~0.5~~
	~~2-3~~	~~0.52~~
	~~3-4~~	~~0.53~~
	~~4-5~~	~~0.55~~
	~~5-6~~	~~0.58~~
	~~6-7~~	~~0.59~~
~~Use Alternate Water Value?~~	~~NO~~	
~~Lead concentration in drinking water (µg/L)~~	~~4~~	
~~MEDIA~~	~~ABSORPTION FRACTION PERCENT~~	
~~Soil~~	~~30~~	
~~Dust~~	~~30~~	
~~Water~~	~~50~~	
~~Diet~~	~~50~~	
~~Alternate~~	~~0~~	
~~Calculate PRG~~		
~~Select Age Group for Graph~~	~~0 to 84 months~~	
~~Change Cutoff~~	~~TBD~~	
~~Change GSD~~	~~1.6~~	
~~Probability of Exceeding the Cutoff~~	~~5~~	

~~Input Values Used in the Adult Lead Model (ALM)~~
~~(for non-residential exposure scenario)~~

~~Variable~~	~~Description of Variable~~	~~Units~~	~~Value~~
~~$PbB_{fetal, 0.95}$~~	~~Target PbB in fetus~~	~~µg/dL~~	~~TBD~~
~~$R_{fetal/maternal}$~~	~~Fetal/maternal PbB ratio~~	~~–~~	~~0.9~~
~~BKSF~~	~~Biokinetic Slope Factor~~	~~µg/dL per µg/day~~	~~0.4~~
~~GSD_i~~	~~Geometric standard deviation PbB~~	~~–~~	~~1.8~~
~~PbB_0~~	~~Baseline PbB~~	~~µg/dL~~	~~0.6~~
~~IR_S~~	~~Soil ingestion rate~~	~~g/day~~	~~0.050~~
~~$AF_{S, D}$~~	~~Absorption fraction~~	~~–~~	~~0.12~~
~~$EF_{S, D}$~~	~~Exposure frequency~~	~~days/yr~~	~~219~~
~~$AT_{S, D}$~~	~~Averaging time~~	~~days/yr~~	~~365~~

pennsylvania
DEPARTMENT OF ENVIRONMENTAL
PROTECTION

August 17, 2021

David Sumner
Executive Director
Independent Regulatory Review Commission
333 Market Street, 14th Floor
Harrisburg, PA 17120

Re: Final Rulemaking: Administration of the Land Recycling Program (#7-552 / IRRC # 3251)

Dear Mr. Sumner:

On July 14, 2021, the Environmental Quality Board (Board) delivered the Administration of the Land Recycling Program (#7-552 / IRRC # 3251) final-form rulemaking to the Independent Regulatory Review Commission (IRRC) for review and consideration at IRRC's next scheduled public meeting on September 1, 2021. As a courtesy to IRRC, the Board is withdrawing this rulemaking from IRRC's September 1, 2021 public meeting agenda and resubmitting the final-form rulemaking for consideration at IRRC's September 23, 2021 public meeting.

Pursuant to Section 5.1(a) of the Regulatory Review Act (RRA), please find enclosed the Administration of the Land Recycling Program final-form rulemaking for review by IRRC. The Board adopted this final-form rulemaking at its June 15, 2021, meeting.

The Board adopted the proposed rulemaking at its meeting on November 19, 2019. On February 15, 2020, the proposed rulemaking was published in the *Pennsylvania Bulletin* at 50 Pa.B. 1011 for a 45-day public comment period. The public comment period closed on April 30, 2020. The Department received comments from 128 commentators. The Board provided the Environmental Resources and Energy Committees and IRRC with copies of all comments received in compliance with Section 5(c) of the RRA.

The Department will provide assistance as necessary to facilitate IRRC's review of the enclosed rulemaking under Section 5.1(e) of the Regulatory Review Act.

Please contact me by e-mail at laurgriffi@pa.gov or by telephone at 717.772.3277 if you have any questions or need additional information.

Sincerely,

Laura Griffin
Regulatory Coordinator

Enclosures

0120-FM-PO0011 6/2015

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
POLICY OFFICE

TRANSMITTAL SHEET FOR REGULATIONS SUBJECT TO THE REGULATORY REVIEW ACT

I.D. NUMBER: 7-552

SUBJECT: Administration of the Land Recycling Program

AGENCY: DEPARTMENT OF ENVIRONMENTAL PROTECTION, Environmental Quality Board

TYPE OF REGULATION

☐ Proposed Regulation

☒ Final Regulation

☐ Final Regulation with Notice of Proposed Rulemaking Omitted

☐ 120-day Emergency Certification of the Attorney General

☐ 120-day Emergency Certification of the Governor

☐ Delivery of Tolled Regulation
a. ☐ With Revisions b. ☐ Without Revisions

RECEIVED
AUG 17 2021
Independent Regulatory Review Commission

FILING OF REGULATION

DATE	SIGNATURE	DESIGNATION
8/17/21	Pamela J. Neyard	Majority Chair, HOUSE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY Representative Daryl Metcalfe
08/17/21		Minority Chair, HOUSE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY Representative Greg Vitali
8/17/21	electronic submittal	Majority Chair, SENATE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY Senator Gene Yaw
8/17/21	electronic submittal	Minority Chair, SENATE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY Senator Carolyn Comitta
8/17/21		INDEPENDENT REGULATORY REVIEW COMMISSION David Sumner
		ATTORNEY GENERAL (for Final Omitted only)
		LEGISLATIVE REFERENCE BUREAU (for Proposed only)

Griffin, Laura

From: Eyster, Emily <Emily.Eyster@pasenate.com>
Sent: Tuesday, August 17, 2021 10:08 AM
To: Griffin, Laura
Cc: Shirley, Jessica; Reiley, Robert A.; Kauffman, Gregory; Hartman, Michael; Fuller, Lisa
Subject: Re: Redelivery of Final Rulemaking - Administration of the Land Recycling Program (7-552)

Received. Thank you Laura!

Emily Eyster
Legislative Director, Office of Senator Carolyn T. Comitta
Executive Director, Environmental Resources and Energy Committee
Cell: (717) 756-4702
Phone: (717) 787-5709
www.pasenatorcomitta.com

From: Griffin, Laura <laurgriffi@pa.gov>
Sent: Tuesday, August 17, 2021 9:52 AM
To: Eyster, Emily <Emily.Eyster@pasenate.com>
Cc: Shirley, Jessica <jesshirley@pa.gov>; Reiley, Robert A. <rreiley@pa.gov>; Kauffman, Gregory <grekauffma@pa.gov>; Hartman, Michael <Michael.Hartman@pasenate.com>; Fuller, Lisa <Lisa.Fuller@pasenate.com>
Subject: Redelivery of Final Rulemaking - Administration of the Land Recycling Program (7-552)

■ EXTERNAL EMAIL ■

Good morning,

Pursuant to Section 5.1(a) of the Regulatory Review Act, please find attached the Administration of the Land Recycling Program (#7-552) final rulemaking for review by the Senate Environmental Resources and Energy Committee. Also attached is the transmittal sheet showing delivery to the House Environmental Resources and Energy Committee this morning.

Please confirm receipt of this rulemaking by replying to all recipients.

Thank you,
Laura

Laura Griffin | Regulatory Coordinator
she/her/hers
Department of Environmental Protection | Policy Office
Rachel Carson State Office Building
400 Market Street | Harrisburg, PA
Phone: 717.772.3277| Fax: 717.783.8926
Email: laurgriffi@pa.gov
www.dep.pa.gov

Connect with DEP on: Twitter | Facebook | LinkedIn | YouTube | Instagram

Griffin, Laura

From:	Troutman, Nick <ntroutman@pasen.gov>
Sent:	Tuesday, August 17, 2021 11:07 AM
To:	Griffin, Laura
Cc:	Shirley, Jessica; Reiley, Robert A.; Kauffman, Gregory
Subject:	RE: Redelivery of Final Rulemaking - Administration of the Land Recycling Program (7-552)

Thanks! Received

From: Griffin, Laura <laurgriffi@pa.gov>
Sent: Tuesday, August 17, 2021 9:52 AM
To: Troutman, Nick <ntroutman@pasen.gov>
Cc: Shirley, Jessica <jesshirley@pa.gov>; Reiley, Robert A. <rreiley@pa.gov>; Kauffman, Gregory <grekauffma@pa.gov>
Subject: Redelivery of Final Rulemaking - Administration of the Land Recycling Program (7-552)
Importance: High

Good morning,

Pursuant to Section 5.1(a) of the Regulatory Review Act, please find attached the Administration of the Land Recycling Program (#7-552) final rulemaking for review by the Senate Environmental Resources and Energy Committee. Also attached is the transmittal sheet showing delivery to the House Environmental Resources and Energy Committee this morning.

Please confirm receipt of this rulemaking by replying to all recipients.

Thank you,
Laura

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