

Regulatory Analysis Form		This space for use by IRRC
(1) Agency Department of Environmental Protection		RECEIVED 2001 SEP 21 PM 3:39 DEPARTMENT OF ENVIRONMENTAL PROTECTION
(2) I.D. Number (Governor's Office Use) #7-356		IRRC Number: 2133
(3) Short Title Administration of the Land Recycling Program		
(4) PA Code Cite 25 Pa. Code, Chapter 250	(5) Agency Contacts & Telephone Numbers Primary Contact: Sharon Trostle, 717-783-1303 Secondary Contact: Barbara Sexton, 717-783-1303	
(6) Type of Rulemaking (Check One) <input type="checkbox"/> Proposed Rulemaking <input checked="" type="checkbox"/> Final Order Adopting Regulation <input type="checkbox"/> Final Order, Proposed Rulemaking Omitted	(7) Is a 120-Day Emergency Certification Attached? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes: By the Attorney General <input type="checkbox"/> Yes: By the Governor	
(8) Briefly explain the regulation in clear and nontechnical language. <p>The final regulations set forth cleanup standards for environmental media that are protective of human health and the environment and which also consider future use of a site. These standards are: Background, Statewide health, and Site-specific. In addition, certain areas may be remediated as special industrial areas. The cleanup standards are based on risk. Attainment of a standard provides for releases from liability for persons remediating a site. Furthermore, the regulations will clarify definitions in the act, present general procedures, and set methods for risk assessment and demonstration of attainment of a cleanup standard.</p>		
(9) State the statutory authority for the regulation and any relevant state or federal court decisions. <p>This rulemaking is being made under the authority of Sections 104(a), 301(c) and 303(a) of the Land Recycling and Environmental Remediation Standards Act (35 P.S. 6026.101 <i>et seq.</i>). Section 104(a) authorizes the Environmental Quality Board (Board) to adopt Statewide health standards, appropriate mathematically valid statistical tests to define compliance with Act 2 and other regulations that may be needed to implement the provisions of Act 2. Section 301(c) authorizes the Department to establish by regulation procedures for determining attainment of remediation standards when practical quantitation limits set by the U.S. Environmental Protection Agency (EPA) have a health risk that is greater than the risk levels established in Act 2. Section 303(a) authorizes the Board to promulgate Statewide health standards for regulated substances for each environmental medium and methods used to calculate the standards. This rulemaking is also being made under the authority of Section 105(a) of the Solid Waste Management Act (35 P.S. Sections 6018.101 <i>et seq.</i>). Section 105(a) grants the Board the power and duty to adopt the rules and regulations of the Department to carry out the provisions of Act 2.</p>		

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(10) Is the regulation mandated by any federal or state law or court order, or federal regulation? If yes, cite the specific law, case or regulation, and any deadlines for action.

Yes.

The Land Recycling and Environmental Remediation Standards Act 35 P.S. §§ 6026.101-6026.909.

Must have been proposed by July, 18, 1996 and adopted as final by the EQB by July 18, 1997.

(11) Explain the compelling public interest that justifies the regulation. What is the problem it addresses?

Past Pennsylvania environmental policies have been disincentives for the cleanup of industrial sites. Previous cleanup policies imposed full cleanup liability on new buyers even though they had no involvement in contamination of the property. This liability discouraged firms, lenders, and public authorities from getting involved in site remediation. These policies were impractical and contributed to the abandonment of industrial sites throughout Pennsylvania. The positive aspects of existing industrial sites were frequently negated by huge and sometimes never-ending liability for environmental cleanup. Lenders were often reluctant to invest and prospective buyers avoided properties where there was no responsible party available to perform the cleanup. Frequently this has led to developers choosing greenfields as an alternative with the result being the loss of valuable open spaces while industrial areas and the economies of the areas suffered.

The regulations will encourage voluntary cleanup and reuse of contaminated sites, restoring these sites to safe and productive uses, while promoting additional jobs and economic stimulus to stressed communities, especially urban areas. By encouraging the reuse of industrial properties, the regulations will reduce the future abandonment of these properties while saving the development of Pennsylvania's greenfields. The increased potential for voluntary cleanups will reduce the costs to the Commonwealth necessary otherwise to cleanup contaminated sites. The regulations cover all contaminated sites in Pennsylvania, identifying risk based cleanup standards and simplifying the approval process of site remediations. Compliance with the requirements of the regulations will provide for a release of liability for the person remediating a site. A person performing remediation will be eligible for relief of further liability for the remediation of the site under the statutes for any contamination identified in reports submitted to and approved by the Department.

(12) State the public health, safety, environmental or general welfare risks associated with non-regulation.

These regulations are designed to identify, reduce, or eliminate environmental contamination from hazardous substances. These regulations will establish uniform cleanup standards and promote the reuse of contaminated industrial properties. Non-regulation would not provide the cleanup standards needed to pursue both voluntary and enforcement oriented remediations needed to protect human health and the environment and spur needed economic development.

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(13) Describe who will benefit from the regulation. (Quantify the benefits as completely as possible and approximate the number of people who will benefit.)

Though difficult to quantify, adopting the Land Recycling and Environmental Remediation Standards regulations will provide significant and far reaching benefits to the citizens of the Commonwealth of Pennsylvania. Adopting this regulation will encourage voluntary cleanup and reuse of contaminated sites, restoring these sites to safe and productive uses, while promoting additional jobs and economic stimulus to stressed communities, especially urban areas. By encouraging the reuse of industrial properties, the regulations will reduce the future abandonment of these properties while saving the development of Pennsylvania's greenfields. The increased potential for voluntary cleanups will reduce the costs to the Commonwealth necessary otherwise to cleanup contaminated sites.

(14) Describe who will be adversely affected by the regulation. (Quantify the adverse effect as completely as possible and approximate the number of people who will be adversely affected.)

This regulation will affect owners and operators and purchasers of all properties and facilities who will volunteer or be required to perform remediation of contaminated sites. This universal group will also include any individual, corporation, business, authority, or municipality or other entity performing remediation, regardless of original liability for the contamination. By providing remediation standards and the opportunity for release from liability, under the provisions of the Act and these regulations, it is not expected that the regulations will pose an adverse effect to persons and entities performing remediation under these regulations.

(15) List the persons, groups or entities that will be required to comply with the regulation. (Approximate the number of people who will be required to comply.)

This regulation will affect owners and operators and purchasers of all properties and facilities who will volunteer or be required to perform remediation of contaminated sites. This universal group will also include any individual, corporation, business, authority, or municipality or other entity performing remediation, regardless of original liability for the contamination.

(16) Describe the communications with and inputs from the public in the development and drafting of the regulation. List the persons and/or groups who were involved, if applicable.

The regulation development process included considerable input from the Cleanup Standards Scientific Advisory Board and their subcommittees. The Board is a 13 member unit created for the purpose of assisting the Department and the Environmental Quality Board in developing Statewide health standards, determine scientifically valid procedures, determine appropriate risk factors, and provide technical and scientific advice. The members have been appointed by the Department Secretary and the Pennsylvania Senate and House of Representatives. The members have backgrounds in engineering, biology, hydrogeology, chemistry, and other scientific fields.

The proposed rule included a 60-day public comment period which generated 38 comments from 9

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persons or groups. These were: Michael Baker Corporation, PPL Generation LLC, The Energy Association of Pennsylvania, Methacrylate Producers Association, Inc., Basic acrylic Monomer Manufacturers, Inc., Rohm and Haas Corporation, PEA Environmental Committee, BP Exploration and Oil, Inc., and the Independent Regulatory Review Commission

(17) Provide a specific estimate of the cost and/or savings to the regulated community associated with compliance, including any legal, accounting or consulting procedures which may be required.

The costs imposed by the statute are the fees required for submission of plans and reports for site remediation. Specifically, these costs are \$250 for each submission of a final report for remediation to a Background or Statewide health standard; \$250 for each remedial investigation report, risk assessment report, and cleanup plan at sites being remediated to a Site-specific standard; and \$500 for a final report for a Site-specific standard remediation.

(18) Provide a specific estimate of the cost and/or savings to local governments associated with compliance, including any legal, accounting or consulting procedures which may be required.

Local governments do have opportunity to participate in certain circumstances, and hence some costs in labor will result. Based on experience since the Act 2 regulations were finalized, municipalities have chosen to be involved in only a few cases. The work involved would include administrative, legal and technical consulting review of a project. It is estimated that 20 sites for each 150 sites entering the program will involve local government review. At \$40.00 labor cost involving 100 hours per site it would amount to \$4,000 per site.

However, the reuse of industrial properties that are vacant or underutilized will increase the local tax base which will increase the revenues to the local government. Also, the reuse of the sites as commercial and industrial enterprises will increase the number of jobs available for the citizens of the area near the redeveloped site.

(19) Provide a specific estimate of the cost and/or savings to state government associated with the implementation of the regulation, including any legal, accounting or consulting procedures which may be required.

State costs to administer the Land Recycling Program are approximately \$2 million per year. These costs are primarily to cover staff salaries, benefits and overhead. This work is being accomplished using existing resources. Therefore, they represent a diverted cost as opposed to an additional cost.

Although there are no actual savings to the state, avoided costs due to simplified procedures are significant, and may reach greater than \$5 million per year.

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(20) In the table below, provide an estimate of the fiscal savings and cost associated with implementation and compliance for the regulated community, local government, and state government for the current year and five subsequent years. * Costs are in thousands dollars.

	Current FY Year	FY +1 Year	FY +2 Year	FY +3 Year	FY +4 Year	FY +5 Year
SAVINGS:	\$*	\$*	\$*	\$*	\$*	\$*
Regulated Community	0	7,500	15,000	22,500	30,000	30,000
Local Government	0	0	0	0	0	0
State Governments	0	0	0	0	0	0
Total Savings	0	7,500	15,000	22,500	30,000	30,000
COSTS:						
Regulated Community	30.5	56.2	112.5	168.7	225	225
Local Government	0	80	160	240	320	320
State Governments	0	0	0	0	0	0
Total Cost	30.5	136.2	272.5	408.7	545	545
REVENUE LOSSES:						
Regulated Community	0	0	0	0	0	0
Local Government	0	0	0	0	0	0
State Governments	0	0	0	0	0	0
Total Revenue Losses	0	0	0	0	0	0

(20a) Explain how the cost estimates listed above were derived.

The number of sites expected to come into the program is 300 per year, based on current sites entering the program in the last 6 years. The costs to the regulatory community are expected to decrease by a minimum of 50%, or estimated to be an average of \$50,000 savings per site. This includes savings in multiple review letters, meetings, etc. with the regulatory agency which in the past have resulted in multiple site characterization and cleanup efforts on the same site.

Local governments do have opportunity to participate in certain circumstances, and hence some costs in labor will result. Based on experience since the Act 2 regulations were finalized, municipalities have chosen to be involved in only a few cases. The work involved would include administrative, legal and technical consulting review of a project. It is estimated that 20 sites for each 150 sites entering the program will involve local government review. At \$40.00 labor cost involving 100 hours per site it would amount to \$4,000 per site.

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(20b) Provide the past three year expenditure history for programs affected by the regulation.

Program	FY-3	FY-2	FY-1(95/96)	Current FY
Land Recycling Prog.	\$0	\$0	\$844,300	\$1,790,000

(21) Using the cost-benefit information provided above, explain how the benefits of the regulation outweigh the adverse effects and cost.

Before Act 2 was effective, July 1995, the Land Recycling Program was not an option for the regulated community. The Environmental Cleanup Program staff time spent working on a Land Recycling Program Act 2 site is considerably less than staff time reviewing sites under other existing remediation programs. So with the same amount of staff time, more sites will be remediated under the Land Recycling Program than in the past. The benefits are in the form of environmental remediation plus providing for the reuse of previously unused or underused contaminated industrial properties. There are fees charged for each submittal under the Background, Statewide health and Site-specific Standards which is used to offset staff time needed to review the information submitted by the regulated community.

(22) Describe the non-regulatory alternative considered and the cost associated with those alternatives. Provide the reasons for their dismissal.

Act 2 mandates promulgation of regulations for statewide health cleanup standards and methods to demonstrate attainment. The Department will supplement the regulations with a Technical Guidance Manual which will be offered for public comment in August, 2001.

(23) Describe alternative regulatory schemes considered and the cost associated with those schemes. Provide the reasons for their dismissal.

The Department considered developing a regulatory program based upon detailed regulations for implementing the program. Because the intent of the program is to facilitate more cleanups through uniform cleanup standards and procedures, the Department chose to develop regulations which would be more flexible and allow for expanded use of guidance, rather than prescriptive regulation, in implementing the program. This approach will benefit both the person performing remediation and the Department by providing the needed flexibility to address site issues not found in the federal CERCLA program or other existing state regulations.

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(24) 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.

(25) How does the regulation compare with those of other states? Will the regulation put Pennsylvania at a competitive disadvantage with other states?

These regulations will not put Pennsylvania at a competitive disadvantage with other states. To the contrary, the regulations will be a major step forward in making Pennsylvania more competitive with other states. This was and has remained a basis for the regulations. By establishing uniform risk based cleanup standards, providing for release of liability for persons performing remediation, and promoting the reuse of industrial properties, Pennsylvania will become more competitive. This will allow for the reuse of properties otherwise left vacant which have resulted in loss of tax base for municipalities and loss of jobs in communities with the resultant economic decline in many areas of the state. The effect of the regulations will encourage the remediation of contaminated sites and the reuse of industrial properties which will allow business to remain in Pennsylvania and provide a climate conducive for new industry to consider Pennsylvania for location.

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

No changes are anticipated beyond that already initiated by Act 2 and as a part of the Regulatory Review.

(27) Will any public hearings or informational meetings be scheduled? Please provide the dates, times, and locations, if available.

No public hearings were proposed for this amendment.

(28) Will the regulation change existing reporting, record keeping, or other paperwork requirements? Describe the changes and attach copies of forms or reports which will be required as a result of implementation, if available.

This regulation will significantly decrease the reporting requirements. This is because the requirements and reports are specified in the statute, and in most cases, the statute and regulation significantly limit the amount of required interface with the regulatory agency during the environmental investigation and remediation phases of a project.

Required report formats are not established by regulation but are planned to be included in guidance. A listing of the required reports are as follows:

Notice of Intent to Remediate - All Cleanups.

Final Report - Background, Statewide health, Site-specific Standard Cleanups.

Remedial Investigation, Risk Assessment, Cleanup Plan - Site-specific Cleanups.

Public Involvement Plan- Site-specific Standard.

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

None. No special provisions were considered to be necessary.

(30) What is the anticipated effective date of the regulation; the date by which compliance with the regulation will be required; and the date by which any required permits, licenses or other approvals must be obtained?

October 15, 2001

(31) Provide the schedule for continual review of the regulation.

Three years after the effective date (July 18, 1995) of the act and every two years thereafter, the Department shall evaluate the effectiveness of this act in recycling existing industrial and commercial sites. The evaluation shall include any recommendations for changes to improve the effectiveness of this act in recycling these sites.

FACE SHEET
FOR FILING DOCUMENTS
WITH THE LEGISLATIVE REFERENCE BUREAU
(Pursuant to Commonwealth Documents Law)

2133

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

(DEPUTY ATTORNEY GENERAL)

DATE OF APPROVAL

Check if applicable
copy not approved. Objections
attached.

Copy below is hereby certified to be a true and correct copy
of a document issued, prescribed or promulgated by:
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL QUALITY BOARD

(AGENCY)

DOCUMENT/FISCAL NOTE NO. 7-356

DATE OF ADOPTION: 9-18-01

BY: David E. Hess

TITLE: DAVID E. HESS, CHAIRMAN
(EXECUTIVE OFFICER, CHAIRMAN OR SECRETARY)

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

BY: [Signature]
9/20/01
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.

ORDER ADOPTING REGULATIONS

DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL QUALITY BOARD

LAND RECYCLING PROGRAM AMENDMENTS

25 Pa. Code, Chapter 250

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

Editor's Note: Changes at proposed rulemaking are bolded and underscored; deletions are bolded and bracketed. Changes made at final rulemaking are bolded, capitalized and underscored; deletions are bolded, bracketed, and contain strikethroughs. Changes at proposed rulemaking that are deleted at final rulemaking are bolded, underscored, bracketed, and contain strikethroughs.

§ 250.1. Definitions.

In addition to the words and terms defined in the act, the following words and terms, when used in this chapter, have the following meanings, unless the context clearly indicates otherwise:

ASTM--The American Society for Testing and Materials.

Act--The Land Recycling and Environmental Remediation Standards Act (35 P. S. §§ 6026.101-6026.909).

Agricultural purposes--Commercial agricultural activities, including, but not limited to, irrigation of crops, watering of livestock, and food production, processing or packaging.

Anisotropy--The variability of a physical property based on direction, for example, variation in permeability in relation to direction of groundwater flow.

Community water system--As defined in the Pennsylvania Safe Drinking Water Act (35 P. S. §§ 721.1-721.17), a public water system, which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

Enterprise zone--An area specially designated as an enterprise zone under requirements determined by the Department of Community and Economic Development.

Environmental protection acts--Includes:

- (i) The Clean Streams Law (35 P.S. §§ 691.1-691.1001).
- (ii) The Municipal Waste Planning, Recycling and Waste Reduction Act (53 P.S. §§ 4001.101-4001.1904).
- (iii) The Hazardous Sites Cleanup Act (35 P. S. §§ 6020.101-6020.1305).
- (iv) The Low-Level Radioactive Waste Disposal Act (35 P.S. §§ 7130.101-7130.906).
- (v) The act of July 13, 1988 (35 P.S. §§ 6019.1-6019.6), known as the Infectious and Chemotherapeutic Waste Disposal Law.
- (vi) The Air Pollution Control Act (35 P.S. §§ 4001-4015).
- (vii) The Surface Mining Conservation and Reclamation Act (52 P.S. §§ 1396.1-1396.31).
- (viii) The Noncoal Surface Mining Conservation and Reclamation Act (35 P.S. §§ 3301-3326).
- (ix) The Dam Safety and Encroachments Act (32 P.S. §§ 693.1-693.27).
- (x) The Solid Waste Management Act (35 P.S. §§ 6018.101-6018.1003).
- (xi) Other State or Federal statutes relating to environmental protection or the protection of public health.

EQL--Estimated quantitation limit.

Habitats of concern--A habitat defined as one of the following:

- (i) Typical wetlands with identifiable function and value, except for exceptional value wetlands as defined in § 105.17 (relating to wetlands).
- (ii) Breeding areas for species of concern.
- (iii) Migratory stopover areas for species of concern.
- (iv) Wintering areas for species of concern.
- (v) Habitat for State endangered plant and animal species.
- (vi) Federal, State and local parks and wilderness areas, and areas designated as wild, scenic or recreational.
- (vii) Areas otherwise designated as critical or of concern by the Game Commission, the Fish and Boat Commission or the Department of Conservation and Natural Resources.

Heterogeneity--Nonhomogeneous structure, composition and physical properties.

MCL--Maximum contaminant level.

MSC--Medium-specific concentration.

NIR--Notice of Intent to Remediate.

NPDES--National Pollutant Discharge Elimination System.

PQL--Practical quantitation limit.

Property--A parcel of land defined by the metes and bounds set forth in the deed for that land.

Regulated discharge--A point or nonpoint source discharge subject to the permit or approval requirements of Chapters 91-97 and 102-105 and any diffuse surface or groundwater discharge to surface waters which has the potential to cause an exceedance of the water quality standards in Chapter 93 (relating to water quality standards).

Risk assessment--A process to quantify the risk posed by exposure of a human or ecological receptor to regulated substances. The term includes baseline risk assessment, development of site-specific standards and risk assessment of the remedial alternatives.

SIA--special industrial area--Property where there is no financially viable responsible person to perform remediation or property located within an enterprise zone, and where the property was used for industrial activity.

Secondary contaminants--A regulated substance for which a secondary MCL exists, and no lifetime health advisory level exists.

Site--The extent of contamination originating within the property boundaries and all areas in close proximity to the contamination necessary for the implementation of remediation activities to be conducted under the act.

Species of concern--Species designated as of special concern, rare, endangered, threatened or candidate by the Game Commission, the Fish and Boat Commission or the Department of Conservation and Natural Resources, if the species has not also been designated threatened or endangered by the Federal government.

TF--Transfer factor.

Volatile compound--A chemical compound with a boiling point less than 200° centigrade at 1 atmosphere.

§ 250.5. Public notice by applicant.

(a) Public notice under the background, Statewide health or site-specific standard and under a special industrial area cleanup shall be initiated by the applicant through an NIR. For remediations proposing the use of a site-specific standard or, for remediations under an SIA agreement, the public and the municipality where the site is located shall be provided a 30-day

period, in the NIR, in which the municipality may request to be involved in the development of the remediation and reuse plans for the site.

(b) The remedial investigation report, the risk assessment report and the cleanup plan, prepared under a site-specific remediation, may not be submitted to the Department until after the initial 30-day public and municipal comment period following the submission of the NIR has expired.

(c) The baseline environmental report, prepared under an SIA remediation, shall be submitted after the initial 30-day public and municipal comment period has expired.

(d) FOR AREAS NOT COVERED ENTIRELY BY A NONUSE AQUIFER AREA WIDE CERTIFICATION GRANTED UNDER § 250.303(f) (RELATING TO AQUIFER DETERMINATION; CURRENT USE AND CURRENTLY PLANNED USE OF AQUIFER GROUNDWATER), [A]At the same time a request for a nonuse aquifer designation under the Statewide health standard is made to the Department, the remediator shall send notice to every municipality and community water supplier servicing the area requested for designation as nonuse under § 250.303(b) [(relating to aquifer determination; current use and currently planned use of aquifer groundwater)]. The notice shall include a copy of the request for determination of nonuse aquifer submitted to the Department.

(e) Upon receipt OF NOTICE of a request for a nonuse aquifer designation, the municipality and community water supplier shall have 45 days to indicate to the Department and the remediator any information relevant to the requirements of § 250.303.

§ 250.6. Public participation.

(a) The publication date of the summary of the NIR in a newspaper of general circulation in the area of the site shall initiate the 30-day public and municipal comment period during which the

municipality can request to be involved in the development of the remediation and reuse plans for a site being remediated to a site-specific standard or for remediation at an SIA.

(b) The person proposing remediation shall be responsible for developing and implementing a public involvement plan if both of the following circumstances exist:

- (1) The remediation involves a site-specific standard or an SIA cleanup.
- (2) A municipality, through its official representatives, has requested, in writing, to be involved in the development of the remediation and reuse plans within the 30-day public and municipal comment period identified in the notice to the municipality and the newspaper notice.

(c) If a public involvement plan has been initiated, the person proposing remediation shall, at a minimum, provide:

- (1) Public access at convenient locations for document review.
- (2) Designation of a single contact person to address questions from the community.
- (3) 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:

- (1) A remedial investigation report under a site-specific remediation.
- (2) A baseline environmental report under an SIA cleanup.

~~[(c) A public involvement plan shall be developed by the person making a precertification determination request under § 250.303(f) (relating to aquifer determination; current use and currently planned use of aquifer groundwater) in conjunction with all municipalities serving the proposed nonuse aquifer area. The public involvement plan shall be~~

~~implemented prior to submission of the precertification request to the Department. The public involvement plan shall contain at a minimum:~~

~~(1) A notice published in a local newspaper of general circulation and provided to the applicable municipality by letter. The notice to the municipality shall be made by the person initiating the request for nonuse aquifer determination. This notice shall provide a brief description of the area for which the nonuse aquifer designation is being requested.~~

~~(2) A public involvement plan with a 90-day comment period. The comment period shall be initiated at the time of the newspaper publication. The nonuse aquifer precertification request may not be submitted to the Department until the conclusion of the 90-day comment period. Comments received during the comment period shall be responded to and provided with the precertification request.~~

~~(3) Public access at convenient locations for document review.~~

~~(4) Designation of a single contact person to address questions from the community.~~

~~(5) A location near the proposed nonuse aquifer designation site for any public hearings and meetings that may be part of the public involvement plan.]~~

Subchapter C. STATEWIDE HEALTH STANDARDS

§ 250.303. Aquifer determination; current use and currently planned use of aquifer groundwater.

(a) With the exception of seasonal, localized and hydrologically isolated perched systems under a property, all geologic formations or parts or groups of formations in this Commonwealth which are saturated are presumed to be aquifers for the purpose of applying the Statewide health standards. The term includes saturated residuum such as saprolite and other weathered rock strata

or intervals developed from underlying bedrock and other saturated deposits overlying these formations to which the geologic formations are hydrologically connected.

(b) All groundwater in aquifers is presumed to be used or currently planned for use, **UNLESS DETERMINED OTHERWISE BY THE DEPARTMENT UNDER THIS SECTION.**

(1) The Department may determine, in writing, based on a demonstration by the person remediating [the] A site IDENTIFIED IN AN NIR, that groundwater is not used or currently planned to be used, if

(i) T[he] public participation requirements of § 250.5 [and 250.6] (relating to public notice by applicant [; and public participation]) are met, and

(ii) I[f] the requirements in subsection (c) are met within the site on the property and within a radius of 1,000 feet downgradient of the points of compliance plus any additional areas to which the contamination has migrated and might reasonably migrate at concentrations that exceed the MSC for groundwater used or currently planned to be used.

(iii) A NONUSE AQUIFER AREA WIDE CERTIFICATION OBTAINED UNDER SUBSECTION (f) MAY BE USED BY THE REMEDIATOR TO DEMONSTRATE THAT THE REQUIREMENTS OF SUBSECTION (c) ARE MET.

(2) Methods appropriate for determining current or currently planned future use may include door-to-door surveys, verifying community water system billing records and interviewing community water system suppliers with regard to their currently planned future groundwater use.

(c) The following requirements shall be met within the area described in subsection (b):

(1) No groundwater derived from wells or springs is used [or currently planned to be used] for drinking water or agricultural purposes.

(2) All downgradient properties are connected to a community water system.

(3) The area described in subsection (b) does not intersect a radius of 1/2 mile from a community water supply well source or does not intersect an area designated by the Department as a zone 2 wellhead protection area under Chapter 109 (relating to safe drinking water).

(4) AT THE TIME THE NONUSE AQUIFER DETERMINATION REQUEST UNDER SUBSECTION (b) IS SUBMITTED TO THE DEPARTMENT, there are NO EXISTING DOCUMENTS DEVELOPED BY POLITICAL SUBDIVISIONS OR COMMUNITY WATER SYSTEM SUPPLIERS DETAILING THE IMPLEMENTATION OF GROUNDWATER RESOURCES DEVELOPMENT (I.E., no currently planned future uses) [of the groundwater] in [that] THE area SPECIFIED IN SUBSECTION (b)(1)(ii) [by any community water supplier or use for agricultural purposes].

(d) If the Department determines that groundwater is not used or currently planned to be used, the following requirements apply within the area identified in subsection (b):

(1) The requirements in § 250.309 (relating to MSCs for surface water).

(2) The ecological screening process identified in § 250.311 (relating to evaluation of ecological receptors).

(3) THE REMEDIATOR SHALL ESTABLISH INSTITUTIONAL CONTROLS TO MAINTAIN THE INTEGRITY OF THE NONUSE AQUIFER DETERMINATION, OR INCLUDE A POSTREMEDIATION CARE PLAN IN THE FINAL REPORT DETAILING THE PROCESS OF ROUTINELY ASSESSING AND REPORTING TO THE DEPARTMENT COMPLIANCE WITH SECTION 250.303(c).

**(i) POSTREMEDIATION CARE PLAN PROVISIONS SHALL BE
ACKNOWLEDGED WITHIN THE DEED TO THE REMEDIATED PROPERTY
UPON TRANSFER OF OWNERSHIP TO INSURE COMPLIANCE WITH SECTION
250.303(c).**

**(ii) POSTREMEDIATION ASSESSMENT AND REPORTING REQUIREMENTS
SHALL CONTINUE UNTIL THE PROPERTY OWNER CAN DEMONSTRATE
THAT THE MSC FOR GROUNDWATER IN AQUIFERS USED OR CURRENTLY
PLANNED FOR USE IS NOT EXCEEDED AT THE POINT OF COMPLIANCE, AND
FATE AND TRANSPORT ANALYSIS SHOWS THAT THE MSC WILL NOT BE
EXCEEDED AT THAT POINT IN THE FUTURE.**

(e) The MSCs for groundwater in an aquifer that is not used or currently planned for use, under § 250.304(d) (relating to MSCs for groundwater), shall be met at the points of compliance identified in § 250.302 (relating to point of compliance)

(f) AREA WIDE CERTIFICATION.

**(1) WITH OR WITHOUT THE PRESENCE OF AN ASSOCIATED NIR, THE
DEPARTMENT MAY DETERMINE, IN WRITING, BASED ON A
DEMONSTRATION BY A MUNICIPAL AUTHORITY OR POLITICAL
SUBDIVISION, THAT GROUNDWATER IS NOT USED OR CURRENTLY
PLANNED TO BE USED IN A SPECIFIC GEOGRAPHIC AREA, IF THE
FOLLOWING CONDITIONS EXIST:**

**(i) THE MUNICIPAL AUTHORITY OR POLITICAL SUBDIVISION
DEMONSTRATES THAT THE REQUIREMENTS OF SUBSECTION (c) ARE MET
IN THE SPECIFIC GEOGRAPHIC AREA**

(ii) MUNICIPAL ORDINANCES ARE IN EFFECT THAT PROHIBIT THE USE OF GROUNDWATER FROM WELLS OR SPRINGS FOR DRINKING WATER OR AGRICULTURAL PURPOSES.

(iii) MUNICIPAL ORDINANCES ARE IN EFFECT THAT REQUIRE ALL WATER USERS TO CONNECT TO A COMMUNITY WATER SUPPLY SYSTEM.

(2) IF THE MUNICIPAL ORDINANCES RELIED UPON TO MAKE THE DEMONSTRATION IN PARAGRAPH (1) ARE AMENDED OR REPEALED, THE POLITICAL SUBDIVISION OR MUNICIPAL AUTHORITY WHO REQUESTED THE AREA WIDE DESIGNATION SHALL NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS OF THE EFFECTIVE DATE OF THE AMENDMENT OR REPEAL.

[(f) After receipt of a nonuse aquifer determination request, and receipt of the required public involvement plan, the Department may make a "precertification" determination that a specific geographic area meets the conditions of subsection (c). Only municipal authorities and political subdivisions are eligible to request this determination. If a municipal ordinance exists which provides for the fulfillment of all aspects of subsection (c), the person applying for a nonuse aquifer designation may use the existence of such an ordinance to demonstrate that the requirements of subsection (c) have been met. A determination made under this subsection expires after 3 years and may be updated at any time additional relevant information comes to the attention of the Department. At the end of the 3-year period, the applicant may request a renewal of determination from the Department.]

[(g) Public participation requirements of § 250.6(c) shall be met on all "precertification" requests.]

§ 250.304. MSCs for groundwater.

(a) A person shall implement a remedy under the Statewide health standard that is protective of human health and the environment.

(b) The MSCs for regulated substances in groundwater are presented in Appendix A, Tables 1 and 2. The methodology used by the Department for calculating MSCs in groundwater is detailed in subsections (c)—(f).

(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 is the MCL as established by the Department or the EPA (U. S. EPA, 1996. Drinking Water Regulations and Health Advisories. Office of Water. EPA 822-R-96-001). For a regulated substance where no MCL has been established, the MSC is the lifetime health advisory level (HAL) for that compound. For a regulated substance where neither an MCL nor a lifetime HAL is established, the MSC is the lowest concentration calculated using the appropriate residential and nonresidential exposure assumptions and the equations in §§ 250.306 and 250.307 (relating to ingestion numeric values; and inhalation numeric values).

(d) For regulated substances contained in aquifers not used or currently planned to be used, the MSCs in Appendix A, Tables 1 and 2 are calculated by the following:

(1) For volatile organic regulated substances with an attenuation factor of less than 20, as calculated by the methodology in paragraph (7), ten times the appropriate residential or nonresidential MSC for groundwater in aquifers used or currently planned to be used containing less than 2,500 mg/l total dissolved solids.

(2) For volatile organic regulated substances with an attenuation factor of greater than or equal to 20, as calculated by the methodology in paragraph (7), 100 times the appropriate residential

or nonresidential MSC for groundwater in aquifers used or currently planned to be used containing less than 2,500 mg/l total dissolved solids.

(3) For semivolatile organic and inorganic regulated substances, regardless of the attenuation factor, 1,000 times the appropriate residential or nonresidential MSC for groundwater in aquifers used or currently planned to be used containing less than 2,500 mg/l total dissolved solids.

(4) For benzene, 100 times the appropriate residential or nonresidential MSC for groundwater in aquifers used or currently planned to be used containing less than 2,500 mg/l total dissolved solids.

(5) For regulated substances with no calculated attenuation factor because of a lack of data in Howard, P. H., R. S. Boethling, W. F. Jarais, W. M. Meylan and E. M. Michalenko. 1991. Handbook of Environmental Degradation Rates. Lewis Publishers, Inc., Chelsea, MI., the appropriate residential or nonresidential MSC for groundwater in aquifers used or currently planned to be used containing less than 2,500 mg/l total dissolved solids.

(6) For minimum threshold MSCs, 5 micrograms per liter in groundwater shall be used.

(7) The attenuation factor (AF) for an organic regulated substance shall be calculated according to the following formula:

$$AF = K \times KOC$$

Where:

$$K = \text{degradation coefficient} = \frac{0.693}{T_{1/2}}$$

T_{1/2}—half-life of organic regulated substance in groundwater as reported in Howard, P. H., R. S. Boethling, W. F. Jarais, W. M. Meylan and E. M. Michalenko, 1991. Handbook of Environmental Degradation Rates. Lewis Publishers, Inc., Chelsea, MI.

KOC—organic carbon partitioning coefficient (See Appendix A Table 5)

(e) If the groundwater in aquifers used or currently planned for use at the site has naturally occurring background total dissolved solids concentrations greater than 2,500 milligrams per liter, the Statewide health standard for a regulated substance dissolved in the groundwater may be adjusted by multiplying the MSC for groundwater in aquifers by 100. The adjusted Statewide health standard shall then be used in calculating the soil to groundwater pathway numeric value as specified in § 250.308 (relating to soil to groundwater pathway numeric values)

(f) In addition to the requirements in this section, the MSCs are further limited by solubility as identified in Appendix A, Table 5. The solubility limits are derived from the **[following]** references **in subsection (g)**, which are keyed to the numbers in Table 5[:]. **The following procedure was used to determine the appropriate solubility value for each regulated substance: where multiple sources are cited in Table 5, the value for the solubility limit is the median of the values in the indicated references.**

(1) Using the hierarchy established in subsection (g), the first two references were consulted. If the solubility values agreed within 5%, the selected value is the lower of the two values.

(2) If the values in step (1) did not agree within 5%, the next references in order were consulted until two values that did agree within 5% were found. The selected value is then the median of all the values consulted.

(3) If none of the values in all of the references in subsection (g) agreed within 5%, the selected value is the median of all values in all references.

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

- (1) Howard, P. H. 1991. *Handbook of Environmental Fate and Exposure Data for Organic Chemicals. Vol. III, Pesticides*. Lewis Publishers.
- (2) Lyman, W. J., W. F. Reehl, and D. H. Rosenblatt. 1982. *Handbook of Chemical Property Estimation Methods*. McGraw-Hill Book Co. N. Y.
- (3) Mabey, et. al. 1982. *Aquatic Fate Process Data for Organic Priority Pollutants*. SRI. EPA Contract Nos. 68-01-3867, 68-03-2981.
- (4) Milne, G.W.A., Ed. 1995. *CRC Handbook of Pesticides*. CRC Press, Inc.
- (5) Montgomery, J. H. 1991. *Groundwater Chemicals Desk Reference. Vol. II*. Lewis Publishers.
- (6) Montgomery, J. H., and L. M. Welkom. 1990. *Groundwater Chemicals Desk Reference. Vol. I*. Lewis Publishers.
- (7) Montgomery, J. H. 1993. *Agrochemicals Desk Reference, Environmental Data*. Lewis Publishers.
- (8) National Library of Medicine (Grateful Med). *Hazardous Substances Databank*.
- (9) Nirmalakhandan, N. N., and R. E. Speece. 1988a. *Prediction of Aqueous Solubility of Organic Chemicals Based on Molecular Structure*. ES&T 22:328-337.
- (10) Nirmalakhandan, N. N., and R. E. Speece. 1988b. *Prediction of Aqueous Solubility of Organic Chemicals Based on Molecular Structure. 2. Application to PNAS, PCBs, PCDDs, etc*. ES&T. 23:708-713.
- (11) Sax, N. I. 1989. *Dangerous Properties of Industrial Materials*. Seventh Edition. Vol. 1-3, Van Nostrand Reinhold.
- (12) Environmental Protection Agency. Undated. *IRIS--The Integrated Risk Information System*.

- (13) Environmental Protection Agency. 1985. *Physical/Chemical Properties and Characterization of RCRA Wastes According to Volatility. Office of Air Quality and Planning and Standards. EA 450/3-85-007.*
- (14) Environmental Protection Agency. 1989. *Database of Chemical Properties for SARA. Section 313 Chemicals.*
- (15) Environmental Protection Agency. 1992. *Handbook of RCRA Groundwater Monitoring Constituents: Chemical & Physical Properties. 40 CFR Part 264, Appendix IX. Office of Solid Waste. Permits and State Programs Division. EPA 530-R-92-022.*
- (16) EPA. 1994. *Superfund Chemical Data Matrix. Office of Solid Waste and Emergency Response. EPA 540-R-94-009.*
- (17) Verschuieren, K. 1977. *Handbook of Environmental Data on Organic Chemicals. Van Nostrand Reinhold.*
- (18) Windholz, M., ed. 1976. *The Merck Index. 9th Ed. Merck and Co.]*
- (1) Lide, D. R., ed. 1996. *CRC Handbook of Chemistry and Physics. 77th Edition. CRC Press.*
- (2) Budavari, S., ed. 1996. *The Merck Index 12th Ed. Merck and Co.*
- (3) Perry, R. H., et al. 1997. *Perry's Chemical Engineer's Handbook. 7th ed. McGraw-Hill, New York.*
- (4) Howard, P. H. 1991. *Handbook of Environmental Fate and Exposure Data for Organic Chemicals. Vol. III Pesticides. Lewis Publishers.*
- (5) Verschuieren, K. 1977. *Handbook of Environmental Data on Organic Chemicals. Van Nostrand Reinhold.*

(6) MacKay, D., et al. 1997. *Illustrated Handbook of Physical-Chemical Properties and Environmental Fate for Organic Chemicals*. 5 Volumes. Lewis Publishers, New York.

(7) Montgomery, J. H. 1991. *Groundwater Chemicals Desk Reference*. Vol. II. Lewis Publishers and Montgomery, J. H., and L. M. Welkom. 1990. *Groundwater Chemicals Desk Reference Vol I*. Louis Publishers.

(8) Milne, G.W.A., ed. 1995. *CRC Handbook of Pesticides*. CRC Press, Inc.

(9) National Library of Medicine (Grateful Med). *Hazardous Substances Databank*.

(10) EPA. 1994. *Superfund Chemical Data Matrix*. Office of Solid Waste and Emergency Response. EPA 540-R-94-009.

(11) Mabey, et al. 1982. *Aquatic Fate Process Data for Organic Priority Pollutants*. SRI. EPA Contract Nos. 68-01-3867, 68-03-2981.

~~(12) Montgomery, J. H. 1993. *Agrochemicals Desk Reference, Environmental Data*. Lewis Publishers.~~

§ 250.311. Evaluation of ecological receptors.

(a) In addition to any protection afforded under other requirements for meeting surface water and air quality standards and MSCs under this chapter, based on the screening process in this section, direct impacts from regulated substances to the following receptors shall be assessed and addressed to implement a remedy that is protective of the environment:

- (1) Individuals of threatened or endangered species as designated by the United States Fish and Wildlife Service under the Endangered Species Act (16 U.S.C.A. §§ 1531-1544).
- (2) Exceptional value wetlands as defined in § 105.17 (relating to wetlands).
- (3) Habitats of concern.
- (4) Species of concern.

(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, 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.

(1) Jet fuel, gasoline, kerosene, number two fuel oil or diesel fuel are the only constituents detected onsite.

(2) The area of contaminated soil is less than 2 acres and the area of contaminated sediment is less than 1,000 square feet.

(3) The site has features, such as buildings, parking lots or graveled paved areas, which would obviously eliminate the specific exposure pathways, such as soils exposure.

(c) If none of the criteria in subsection (b) are met and if no Constituents of Potential Ecological Concern (CPECs) **associated with [a] THE release BEING ADDRESSED AS PART OF AN NIR at the site**, as identified in Appendix A, Table 8, are detected onsite, an onsite evaluation shall be conducted to document any indications of ecological impact. Ecological impacts requiring more detailed evaluation exist if there are differences of greater than 50% in the density or diversity of species or habitats of concern when compared with nearby reference areas representing equivalent ecological areas without contamination, if available. This evaluation shall also document the presence of threatened and endangered species and exceptional value wetlands. If no ecological impacts requiring further evaluation are identified, and no threatened and endangered species exist within a 2,500-foot radius of the site and no exceptional value wetlands exist on the site, no further evaluation is required and that determination shall be documented in the final report.

(d) If none of the criteria in subsection (b) are met and if CPECs **associated with the release BEING ADDRESSED AS PART OF AN NIR at the site** are detected onsite or ecological impacts requiring more detailed evaluation, threatened and endangered species, or exceptional value wetlands as identified in subsection (c) exist, a detailed onsite evaluation shall be conducted by a person qualified to perform environmental risk assessments to document any substantial ecological impacts. Substantial ecological impacts exist if there are differences of greater than 20% in the density of species of concern or greater than 50% in the diversity and extent of habitats of concern when compared with nearby reference areas representing equivalent ecological areas without contamination, if available. If there are no substantial ecological impacts identified and there are no threatened or endangered species on or within a 2,500-foot radius of the site and no exceptional value wetlands on the site, that determination shall be provided in the final report.

(e) If the person cannot demonstrate that they meet the criteria in subsection (b), and cannot demonstrate that the evaluation performed under subsection (c) identified no ecological impacts requiring more detailed evaluation under subsection (d), or cannot demonstrate that the evaluation performed under subsection (d) identified no substantial ecological impacts, or threatened or endangered species or exceptional value wetlands, one of the following shall be met:

(1) A person shall demonstrate in the final report that attainment of the Statewide health standard MSCs are protective of the ecological receptors.

(2) If a demonstration cannot be made that the Statewide health standard MSCs are protective of ecological receptors, a person shall demonstrate in the final report that postremedy use will eliminate complete exposure pathways at the time of the final report or in accordance with a

postremediation care plan, or that mitigative measures identified in subsection (f) have been instituted and are subject to postremediation care plan requirements as described in § 250.312(b) (relating to final report).

(3) A person shall demonstrate attainment of the background standard.

(4) A person shall follow the procedures in §§ 250.402(c) and 250.409 (relating to human health and environmental protection goals; and risk assessment report) and demonstrate attainment of the site-specific standard for protection of ecological receptors.

(f) Mitigation measures to restore or replace equivalent ecological resources in the local area of the site may be applied if the following are met:

(1) No exceptional value wetlands have been identified by the screening process.

(2) No Federal or State laws and regulations prohibit or restrict the elimination of habitats or species identified by the screening process.

(3) A mitigation measure is selected based on the following hierarchy:

(i) Restoration onsite of species and habitats identified in the screening process.

(ii) Replacement onsite of species and habitats identified in the screening process.

(iii) Replacement on an adjacent area to the site of species and habitats identified in the screening process.

(iv) Replacement at a location within the municipality where the site is located of species and habitats identified in the screening process.

(4) The Department will review and approve mitigation measures prior to implementation to ensure that the proposed remedy and intended use of the property minimize the impacts to ecological receptors identified in the screening procedure.

(5) The postremediation care plan requirements in § 250.312(e) or 250.411(f) (relating to final report) are implemented.

Subchapter G. DEMONSTRATION OF ATTAINMENT

§ 250.703. General attainment requirements for soil.

(a) For any standard selected, the attainment demonstration for the soil media shall be made at the point of compliance as defined in Subchapters B—D (relating to background standards; Statewide health standards; and site-specific standards)

(b) The [volume] [location of] soil to which the attainment criteria [is] ARE applied shall be determined by circumscribing with an irregular surface those concentrations detected during characterization which exceed the selected standard. Where this soil is to be removed from the site, the attainment DEMONSTRATION applies to the base of the excavation [outlined by that irregular surface] DEFINED BY THE LIMIT OF EXCAVATION.

(c) Sampling points for demonstration of attainment of soils shall be selected to be random and representative both horizontally and vertically based on a systematic random sampling as set forth in a Department approved reference. If exceedances of a standard occur in a localized area, the Department may require additional characterization and remediation if three or more adjacent samples exceed the standard by more than ten times.

(d) For statistical methods under § 250.707(b)(1)(i) (relating to statistical tests), the number of sample points required for each distinct area of contamination to demonstrate attainment shall be determined in the following way:

- (1) For soil volumes equal to or less than 125 cubic yards, at least eight samples.
- (2) For soil volumes up to 3,000 cubic yards, at least 12 sample points.
- (3) For each additional soil volume of up to 3,000 cubic yards, an additional 12 sample points.

(4) Additional sampling points may be required based on site-specific conditions.

(e) For statistical methods under § 250.707(b)(1)(ii) and (c), the minimum number of samples required for demonstrating attainment shall be as specified by the documentation of the chosen method.

§ 250.707. Statistical tests.

(a) For regulated substances which are naturally occurring, the person shall compare the analytical results of background reference samples, that are representative of naturally occurring concentrations of regulated substances on the site, with the analytical results of the medium of concern onsite. For nonnaturally occurring regulated substances for which a known background condition exists, the person shall compare the analytical results of background reference samples, which are related to the migration of contaminants onto the site, with the analytical results of the medium of concern onsite. In addition, application of statistical tests for the background standard shall be as follows:

(1) Soil. For soil, a person shall use one of the following statistical methods in subparagraphs (i)—(iii) and conditions relating to subparagraphs (i)—(iii) as described in subparagraphs (iv)—(vi) to demonstrate attainment of the background standard:

(i) The person shall demonstrate that the highest measurement from the area of concern is not greater than the highest measurement from the background area. The Department may accept insignificant variances in numbers. The minimum number of samples to be collected is ten from the background reference population and ten from each distinct area of contamination.

(ii) The Department may accept the use of a combination of the Wilcoxon rank-sum test (equivalent to the Mann-Whitney U test) and the quantile test for data from two populations. The application of these tests shall meet the criteria in subparagraphs (iv) and (vi).

(iii) The Department may accept other appropriate statistical methods that meet the requirements of subparagraphs (iv)-(vi).

(iv) For nonparametric and parametric methods under subparagraphs (ii) and (iii), the false-positive rate for a set of data applied to a statistical test may not be greater than 0.20. The minimum number of samples to be collected is ten from the background population and ten from each distinct area of contamination.

(v) For parametric methods under subparagraph (iii), the censoring level for each nondetect (ND) shall be the assigned value randomly generated that is between zero and the limit related to the PQL.

(vi) For nonparametric and parametric methods under subparagraphs (ii) and (iii), the application of a statistical method shall meet the criteria in subsection (d).

(2) Groundwater for known upgradient release of a regulated substance.

(i) The Department may accept the use of the nonparametric tolerance intervals that are applied in accordance with the procedures in subparagraphs (ii)-(vi) and (viii)-(x).

(ii) The upgradient concentration shall be determined by sampling in a background reference well shown on the basis of characterization to exhibit the highest concentration and by demonstrating that the groundwater is representative of concentrations in groundwater that are migrating onto the site.

(iii) The background reference well shall be sampled over a period of eight quarters to provide eight samples.

(iv) From these eight samples, the highest concentration for each regulated substance shall be selected as the upper tolerance limit.

(v) In each onsite well, eight samples shall also be collected during the same eight-quarter period.

(vi) The upper tolerance limit shall be met in each onsite well. The maximum of data collected from each onsite well shall be at or below the upper tolerance limit.

(vii) In lieu of subparagraphs (iv)-(vi), the Department may accept a retesting strategy using nonparametric prediction limit in accordance with current EPA guidance (EPA, Office of Solid Waste Management Division. "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities;" Addendum to Interim Final Guidance, EPA, Washington, D. C. June 1992). For each regulated substance, the highest concentration of the eight background reference samples shall be selected as the upper prediction limit, as determined by the most current EPA guidance.

(viii) The application of a statistical method for groundwater background standard shall meet the criteria in subsection (d).

(ix) For parametric methods, the censoring level for each nondetect (ND) shall be the assigned value randomly generated that is between zero and the limit related to the PQL.

(x) In lieu of eight-quarter sampling in subparagraphs (iii) and (v), the Department may allow the eight samples to be taken during a period of four quarters, or less with written approval from the Department if the following criteria can be met:

(A) There is adequate spatial monitoring of the plume upgradient of the property on which the release occurred which indicates a stable plume condition.

(B) Parameters affecting the fate and transport of regulated substances within the plume have been fully evaluated.

(C) Coefficient of variation for the eight samples collected over a four-quarter period may not exceed 1.0 for metals and 2.0 for organic compounds.

(D) The age of the plume is sufficiently well known to permit a judgment to be made regarding its stability and remediation of the source associated with the upgradient contamination is not currently or has not recently occurred.

(3) Background groundwater conditions due to naturally occurring or areawide contamination.

(i) To use this subparagraph for areawide contamination, the person performing remediation shall demonstrate to the Department, in writing, that the site conditions are due to areawide contamination and shall obtain the Department's approval to use this subsection.

(ii) A minimum of 12 samples shall be collected from any combination of monitoring wells, including upgradient locations, if all data collected is used in determination of background concentrations.

(iii) The same number of samples shall be collected within and representative of the area of groundwater contamination (plume) onsite as were collected in the upgradient sampling for each sampling event.

(iv) The samples from the upgradient wells and the wells in the plume onsite shall be collected during the same sampling event.

(v) Sampling may be accelerated so that all sampling events occur in as short a period of time as possible so as not to result in serial correlation in the data.

(vi) The resulting values may be used with appropriate nonparametric or parametric methods to compare the two populations.

(vii) The sampling results in the plume onsite may not exceed the sum of the background arithmetic average and three times the standard deviation calculated for the background area.

(viii) The application of a statistical method for groundwater background standard shall meet the criteria in subsection (d).

(ix) For parametric methods, the censoring level for each nondetect (ND) shall be the assigned value randomly generated that is between zero and the limit related to the PQL.

(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 shall 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).

(i) Seventy-five percent of all samples, which shall be randomly collected in a single event from the site, shall be equal to or less than the Statewide health standard or the limit related to PQLs with no individual sample exceeding ten times the Statewide health standard.

(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

(iii) **[For sites that qualify as localized contamination sites under the document entitled "Closure Requirements for Underground Storage Tank Systems" (DEP Technical Guidance Document No. 2530-BK-DEP2008), where samples are taken in accordance with that document that result in fewer samples being taken than otherwise required in**

this section, no sample may exceed the Statewide health standard.] For sites with a petroleum release where full site characterization, AS DEFINED IN SECTION 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 [will approve] APPROVAL OF the confirmatory sampling plan PRIOR TO CONDUCTING ATTAINMENT SAMPLING.

(IV) Where water is encountered in the excavation and obvious contamination is observed or indicated, soil samples collected just above the soil/water interface shall [meet] BE EQUAL TO OR LESS THAN THE APPLICABLE STATEWIDE HEALTH [the] MSC determined by SECTION 250.308(a)(2)(ii) (RELATING TO SOIL TO GROUNDWATER PATHWAY NUMERIC VALUES) [using the saturated soil component of the soil-to-groundwater numeric value].

(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.

(C) All sample results shall [meet] BE EQUAL TO OR LESS THAN the APPLICABLE Statewide health [standard] MSC AS DETERMINED USING TABLES 1 THROUGH 4 AND 6 IN APPENDIX A.

(iv) 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 subparagraph (iii)(B), except that two samples shall be collected.

(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).

(i) Seventy-five percent of all samples collected within each monitoring well over time shall be equal to or less than the Statewide health standard or the limit related to PQLs with no individual sample exceeding both of the following:

(A) Ten times the Statewide health standard on the property.

(B) Two times the Statewide health standard beyond the property boundary.

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

(3) In addition to the statistical tests identified in paragraphs (1) and (2), a person may use a statistical test that meets the requirements of subsection (d) to demonstrate attainment.

(c) To demonstrate attainment of the site-specific standard, a person may use a statistical test identified in subsection (b)(1)(ii) and (2)(ii) where the 95% UCL of the arithmetic mean is below the site-specific standard or a statistical test that meets the requirements of subsection (d). The attainment test and the methodology used in the risk assessment to evaluate exposure concentrations shall be the same.

(d) Except for the statistical methods identified in subsections (a)(1)(i) and (b)(1)(i) and (2)(i), a demonstration of attainment of one or a combination of remediation standards shall comply with the following:

(1) When statistical methods are to be used for demonstration of attainment of Statewide health or site-specific standards, the null hypotheses (H_0) shall be that the true site arithmetic average

concentration is at or above the cleanup standard, and the alternative hypothesis (H_a) shall be that the true site arithmetic average concentration is below the cleanup standard. When statistical methods are to be used to determine that the background standard is exceeded, the null hypothesis (H_0) shall be that the background standard is achieved and the alternative hypothesis (H_a) shall be that the background standard is not achieved.

(2) A statistical method chosen shall comply with the following performance standards:

- (i) The underlying assumptions of the statistical method shall be met, such as data distribution.
- (ii) The statistical method shall be recommended for this use in Department-approved guidance or regulation and shall be generally recognized as appropriate for the particular remediation implemented at the site.
- (iii) Compositing cannot be used with nonparametric methods or for volatile organic compounds.
- (iv) For parametric methods, the censoring level for each nondetect shall be the assigned value randomly generated that is between zero and the limit related to the PQL.
- (v) Tests shall account for seasonal and spatial variability as well as temporal correlation of data, unless otherwise approved by the Department.
- (vi) Tests used to determine that the background standard is exceeded shall maintain adequate power to detect contamination in accordance with current EPA guidances, regulations or protocols.
- (vii) For the limits relating to the PQLs, Statewide health and site-specific standards, the false-positive rate for a statistical test may not be greater than 0.20 for nonresidential and 0.05 for residential.

(viii) Statistical testing shall be done individually for each regulated substance present at the site.

(3) The following information shall be documented in a final report when a statistical method is applied:

(i) A description of the statistical method.

(ii) A clear statement of the applicable decision rule in the form of statistical hypotheses for each spatial unit and temporal boundary including the applicable statistical parameter of interest and the specific cleanup standard.

(iii) A description of the underlying assumptions of the method.

(iv) Documentation showing that the sample data set meets the underlying assumptions of the method and demonstrating that the method is appropriate to apply to the data.

(v) Specification of false positive rates and, in addition for the background standard, specification of false negative rates.

(vi) Documentation of input and output data for the statistical test, presented in tables or figures, or both, as appropriate.

(vii) An interpretation and conclusion of the statistical test.

(e) The references identified in subsection (b)(1)(ii) and (2)(ii) are as follows:

(1) EPA, Office of Policy, Planning and Evaluation, Methods for Evaluating the Attainment of Cleanup Standards, Volume 1: Soils and Solid Media, EPA 230/02-89-042, Washington, D. C. 1989.

(2) EPA, Office of Solid Waste Management Division, Test Methods for Evaluating Solid Waste, SW-846 Volume II: Field Methods, EPA, November 1985, Third Edition.

(3) EPA, Office of Solid Waste Management Division, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Interim Final Guidance, EPA, Washington, D. C., April, 1989.

(4) EPA, Office of Solid Waste Management Division, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance, EPA, Washington, D. C., June, 1992.

(5) 40 CFR 264 and 265 (relating to standards for owners and operators of hazardous waste treatment, storage, and disposal facilities; and interim status standards for owners and operators of hazardous waste treatment, storage, and disposal facilities).

APPENDIX A
TABLE 1 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN GROUNDWATER

REGULATED SUBSTANCE	CASRN	USED AQUIFERS				NON-USE AQUIFERS	
		TDS ≤ 2500		TDS > 2500		R	NR
		R	NR	R	NR		
ACENAPHTHENE	83-32-9	2200 G	[2500] 3800 S	[3500] 3800 S	[3500] 3800 S	[2500] 3800 S	[3500] 3800 S
ACENAPHTHYLENE	208-96-8	2200 G	[2900] 6100 [S] G	[3900] 16000 S	[2900] 16000 S	[2900] 16000 S	[3900] 16000 S
ACEPHATE	30560-19-1	76 G	300 G	7,600 G	30,000 G	76 G	300 G
ACETALDEHYDE	75-07-0	19 N	[67] 52 N	1900 N	[5700] 5200 N	19 N	[57] 52 N
ACETONE	67-64-1	3700 G	10000 G	370000 G	1000000 G	37000 G	100000 G
ACETONITRILE	75-05-8	[58] 170 N	[420] 350 N	[5800] 17000 N	[42000] 35000 N	[580] 1700 N	[4200] 3500 N
ACETOPHENONE	98-86-2	3700 G	10000 G	370000 G	1000000 G	3700 G	10000 G
ACETYLAMINOFLUORENE, 2- (2AAF)	53-96-3	0.17 G	0.68 G	17 G	68 G	170 G	680 G
ACROLEIN	107-02-8	0.055 N	0.12 N	5.5 N	12 N	0.55 N	1.2 N
ACRYLAMIDE	79-06-1	0.033 N	0.14 N	3.3 N	14 N	0.033 N	0.14 N
ACRYLIC ACID	79-10-7	2.8 N	5.8 N	280 N	580 N	280 N	580 N
ACRYLONITRILE	107-13-1	0.63 N	2.7 N	63 N	270 N	63 N	270 N
ALACHLOR	15972-60-8	2 M	2 M	200 M	200 M	2 M	2 M
ALDICARB	118-08-3	7 M	7 M	700 M	700 M	7000 M	7000 M
ALDRIN	309-00-2	0.0087 N	0.037 N	0.87 N	3.7 N	0.87 N	3.7 N
ALLYL ALCOHOL	107-18-6	49 N	100 N	4900 N	10000 N	4900 N	10000 N
AMINOBIPHENYL, 4-	92-67-1	0.031 G	0.12 G	3.1 G	12 G	31 G	120 G
AMITROLE	61-82-5	0.7 G	2.8 G	70 G	280 G	700 G	2800 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	2.8 N	5.8 N	280 N	580 N	2.8 N	5.8 N
ANTHRACENE	120-12-7	[43] 66 S	[43] 66 S	[43] 66 S	[43] 66 S	[43] 66 S	[43] 66 S
ATRAZINE	1912-24-9	3 M	3 M	300 M	300 M	3 M	3 M
BAYGON (PROPOXUR)	114-26-1	3 H	3 H	300 H	300 H	3,000 H	3,000 H
BENOMYL	17804-35-2	1,800 G	2,000 S	2,000 S	2,000 S	1,800 G	2,000 S
BENTAZON	25057-89-0	1,100 G	3,100 G	110,000 G	310,000 G	1,100 G	3,100 G
BENZENE	71-43-2	5 M	5 M	500 M	500 M	500 M	500 M
BENZIDINE	92-87-5	0.0029 G	0.011 G	0.29 G	1.1 G	2.9 G	11 G
BENZO(A)ANTHRACENE	56-55-3	0.9 G	3.6 G	[44] 11 S	[44] 11 S	[44] 11 S	[44] 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	0.9 G	1.2 S	1.2 S	1.2 S	1.2 S	1.2 S
BENZO(GH)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	0.55 S	0.55 S	0.55 S	0.55 S	0.55 S	0.55 S
BENZOIC ACID	65-85-0	150000 G	410000 G	[3400000] S 2700000	[3400000] S 2700000	150000 G	410000 G
BENZOTRICHLORIDE	98-07-7	0.051 G	0.2 G	5.1 G	20 G	51 G	200 G
BENZYL ALCOHOL	100-51-6	11000 G	31000 G	1100000 G	3100000 G	11000 G	31000 G
BENZYL CHLORIDE	100-44-7	0.87 N	3.7 N	87 N	370 N	87 N	370 N
BHC, ALPHA-	319-84-6	0.1 G	0.41 G	10 G	41 G	100 G	410 G
BHC, BETA-	319-85-7	0.37 G	1.4 G	37 G	[440] 100 [G] S	[370] 100 [G] S	[4400] 100 [G] S
BHC, DELTA-	319-86-8	[44] 22 G	[34] 61 G	[4400] 2200 G	[3400] 6100 G	[44000] 8000 [G] S	[24000] 8000 S
BHC, GAMMA (LINDANE)	58-99-9	0.2 M	0.2 M	20 M	20 M	200 M	200 M
BIPHENYL, 1,1-	92-52-4	1,800 G	5,100 G	7,200 S	7,200 S	7,200 S	7,200 S
BIS(2-CHLOROETHYL)ETHER	111-44-4	0.13 N	0.55 N	13 N	55 N	13 N	55 N
BIS(2-CHLORO-ISOPROPYL)ETHER	108-60-1	300 H	300 H	30000 H	30000 H	30000 H	30000 H
BIS(CHLOROMETHYL)ETHER	542-88-1	0.00069 N	0.0029 N	0.069 N	0.29 N	0.069 N	0.29 N
BIS(2-ETHYLHEXYL) PHTHALATE	117-81-7	6 M	6 M	[340] 290 S	[340] 290 S	[340] 290 S	[340] 290 S

All concentrations in µg/L

R = Residential

NR = Non-Residential

M = Maximum Contaminant Level

H = Lifetime health advisory level

G = Ingestion

N = Inhalation

S = Aqueous solubility cap

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REGULATED SUBSTANCE	CASRN	USED AQUIFERS				NON-USE AQUIFERS	
		TDS ≤ 2500		TDS > 2500		R	NR
		R	NR	R	NR		
BISPHENOL A	90-05-7	1,800 G	5,100 G	120,000 S	120,000 S	120,000 S	120,000 S
BROMACIL	314-40-9	80 H	80 H	8,000 H	8,000 H	80 H	80 H
BROMOCHLOROMETHANE	74-97-5	90 H	90 H	9,000 H	9,000 H	90 H	90 H
BROMODICHLOROMETHANE	75-27-4	100 M	100 M	10,000 M	10,000 M	100 M	100 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	730 G	2,000 G	73,000 G	130,000 S	730 G	2,000 G
BROMOXYNIL OCTANOATE	1689-99-2	80 S	80 S	80 S	80 S	80 S	80 S
BUTADIENE, 1,3-	106-99-0	0.15 N	0.65 N	15 N	65 N	15 N	65 N
BUTYL ALCOHOL, N-	71-36-3	970 N	2,000 N	97,000 N	200,000 N	970 N	2,000 N
BUTYLATE	2008-41-5	350 H	350 H	35,000 H	35,000 H	350 H	350 H
BUTYL BENZENE, N-	104-51-8	1,500 G	4,100 G	15,000 S	15,000 S	1,500 G	4,100 G
BUTYL BENZENE, SEC-	135-98-8	1,500 G	4,100 G	17,000 S	17,000 S	1,500 G	4,100 G
BUTYL BENZENE, TERT-	98-06-6	1,500 G	4,100 G	30,000 S	30,000 S	1,500 G	4,100 G
BUTYLBENZYL PHTHALATE	85-68-7	2700 S	2700 S	2700 S	2700 S	2700 S	2700 S
CAPTAN	13-36-2	190 G	[740] 500 (G) S	[3300] 500 S	[3300] 500 S	[3300] 500 S	[3300] 500 S
CARBARYL	63-25-2	700 H	700 H	70,000 H	70,000 H	[83000] 120,000 S	[83000] 120,000 S
CARBAZOLE	86-74-8	33 G	130 G	1,200 S	1,200 S	1,200 S	1,200 S
CARBOFURAN	1563-68-2	40 M	40 M	4,000 M	4,000 M	40 M	40 M
CARBON DISULFIDE	75-15-0	1,900 N	4,100 N	190,000 N	410,000 N	1,900 N	4,100 N
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	140,000 N	290,000 N	1,400,000 S	1,400,000 S	140,000 N	290,000 N
CHLORO-1-PROPENE, 3- (ALLYL CHLORIDE)	107-05-1	2.8 N	5.8 N	280 N	580 N	280 N	580 N
CHLOROACETOPHENONE, 2-	532-27-4	0.31 G	0.88 G	31 G	88 G	310 G	880 G
CHLOROANILINE, P-	106-47-8	150 G	410 G	[3900] 15,000 (S) G	[3900] 41,000 (S) G	150 G	410 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	2.4 G	9.6 G	240 G	960 G	240 G	960 G
CHLOROBUTANE, 1-	109-69-3	15,000 G	41,000 G	680,000 S	680,000 S	15,000 G	41,000 G
CHLORODIBROMOMETHANE	124-48-1	100 M	100 M	10,000 M	10,000 M	10,000 M	10,000 M
CHLORODIFLUOROMETHANE	75-45-6	100 H	100 H	10,000 H	10,000 H	100 H	100 H
CHLOROETHANE	75-00-3	[28000] 230 G	[58000] 900 G	[2800000] 23,000 G	[57000000] 90,000 (S) G	[2800000] 23,000 (S) G	[57000000] 90,000 (S) G
CHLOROETHYL VINYL ETHER, 2-	440-75-8	240 N	540 N	24,000 N	54,000 N	240 N	540 N
CHLOROFORM	67-66-3	100 M	100 M	10,000 M	10,000 M	100 M	100 M
CHLORONAPHTHALENE, 2-	91-58-7	2,900 G	[6700] 8,200 (S) G	[6700] 12,000 S	[6700] 12,000 S	2,900 G	[6700] 8,200 (S) G
CHLORONITROBENZENE, P-	100-00-5	37 G	140 G	3,700 G	14,000 G	37 G	140 G
CHLOROPHENOL, 2-	95-57-8	40 H	40 H	4,000 H	4,000 H	40 H	40 H
CHLOROPRENE	126-99-8	19 N	41 N	1,900 N	4,100 N	1,900 N	4,100 N
CHLOROPROPANE, 2-	75-29-6	280 N	580 N	28,000 N	58,000 N	280 N	580 N
CHLOROTHALONIL	1897-45-6	60 G	240 G	600 S	600 S	60 G	240 G
CHLOROTOLUENE, O-	95-49-8	100 H	100 H	10,000 H	10,000 H	100 H	100 H
CHLORPYRIFOS	2921-88-2	20 H	20 H	[4300] 1,100 S	[4300] 1,100 S	20 H	20 H
CHLORSULFURON	64902-72-3	1,800 G	5,100 G	130,000 S	130,000 S	1,800 G	5,100 G
CHLORTHAL-DIMETHYL (DACTHAL) (DCPA)	1861-32-1	400 H	400 H	500 S	500 S	500 S	500 S

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REGULATED SUBSTANCE	CASRN	USED AQUIFERS				NON-USE AQUIFERS	
		TDS ≤ 2500		TDS > 2500		R	NR
		R	NR	R	NR		
CHRYSENE	218-01-9	1.9 S	[4-8] 1.9 S	[4-8] 1.9 S	[4-8] 1.9 S	[3-8] 1.9 S	[4-8] 1.9 S
CRESOL	1319-77-3	[49] 180 [N] G	[490] 510 [N] G	[4900] 18000 [N] G	[40000] 51000 [N] G	[4900] 18000 [N] G	[40000] 51000 [N] G
CRESOL, O- (METHYLPHENOL, 2-)	95-48-7	1,800 G	5,100 G	180,000 G	510,000 G	180,000 G	510,000 G
CRESOL, M (METHYLPHENOL, 3-)	108-39-4	1,800 G	5,100 G	180,000 G	510,000 G	1,800,000 G	2,500,000 S
CRESOL, P (METHYLPHENOL, 4-)	108-44-5	180 G	510 G	18,000 G	51,000 G	180,000 G	510,000 G
CRESOL, P-CHLORO-M-	59-50-7	180 G	510 G	18,000 G	51,000 G	180 G	510 G
CROTONALDEHYDE	4170-30-3	0.079 N	0.34 N	7.9 N	34 N	7.9 N	34 N
CROTONALDEHYDE, TRANS-	123-73-9	0.079 G	0.34 G	7.9 G	34 G	7.9 G	34 G
CUMENE	98-82-8	[26] 1100 N	[52] 2300 N	[2600] 50000 [N] S	[5200] 50000 [N] S	[2600] 50000 [N] S	[5200] 50000 [N] S
CYCLOHEXANONE	108-94-1	49000 N	100000 N	4900000 N	[5000000] [S] 10000000 N	49000 N	100000 N
CYFLUTHRIN	68359-37-5	1 S	1 S	1 S	1 S	1 S	1 S
CYROMAZINE	66215-27-8	270 G	770 G	27,000 G	77,000 G	270 G	770 G
DDD, 4,4'-	72-54-8	0.62 N	2.7 N	62 N	180 S	62 N	180 S
DDE, 4,4'-	72-55-9	[4-3] 1.9 [S] G	[4-3] 7.6 [S] G	[4-3] 40 S	[4-3] 40 S	[4-3] 40 S	[4-3] 40 S
DDT, 4,4'-	50-29-3	[4-7] 1.9 [S] G	[4-7] 5.5 S	[4-7] 5.5 S	[4-7] 5.5 S	[4-7] 5.5 S	[4-7] 5.5 S
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	2.5 N	10 N	250 N	1000 N	250 N	1000 N
DIAMINOTOLUENE, 2,4-	95-80-7	0.21 G	0.81 G	21 G	81 G	210 G	810 G
DIAZINON	333-41-5	0.6 H	0.6 H	60 H	60 H	0.6 H	0.6 H
DIBENZO[A, H]ANTHRACENE	53-70-3	0.09 G	0.36 G	[0.5] 0.6 S	[0.5] 0.6 S	[0.5] 0.6 S	[0.5] 0.6 S
DIBROMO-3-CHLOROPROPANE, 1,2-	98-12-8	0.2 M	0.2 M	20 M	20 M	20 M	20 M
DIBROMOBENZENE, 1,4-	106-37-6	370 G	1,000 G	20,000 S	20,000 S	370 G	1,000 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	97 N	200 N	9700 N	20000 N	9700 N	20000 N
DIBUTYL PHTHALATE, N-	84-74-2	3700 G	10000 G	[43000] 370000 [S] G	[43000] 400000 S	[43000] 400000 S	[43000] 400000 S
DICHLORO-2-BUTENE, 1,4-	784-41-0	0.016 N	0.069 N	1.6 N	6.9 N	0.016 N	0.069 N
DICHLOROBENZENE, 1,2-	95-50-1	600 M	600 M	60000 M	60000 M	60000 M	60000 M
DICHLOROBENZENE, 1,3-	541-73-1	600 H	600 H	60000 H	60000 H	60000 H	60000 H
DICHLOROBENZENE, P-	106-46-7	75 M	75 M	7500 M	7500 M	7500 M	7500 M
DICHLOROBENZIDINE, 3,3'-	91-94-1	1.5 G	5.8 G	150 G	580 G	1500 G	[5800] 3100 [G] S
DICHLORODIFLUOROMETHANE (FREON 12)	75-71-8	1000 H	1000 H	100000 H	100000 H	100000 H	100000 H
DICHLOROETHANE, 1,1-	75-34-3	27 N	110 N	2700 N	11000 N	270 N	1100 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	7000 M	7000 M	700 M	700 M
DICHLOROETHYLENE, TRANS-1,2-	156-60-5	100 M	100 M	10000 M	10000 M	1000 M	1000 M
DICHLOROMETHANE (METHYLENE CHLORIDE)	75-09-2	5 M	5 M	500 M	500 M	500 M	500 M
DICHLOROPHENOL, 2,4-	120-83-2	20 H	20 H	2000 H	2000 H	20000 H	20000 H
DICHLOROPHENOXYACETIC ACID, 2,4- (2,4-D)	94-75-7	70 M	70 M	7000 M	7000 M	7000 M	7000 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	6.6 G	26.0 G	660 G	2,600 G	660 G	2,600 G
DICHLOROPROPIONIC ACID, 2,2- (DALAPON)	75-99-0	200 M	200 M	20000 M	20000 M	20000 M	20000 M
DICHLORVOS	62-73-7	0.52 N	2.2 N	52 N	220 N	0.52 N	2.2 N

All concentrations in µg/L
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REGULATED SUBSTANCE	CASRN	USED AQUIFERS				NON-USE AQUIFERS	
		TDS ≤ 2500		TDS > 2500		R	NR
		R	NR	R	NR		
DICYCLOPENTADIENE	77-73-6	0.55 N	1.2 N	55 N	120 N	0.55 N	1.2 N
DIELDRIN	60-57-1	0.041 G	0.16 G	4.1 G	16 G	41 G	160 G
DIETHYL PHTHALATE	84-66-2	5000 H	5000 H	500000 H	500000 H	[900000] 1100000 S	[900000] 1100000 S
DIFLUBENZURON	35367-38-5	200 S	200 S	200 S	200 S	200 S	200 S
DIMETHOATE	60-51-5	7.3 G	20 G	730 G	2000 G	7300 G	20000 G
DIMETHOXYBENZIDINE, 3,3-	119-90-4	47 G	190 G	4,700 G	19,000 G	47,000 G	60,000 S
DIMETHYLAMINOAZOBENZENE, P-	60-11-7	0.14 G	0.57 G	14 G	57 G	140 G	[230] 570 [S] G
DIMETHYLANILINE, N,N-	121-69-7	73 G	200 G	7,300 G	20,000 G	7,300 G	20,000 G
DIMETHYL BENZIDINE, 3,3-	119-93-7	0.072 G	0.28 G	7.2 G	28 G	72 G	280 G
[DIMETHYLHYDRAZINE, 1,1-]	[67-14-7]	[0.087] [N]	[0.37] [N]	[8.7] [N]	[37] [N]	[0.87] [N]	[3.7] [N]
DIMETHYLPHENOL, 2,4-	105-67-9	730 G	2000 G	7300 G	20000 G	73000 G	200000 G
DINITROBENZENE, 1,3-	98-65-0	1 H	1 H	100 H	100 H	1000 H	1000 H
DINITROPHENOL, 2,4-	51-28-5	19 N	41 N	1900 N	4100 N	190 N	410 N
DINITROTOLUENE, 2,4-	121-14-2	2.1 G	8.4 G	210 G	840 G	2100 G	8400 G
DINITROTOLUENE, 2,6- (2,6-DNT)	606-20-2	37 G	100 G	3700 G	10000 G	37000 G	100000 G
DINOSEB	88-85-7	7 M	7 M	700 M	700 M	700 M	700 M
DIOXANE, 1,4-	123-91-1	5.6 N	24 N	560 N	2400 N	56 N	240 N
DIPHENAMID	957-51-7	200 H	200 H	20,000 H	20,000 H	200 H	200 H
DIPHENYLAMINE	122-39-4	200 H	200 H	20000 H	20000 H	20000 H	20000 H
DIPHENYLHYDRAZINE, 1,2-	122-66-7	0.83 G	3.3 G	83 G	[330] 250 [G] S	[330] 250 [G] S	[330] 250 [G] S
DIQUAT	85-00-7	20 M	20 M	2000 M	2000 M	20 M	20 M
DISULFOTON	298-04-4	0.3 H	0.3 H	30 H	30 H	30 H	30 H
DIURON	330-54-1	10 H	10 H	1000 H	1000 H	10 H	10 H
ENDOSULFAN	115-29-7	58 N	120 N	480 S	480 S	480 S	480 S
ENDOSULFAN I (ALPHA)	959-98-8	220 G	[530] 500 S	[530] 500 S	[530] 500 S	220 G	[530] 500 S
ENDOSULFAN II (BETA)	33213-85-9	220 G	[280] 450 S	[280] 450 S	[280] 450 S	220 G	[280] 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	10000 M	10000 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	2.8 N	5.8 N	280 N	580 N	280 N	580 N
ETHEPHON	16672-87-0	180 G	510 G	18,000 G	51,000 G	180 G	510 G
ETHION	563-12-2	18 G	51 G	[600] 850 S	[600] 850 S	18 G	51 G
ETHOXYETHANOL, 2- (EGEE)	110-80-5	[3900] 550 N	[8200] 1200 N	[390000] 55000 N	[820000] 120000 N	[390000] 55000 N	[820000] 120000 N
ETHYL ACETATE	141-78-6	8700 N	18000 N	870000 N	1800000 N	870000 N	1800000 N
ETHYL ACRYLATE	140-88-5	3.1 N	13 N	310 N	1300 N	310 N	1300 N
ETHYL BENZENE	100-41-4	700 M	700 M	70000 M	70000 M	70000 M	70000 M
ETHYL DIPROPYLTHIOCARBAMATE, S- (EPTC)	759-94-4	910 G	2,600 G	91,000 G	260,000 G	910 G	2,600 G
ETHYL ETHER	60-29-7	1900 N	4100 N	190000 N	410000 N	1900 N	4100 N
ETHYL METHACRYLATE	97-63-2	870 N	1,800 N	87,000 N	180,000 N	870 N	1,800 N
ETHYLENE GLYCOL	107-21-1	14000 H	14000 H	1400000 H	1400000 H	1400000 H	1400000 H
ETHYLENE THIOUREA (ETU)	96-45-7	3 H	3 H	300 H	300 H	3,000 H	3,000 H
ETHYL P-NITROPHENYL PHENYLPHOSPHOROTHIOATE	2104-64-5	0.37 G	1 G	37 G	100 G	0.37 G	1 G
FENAMIPHOS	22224-92-6	2 H	2 H	200 H	200 H	2 H	2 H
FENVALERATE (PYDRIN)	51630-58-1	85 S	85 S	85 S	85 S	85 S	85 S
FLUOMETURON (FLUOMETRON IN EPA FEB 96)	2164-17-2	90 H	90 H	9,000 H	9,000 H	90 H	90 H
FLUORANTHENE	206-44-0	[270] 260 S	[270] 260 S	[270] 260 S	[270] 260 S	[270] 260 S	[270] 260 S

All concentrations in µg/L
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S = Aqueous solubility cap

APPENDIX A
TABLE 1 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN GROUNDWATER

REGULATED SUBSTANCE	CASRN	USED AQUIFERS				NON-USE AQUIFERS	
		TDS ≤ 2500		TDS > 2500		R	NR
		R	NR	R	NR		
FLUORENE	86-73-7	[490] 1500 G	[490] 1900 S	[490] 1900 S	[490] 1900 S	[490] 1900 S	[490] 1900 S
FLUOROTRICHLOROMETHANE (FREON 11)	75-69-4	2000 H	2000 H	200000 H	200000 H	200000 H	200000 H
FONOFOS	944-22-9	10 H	10 H	1000 H	1000 H	10 H	10 H
FORMALDEHYDE	50-00-0	1000 H	1000 H	100000 H	100000 H	100000 H	100000 H
FORMIC ACID	64-18-6	19000 N	41000 N	1900000 N	4100000 N	190000 N	410000 N
FOSETYL-AL	39148-24-8	110,000 G	310,000 G	11,000,000 G	31,000,000 G	110,000 G	310,000 G
FURAN	110-00-9	9.7 N	20 N	970 N	2,000 N	970 N	2,000 N
FURFURAL	98-01-1	110 G	290 N	11000 G	29000 N	110 G	290 N
GLYPHOSATE	1071-83-6	700 M	700 M	70000 M	70000 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	[6-2] 6 S	[6-2] 6 S	[6-2] 6 S	[6-2] 6 S
HEXACHLOROBUTADIENE	87-68-3	1 H	1 H	100 H	100 H	1000 H	1000 H
HEXACHLOROCYCLOPENTADIENE	77-47-4	50 M	50 M	[3490] 1800 S	[3490] 1800 S	[3490] 1800 S	[3490] 1800 S
HEXACHLOROETHANE	67-72-1	1 H	1 H	100 H	100 H	100 H	100 H
HEXANE	110-54-3	550 N	1200 N	9500 S	9500 S	550 N	1200 N
HEXYTHIAZOX (SAVEY)	78587-05-0	500 S	500 S	500 S	500 S	500 S	500 S
HYDRAZINE/HYDRAZINE SULFATE	302-01-2	0.0088 N	0.038 N	0.88 N	3.8 N	0.088 N	0.38 N
HYDROQUINONE	123-31-9	1,500 G	4,100 G	150,000 G	410,000 G	1,500,000 G	4,100,000 G
INDENO[1,2,3-CD]PYRENE	193-39-5	0.9 G	3.6 G	62 S	62 S	62 S	62 S
IPRODIONE	36734-19-7	1,500 G	4,100 G	13,000 S	13,000 S	1,500 G	4,100 G
ISOBUTYL ALCOHOL	78-83-1	2900 N	6100 N	290000 N	610000 N	290000 N	610000 N
ISOPHORONE	78-59-1	100 H	100 H	10000 H	10000 H	100000 H	100000 H
KEPONE	143-50-0	0.041 G	0.16 G	4.1 G	16 G	41 G	160 G
MALATHION	121-75-5	100 H	100 H	10000 H	10000 H	10000 H	10000 H
MALEIC HYDRAZIDE	123-33-1	4000 H	4000 H	400000 H	400000 H	4000 H	4000 H
MANEB	12427-38-2	180 G	510 G	18,000 G	23,000 S	180 G	510 G
MERPHOS OXIDE	78-48-8	1.1 G	3.1 G	110 G	310 G	1.1 G	3.1 G
METHACRYLONITRILE	126-98-7	1.9 N	4.1 N	190 N	410 N	1.9 N	4.1 N
METHAMIDOPHOS	10285-92-6	1.8 G	5.1 G	180 G	510 G	1.8 G	5.1 G
METHANOL	67-56-1	4900 N	10000 N	490000 N	1000000 N	490000 N	1000000 N
METHOMYL	16752-77-5	200 H	200 H	20000 H	20000 H	200 H	200 H
METHOXYCHLOR	72-43-5	40 M	40 M	[400] 45 S	[400] 45 S	[400] 45 S	[300] 45 S
METHOXYETHANOL, 2-	109-88-4	37 G	100 G	3,700 G	10,000 G	37 G	100 G
METHYL ACETATE	78-20-9	37,000 G	100,000 G	3,700,000 G	10,000,000 G	37,000 G	100,000 G
METHYL ACRYLATE	96-33-3	1,100 G	3,100 G	110,000 G	310,000 G	110,000 G	310,000 G
METHYL CHLORIDE	74-87-3	3 H	3 H	300 H	300 H	300 H	300 H
METHYL ETHYL KETONE	78-93-3	2800 N	5800 N	280000 N	580000 N	280000 N	580000 N
METHYL ISOBUTYL KETONE	108-10-1	[220] 190 N	[470] 410 N	[22000] 19000 N	[47000] 41000 N	[22000] 19000 N	[47000] 41000 N
METHYL METHACRYLATE	80-62-6	[280] 1900 N	4100 N	190000 N	410000 N	190000 N	410000 N
METHYL METHANESULFONATE	66-27-3	6.7 G	26 G	670 G	2600 G	6.7 G	26 G
METHYL PARATHION	298-00-0	2 H	2 H	200 H	200 H	200 H	200 H
METHYL STYRENE (MIXED ISOMERS)	25013-15-4	220 G	610 G	22,000 G	61,000 G	220 G	610 G
METHYL TERT-BUTYL ETHER (MTBE)	1634-04-4	20 H	20 H	2000 H	2000 H	200 H	200 H
METHYLENE BIS(2-CHLOROANILINE), 4,4'-	101-14-4	5.1 G	20 G	510 G	2,000 G	5.1 G	20 G
METHYLNAPHTHALENE, 2-	91-57-6	[4500] 730 G	[4400] 2000 G	25000 S	25000 S	[4500] 730 G	[4400] 2000 G
METHYLSTYRENE, ALPHA	98-83-9	680 N	1,400 N	68,000 N	140,000 N	680 N	1,400 N
NAPHTHALENE	91-20-3	100 H	100 H	10000 H	10000 H	30000 S	30000 S
NAPHTHYLAMINE, 1-	134-32-7	0.37 G	1.4 G	37 G	140 G	370 G	1400 G

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TABLE 1 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN GROUNDWATER

REGULATED SUBSTANCE	CASRN	USED AQUIFERS				NON-USE AQUIFERS	
		TDS ≤ 2500		TDS > 2500		R	NR
		R	NR	R	NR		
NAPHTHYLAMINE, 2-	91-59-8	0.37 G	1.4 G	37 G	140 G	370 G	1400 G
NAPROPAMIDE	15299-99-7	3,700 G	10,000 G	70,000 S	70,000 S	3,700 G	10,000 G
NITROANILINE, M-	99-09-2	2.1 G	5.8 G	210 G	580 G	2.1 G	5.8 G
NITROANILINE, O-	88-74-4	2.1 G	5.8 G	210 G	580 G	2.1 G	5.8 G
NITROANILINE, P-	100-01-6	2.1 G	5.8 G	210 G	580 G	2.1 G	5.8 G
NITROBENZENE	98-95-3	18 G	51 G	1800 G	5100 G	18000 G	51000 G
NITROPHENOL, 2-	88-75-5	[2300] 290 G	[6300] 820 G	[230000] 29000 G	[620000] 82000 G	[2400000] 290000 [S] G	[2400000] 820000 [S] G
NITROPHENOL, 4-	100-02-7	60 H	60 H	6000 H	6000 H	60000 H	60000 H
NITROPROPANE, 2-	79-46-9	0.016 N	0.058 N	1.6 N	6.8 N	0.16 N	0.68 N
NITROSODIETHYLAMINE, N-	55-18-5	0.001 N	0.0043 N	0.1 N	0.43 N	0.01 N	0.043 N
NITROSODIMETHYLAMINE, N-	62-75-9	0.0031 N	0.013 N	0.31 N	1.3 N	0.031 N	0.13 N
NITROSO-DI-N-BUTYLAMINE, N-	924-16-3	0.027 N	0.11 N	2.7 N	11 N	2.7 N	11 N
NITROSODI-N-PROPYLAMINE, N-	621-64-7	0.094 G	0.37 G	9.4 G	37 G	94 G	370 G
NITROSODIPHENYLAMINE, N-	86-30-6	130 G	530 G	13000 G	35000 S	35000 S	35000 S
NITROSO-N-ETHYLUREA, N-	759-73-9	0.0047 G	0.019 G	0.47 G	1.9 G	0.47 G	1.9 G
OCTYL PHTHALATE, DI-N-	117-84-0	730 G	2000 G	3000 S	3000 S	3000 S	3000 S
OXAMYL (VYDATE)	23135-22-0	200 M	200 M	20000 M	20000 M	200 M	200 M
PARATHION	56-38-2	220 G	610 G	20000 S	20000 S	220 G	610 G
PCB-1016 (AROCLOR)	12674-11-2	2.6 G	7.2 G	[49] 250 S	[49] 250 S	2.6 G	7.2 G
PCB-1221 (AROCLOR)	11104-28-2	1.3 G	5.2 G	130 G	[200] 520 [S] G	1.3 G	5.2 G
PCB-1232 (AROCLOR)	11141-16-5	1.3 G	5.2 G	130 G	520 G	1.3 G	5.2 G
PCB-1242 (AROCLOR)	53469-21-9	1.3 G	5.2 G	[130] 100 [S] S	[240] 100 S	1.3 G	5.2 G
PCB-1248 (AROCLOR)	12672-29-6	0.37 G	1.4 G	[6] 37 [S] G	[6] 37 [S] G	0.37 G	1.4 G
PCB-1254 (AROCLOR)	11097-69-1	0.37 G	1.4 G	[42] 37 [S] G	[42] 37 [S] G	0.37 G	1.4 G
PCB-1280 (AROCLOR)	11096-82-5	[0.26] 1.1 [N] G	[1-1] 4.3 [N] G	[26] 80 [N] S	80 S	[0.26] 1.1 [N] G	[1-1] 4.3 [N] G
PEBULATE	1114-71-2	1,800 G	5,100 G	92,000 S	92,000 S	1,800 G	5,100 G
PENTACHLOROBENZENE	608-93-5	29 G	82 G	[240] 740 S	[240] 740 S	[240] 740 S	[240] 740 S
PENTACHLORONITROBENZENE	82-68-8	2.5 G	10 G	250 G	[600] 440 S	[600] 440 S	[600] 440 S
PENTACHLOROPHENOL	87-86-5	1 M	1 M	100 M	100 M	1000 M	1000 M
PHENACETIN	62-44-2	300 G	1200 G	30000 G	120000 G	30000 G	760000 S
PHENANTHRENE	85-01-8	[1200] 1100 S	[1200] 1100 S	[1200] 1100 S	[1200] 1100 S	[1200] 1100 S	[1200] 1100 S
PHENOL	108-95-2	4000 H	4000 H	40000 H	40000 H	40000 H	40000 H
PHENYLENEDIAMINE, M-	108-45-2	220 G	610 G	22000 G	61000 G	22000 G	61000 G
PHENYLPHENOL, 2-	90-43-7	340 G	1,300 G	34,000 G	130,000 G	340,000 G	700,000 G
PHORATE	298-02-2	1.9 N	4.1 N	190 N	410 N	1.9 N	4.1 N
PHTHALIC ANHYDRIDE	85-44-9	73000 G	200000 G	6200000 S	6200000 S	6200000 S	6200000 S
PICLORAM	1918-02-1	500 M	500 M	50,000 M	50,000 M	500 M	500 M
POLYCHLORINATED BIPHENYLS (AROCLORS) (PCBS)	1336-36-3	0.5 M	0.5 M	50 M	50 M	0.5 M	0.5 M
PRONAMIDE	23950-58-5	50 H	50 H	5000 H	5000 H	50 H	50 H
PROPANIL	709-98-8	180 G	510 G	18,000 G	51,000 G	180 G	510 G
PROPHAM	122-42-9	730 G	2,000 G	73,000 G	200,000 G	730 G	2,000 G
PROPYLBENZENE, N-	103-65-1	1,500 G	4,100 G	52,000 S	52,000 S	1,500 G	4,100 G
PROPYLENE OXIDE	75-56-9	2.8 G	11 G	280 G	1100 G	2.8 G	11 G
PYRENE	129-00-0	[43] 130 S	[43] 130 S	[43] 130 S	[43] 130 S	[43] 130 S	[43] 130 S

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TABLE 1 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN GROUNDWATER

REGULATED SUBSTANCE	CASRN	USED AQUIFERS				NON-USE AQUIFERS	
		TDS ≤ 2500		TDS > 2500		R	NR
		R	NR	R	NR		
PYRIDINE	110-86-1	9.7 N	20 N	970 N	2000 N	97 N	200 N
QUINOLINE	91-22-5	0.055 G	0.22 G	5.5 G	22 G	55 G	220 G
QUIZALOFOP (ASSURE)	76578-14-8	300 S	300 S	300 S	300 S	300 S	300 S
RONNEL	299-84-3	1,800 G	5,100 G	40,000 S	40,000 S	1,800 G	5,100 G
SIMAZINE	122-34-9	4 M	4 M	400 M	400 M	4 M	4 M
STRYCHNINE	57-24-9	11 G	31 G	1100 G	3100 G	11000 G	31000 G
STYRENE	100-42-5	100 M	100 M	10000 M	10000 M	10000 M	10000 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	0.9 H	0.9 H	90 H	90 H	0.9 H	0.9 H
TETRACHLOROENZENE, 1,2,4,5-	95-94-3	11 G	31 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	0.3 N	0.3 N	30 N	30 N	30 N	30 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	290 N	610 N	29000 N	61000 N	29000 N	61000 N
TETRAETHYL LEAD	78-00-2	0.0037 G	0.01 G	0.37 G	1 G	3.7 G	10 G
TETRAETHYLDITHIOPYROPHOSPHATE	3689-24-5	4.9 N	10 N	490 N	1,000 N	4.9 N	10 N
THIOFANOX	39196-18-4	11 G	31 G	1,100 G	3,100 G	11 G	31 G
THIRAM	137-26-8	180 G	510 G	18000 G	30000 S	180 G	510 G
TOLUENE	108-88-3	1000 M	1000 M	100000 M	100000 M	100000 M	100000 M
TOLUIDINE, M-	108-44-1	2.8 G	11 G	280 G	1100 G	2.8 G	11 G
TOLUIDINE, O	95-53-4	[3-7] 2.8 G	[4-4] 11 G	[970] 280 G	[1400] 1100 G	[3700] 2800 G	[49000] 11000 G
TOLUIDINE, P-	106-49-0	3.5 G	14 G	350 G	1400 G	3.5 G	14 G
TOXAPHENE	8001-35-2	3 M	3 M	300 M	300 M	3 M	3 M
TRIALATE	2303-17-5	470 G	1,300 G	4,000 S	4,000 S	470 G	1,300 G
TRIBROMOMETHANE (BROMOFORM)	75-25-2	100 M	100 M	10000 M	10000 M	10000 M	10000 M
TRICHLORO-1,2,2-TRIFLUOROETHANE, 1,1,2-	76-13-1	83,000 N	170,000 S	170,000 S	170,000 S	170,000 N	170,000 S
TRICHLOROENZENE, 1,2,4-	120-82-1	70 M	70 M	7000 M	7000 M	[49000] 44000 S	[49000] 44000 S
TRICHLOROENZENE, 1,3,5-	108-70-3	40 H	40 H	4000 H	4000 H	40 H	40 H
TRICHLOROETHANE, 1,1,1-	71-55-6	200 M	200 M	20000 M	20000 M	2000 M	2000 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
TRICHLOROPHENOL, 2,4,5-	95-95-4	3700 G	10000 G	370000 G	1000000 G	1000000 S	1000000 S
TRICHLOROPHENOL, 2,4,6-	88-06-2	[60] 11 G	[240] 31 G	[6000] 1100 G	[24000] 3100 G	[60000] 11000 G	[240000] 31000 G
TRICHLOROPHENOXACETIC ACID, 2,4,5- (2,4,5-T)	93-76-5	70 H	70 H	7000 H	7000 H	70000 H	70000 H
TRICHLOROPHENOXYPYROPIONIC ACID, 2,4,5- (2,4,5-TP)	93-72-1	50 M	50 M	5000 M	5000 M	50 M	50 M
TRICHLOROPROPANE, 1,1,2-	598-77-6	180 G	510 G	18,000 G	51,000 G	180 G	510 G
TRICHLOROPROPANE, 1,2,3-	96-18-4	40 H	40 H	4000 H	4000 H	4000 H	4000 H
TRICHLOROPROPENE, 1,2,3-	96-19-5	180 G	510 G	18,000 G	51,000 G	180 G	510 G
TRIFLURALIN	1582-09-8	5 H	5 H	500 H	500 H	5 H	5 H
TRIMETHYLBENZENE, 1,3,4- (TRIMETHYLBENZENE, 1,2,4-)	95-63-6	16 N	35 N	1,600 N	3,500 N	1,600 N	3,500 N
TRIMETHYLBENZENE, 1,3,5-	108-67-8	16 N	35 N	1,600 N	3,500 N	16 N	35 N
TRINITROTOLUENE, 2,4,6-	118-96-7	2 H	2 H	200 H	200 H	2 H	2 H
VINYL ACETATE	108-05-4	550 N	1200 N	55000 N	120000 N	550 N	1200 N
VINYL BROMIDE (BROMOETHENE)	593-60-2	1.4 N	5.8 N	140 N	580 N	14 N	58 N
VINYL CHLORIDE	75-01-4	2 M	2 M	200 M	200 M	20 M	20 M
WARFARIN	81-81-2	[0.00000092] 11 [S]	[0.00000092] 31 [S]	[0.00000092] [S]	[0.00000092] [S]	[0.00000092] [S]	[0.00000092] S

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 TABLE 1 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN GROUNDWATER

REGULATED SUBSTANCE	CASRN	USED AQUIFERS				NON-USE AQUIFERS	
		TDS ≤ 2500		TDS > 2500		R	NR
		R	NR	R	NR		
XYLENES (TOTAL)	1330-20-7	10000 M	10000 M	180000 S	180000 S	180000 S	180000 S
ZINEB	12122-67-7	1,800 G	5,100 G	10,000 S	10,000 S	1,800 G	5,100 G

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 R = Residential
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 G = Ingestion
 N = Inhalation
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APPENDIX A

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

REGULATED SUBSTANCE	CASRN	USED AQUIFERS				NON-USE AQUIFERS	
		TDS ≤ 2500		TDS > 2500		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	50 M	50 M	5,000 M	5,000 M	50,000 M	50,000 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	600 H	600 H	60,000 H	60,000 H	600,000 H	600,000 H
CADMIUM	7440-43-9	5 M	5 M	500 M	500 M	5,000 M	5,000 M
[CHROMIUM (III)]	6065-83-1	[100] [M]	[100] [M]	[10,000] [M]	[10,000] [M]	[100,000] [M]	[100,000] [M]
[CHROMIUM (VI)]	8540-29-9	[180] [G]	[510] [G]	[18,000] [G]	[51,000] [G]	[180,000] [G]	[510,000] [G]
CHROMIUM, TOTAL	16065-83-1	100 M	100 M	10,000 M	10,000 M	100,000 M	100,000 M
COBALT	7440-48-4	[2200] 730 G	[6100] 2,000 G	[220000] 73,000 G	[610000] 200,000 G	[2200000] 73,000 G	[6100000] 200,000 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
LEAD	7439-92-1	5 M	5 M	500 M	500 M	5,000 M	5,000 M
MERCURY	7439-97-6	2 M	2 M	200 M	200 M	2,000 M	2,000 M
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
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
SULFATE		500,000 M	500,000 M	50,000,000 M	50,000,000 M	500,000,000 M	500,000,000 M

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

APPENDIX A

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

REGULATED SUBSTANCE	CASRN	USED AQUIFERS				NON-USE AQUIFERS	
		TDS ≤ 2500		TDS > 2500		R	NR
		R	NR	R	NR		
THALLIUM	7440-28-0	2 M	2 M	200 M	200 M	2,000 M	2,000 M
TIN	7440-31-5	22,000 G	61,000 G	2,200,000 G	6,100,000 G	22,000,000 G	61,000,000 G
VANADIUM	7440-62-2	[2-4] 260 G	[5-8] 720 G	[240] 26,000 G	[580] 72,000 G	[2400] 260,000 G	[5800] 720,000 G
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	SMCL
ALUMINUM	200
CHLORIDE	250,000
FLUORIDE	2,000
IRON	300
MANGANESE	50

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

APPENDIX A

TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL

A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential	Non-Residential	
		0-15 feet	Surface Soil 0-2 feet	Subsurface Soil 2-15 feet
ACENAPHTHENE	83-32-9	13,000 G	170,000 G	190,000 C
ACENAPHTHYLENE	208-96-8	13,000 G	170,000 G	190,000 C
ACEPHATE	30560-19-1	880 G	9,100 G	190,000 C
ACETALDEHYDE	75-07-0	140 N	[520] 480 N	[600] 560 N
ACETONE	67-64-1	10,000 C	10,000 C	10,000 C
ACETONITRILE	75-05-8	[400] 1,100 C	[1,100] C	[1,300] C
ACETOPHENONE	98-86-2	10,000 C	10,000 C	10,000 C
ACETYLAMINOFLUORENE, 2- (2AAF)	53-96-3	4.7 G	21 G	190,000 C
ACROLEIN	10-702-8	0.38 N	1.1 N	1.2 N
ACRYLAMIDE	79-06-1	4 G	18 G	190,000 C
ACRYLIC ACID	79-10-7	19 N	53 N	60 N
ACRYLONITRILE	107-13-1	4.7 N	24 N	28 N
ALACHLOR	15972-60-8	220 G	990 G	190,000 C
ALDICARB	116-06-3	220 G	2,800 G	190,000 C
ALDRIN	309-00-2	1.1 G	4.7 G	190,000 C
ALLYL ALCOHOL	107-18-6	330 N	930 N	1100 N
AMINOBIIPHENYL, 4-	92-67-1	0.85 G	3.8 G	190,000 C
AMITROLE	61-82-5	19 G	84 G	190,000 C
AMMONIA	7664-41-7	1,900 N	5,300 N	6,100 N
AMMONIUM SULFAMATE	7773-06-0	44,000 G	190,000 C	190,000 C
ANILINE	62-53-3	19 N	53 N	60 N
ANTHRACENE	120-12-7	66,000 G	190,000 C	190,000 C
ATRAZINE	1912-24-9	81 G	360 G	190,000 C
BAYGON (PROPOXUR)	114-26-1	880 G	11,000 G	190,000 C
BENOMYL	17804-35-2	11,000 G	140,000 G	190,000 C
BENTAON	25057-89-0	6,600 G	84,000 G	190,000 C
BENZENE	71-43-2	[38] 41 N	[200] 210 N	[230] 240 N
BENZIDINE	92-87-5	0.078 G	0.34 G	190,000 C
BENZO[A]ANTHRACENE	56-55-3	25 G	110 G	190,000 C
BENZO[A]PYRENE	50-32-8	2.5 G	11 G	190,000 C
BENZO[B]FLUORANTHENE	205-99-2	25 G	110 G	190,000 C
BENZO[GHI]PERYLENE	191-24-2	13,000 G	170,000 G	190,000 C
BENZO[K]FLUORANTHENE	207-08-9	250 G	1100 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	6.1 G	10,000 C
BENZYL ALCOHOL	100-51-6	10,000 C	10,000 C	10,000 C
BENZYL CHLORIDE	100-44-7	6.4 N	33 N	38 N
BHC, ALPHA	319-84-6	2.8 G	13 G	190,000 C
BHC, BETA-	319-85-7	9.9 G	44 G	190,000 C
BHC, DELTA-	319-86-8	[66] 130 G	[840] 1,700 G	190,000 C
BHC, GAMMA (LINDANE)	58-89-9	[16] 14 G	[72] 61 G	190,000 C
BIPHENYL, 1,1-	92-52-4	11,000 G	140,000 G	190,000 C
BIS(2-CHLOROETHYL)ETHER	111-44-4	0.96 N	5 N	5.7 N
BIS(2-CHLORO-ISOPROPYL)ETHER	108-60-1	[2,700] 32 N	[7,400] 160 N	[8,500] 190 N
BIS(CHLOROMETHYL)ETHER	542-88-1	0.0051 N	0.027 N	0.031 N
BIS[2-ETHYLHEXYL] PHTHALATE	117-81-7	1,300 G	5,700 G	10,000 C
BISPHENOLA	80-05-7	11,000 G	140,000 G	190,000 C
BROMACIL	314-40-9	22,000 G	190,000 C	190,000 C
BROMOCHLOROMETHANE	74-97-5	2,200 G	10,000 C	10,000 C
BROMODICHLOROMETHANE	75-27-4	8.6 N	45 N	51 N
BROMOMETHANE	74-83-9	95 N	270 N	300 N
BROMOXYNIL	1689-84-5	4,400 G	56,000 G	190,000 C

All concentrations in mg/kg

- G - Ingestion
- H - Inhalation
- C - Cap

APPENDIX A
TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL
A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential		Non-Residential			
		0-15 feet		Surface Soil 0-2 feet	Subsurface Soil 2-15 feet		
BROMOXYNIL OCTANOATE	1689-99-2	4,400	G	56,000	G	190,000	C
BUTADIENE, 1,3-	106-99-0	5.3	G	23	G	190,000	C
BUTYL ALCOHOL, N-	71-36-3	6,600	N	10,000	C	10,000	C
BUTYLATE	2008-41-5	10,000	C	10,000	C	10,000	C
BUTYLBENZENE, N-	104-51-8	8,800	G	10,000	C	10,000	C
BUTYLBENZENE, SEC-	135-98-8	8,800	G	10,000	C	10,000	C
BUTYLBENZENE, TERT-	98-06-6	8,800	G	10,000	C	10,000	C
BUTYLBENZYL PHTHALATE	85-68-7	10,000	C	10,000	C	10,000	C
CAPTAN	133-06-2	5,100	G	23,000	G	190,000	C
CARBARYL	63-25-2	22,000	G	190,000	C	190,000	C
CARBAZOLE	86-74-8	900	G	4,000	G	190,000	C
CARBOFURAN	1563-66-2	1,100	G	14,000	G	190,000	C
CARBON DISULFIDE	75-15-0	10,000	C	10,000	C	10,000	C
CARBON TETRACHLORIDE	56-23-5	21	N	110	N	120	N
CARBOXIN	5234-68-4	22,000	G	190,000	C	190,000	C
CHLORAMBEN	133-90-4	3,300	G	42,000	G	190,000	C
CHLORDANE	57-74-9	[43] 51	G	[64] 230	G	190,000	C
CHLORO-1,1-DIFLUOROETHANE, 1-	75-68-3	190,000	C	190,000	C	190,000	C
CHLORO-1-PROPENE, 3- (ALLYL CHLORIDE)	107-05-1	19	N	53	N	61	N
CHLOROACETOPHENONE, 2-	532-27-4	1.9	G	24	G	190,000	C
CHLOROANILINE, P-	106-47-8	880	G	11,000	G	190,000	C
CHLOROBENZENE	108-90-7	4,400	G	10,000	C	10,000	C
CHLOROBENZILATE	510-15-6	66	G	290	G	10,000	C
CHLOROBUTANE, 1-	109-69-3	10,000	C	10,000	C	10,000	C
CHLORODIBROMOMETHANE	124-48-1	12	N	61	N	70	N
CHLORODIFLUOROMETHANE	75-45-6	190,000	C	190,000	C	190,000	C
CHLOROETHANE	75-00-3	[40000] [C]		10,000	C	10,000	C
		6200	G				
[CHLOROETHYL VINYL ETHER, 2-]	[440-75-8]	[4,700]	[N]	[4,700]	[N]	[6,400]	[N]
CHLOROFORM	67-66-3	[44] 6	N	[72] 17	N	[82] 19	N
CHLORONAPHTHALENE, 2-	91-58-7	18,000	G	190,000	C	190,000	C
CHLORONITROBENZENE, P-	100-00-5	990	G	4,400	G	190,000	C
CHLOROPHENOL, 2-	95-57-8	330	N	920	N	1,100	N
CHLOROPRENE	126-99-8	130	N	370	N	430	N
CHLOROPROPANE, 2-	75-29-6	1,900	N	5,400	N	6,100	N
CHLOROTHALONIL	1897-45-6	1,600	G	7,200	G	190,000	C
CHLOROTOLUENE, O-	95-49-8	4,400	G	10,000	C	10,000	C
CHLORPYRIFOS	2921-88-2	660	G	8,400	G	190,000	C
CHLORSULFURON	64902-72-3	11,000	G	140,000	G	190,000	C
CHLORTHAL-DIMETHYL (DACTHAL) (DCPA)	1861-32-1	2,200	G	28,000	G	190,000	C
CHRYSENE	218-01-9	2,500	G	11,000	G	190,000	C
CRESOL	1319-77-3	[330] 1.100	[N]	[920] 10,000	[N]	[4,400] [N]	
			G		G	10,000	G
CRESOL, O- (METHYLPHENOL, 2-)	95-48-7	10,000	C	10,000	C	10,000	C
CRESOL, M (METHYLPHENOL, 3-)	108-39-4	10,000	C	10,000	C	10,000	C
CRESOL, P (METHYLPHENOL, 4-)	106-44-5	1,100	G	14,000	G	190,000	C
CRESOL, P-CHLORO-M-	59-50-7	1,100	G	14,000	G	190,000	C
CROTONALDEHYDE	4170-30-3	9.4	G	42	G	10,000	C
CROTONALDEHYDE, TRANS-	123-73-9	9.4	G	42	G	10,000	C
CUMENE	98-82-8	7,300	N	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	10,000	C	10,000	C

All concentrations in mg/kg

G - Ingestion

H - Inhalation

C - Cap

APPENDIX A
TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL
A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential		Non-Residential			
		0-15 feet		Surface Soil 0-2 feet	Subsurface Soil 2-15 feet		
CYROMAZINE	66215-27-8	1,700	G	21,000	G	190,000	C
DDD, 4,4'-	72-54-8	75	G	330	G	190,000	C
DDE, 4,4'-	72-55-9	53	G	230	G	190,000	C
DDT, 4,4'-	50-29-3	53	G	230	G	190,000	C
DI(2-ETHYLHEXYL)ADIPATE	103-23-1	10,000	C	10,000	C	10,000	C
DIALATE	2303-16-4	18	N	93	N	110	N
DIAMINOTOLUENE, 2,4-	95-80-7	5.6	G	25	G	190,000	C
DIAZINON	333-41-5	200	G	2500	G	190,000	C
DIBENZO[A,H]ANTHRACENE	53-70-3	2.5	G	11	G	190,000	C
DIBROMO-3-CHLOROPROPANE, 1,2-	96-12-8	3.8	N	11	N	12	N
DIBROMOBENZENE, 1,4-	106-37-6	2,200	G	28,000	G	190,000	C
DIBROMOETHANE, 1,2- (ETHYLENE DIBROMIDE)	106-93-4	0.21	G	0.93	G	8.6	N
DIBROMOMETHANE	74-95-3	670	N	1,900	N	2,100	N
DIBUTYL PHTHALATE, N-	84-74-2	10,000	C	10,000	C	10,000	C
DICHLORO-2-BUTENE, 1,4-	764-41-0	91,000	N	190,000	C	190,000	C
DICHLOROBENZENE, 1,2-	95-50-1	3,800	N	10,000	C	10,000	C
DICHLOROBENZENE, 1,3-	541-73-1	[5,999] [N] 6,600	G	10,000	C	10,000	C
DICHLOROBENZENE, P-	106-46-7	750	G	3,300	G	190,000	C
DICHLOROBENZIDINE, 3,3'-	91-94-1	40	G	180	G	190,000	C
DICHLORODIFLUOROMETHANE (FREON 12)	75-71-8	3,800	N	10,000	N	10,000	C
DICHLOROETHANE, 1,1-	75-34-3	200	N	1,000	N	1,200	N
DICHLOROETHANE, 1,2-	107-06-2	12	N	63	N	73	N
DICHLOROETHYLENE, 1,1-	75-35-4	6	N	33	N	38	N
DICHLOROETHYLENE, CIS-1,2-	156-59-2	670	N	1,900	N	2,100	N
DICHLOROETHYLENE, TRANS-1,2-	156-60-5	1,300	N	3,700	N	4,300	N
DICHLOROMETHANE (METHYLENE CHLORIDE)	75-09-2	[670] 680	N	3500	N	4000	N
DICHLOROPHENOL, 2,4-	120-83-2	660	G	8400	G	190,000	C
DICHLOROPHENOXYACETIC ACID, 2,4- (2,4-D)	94-75-7	2,200	G	28,000	G	190,000	C
DICHLOROPROPANE, 1,2-	78-87-5	[46] 31	N	[85] 160	N	[97] 180	N
DICHLOROPROPENE, 1,3-	542-75-6	80	N	410	N	470	N
DICHLOROPROPIONIC ACID (DALAPON), 2,2-	75-99-0	2,000	N	5,500	N	6,300	N
DICHLORVOS	62-73-7	62	G	270	G	190,000	C
DICYCLOPENTADIENE	77-73-6	6,600	G	84,000	G	190,000	C
DIELDRIN	60-57-1	1.1	G	5	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	56,000	G	190,000	C
DIMETHOATE	60-51-5	44	G	560	G	190,000	C
DIMETHOXYBENZIDINE, 3,3'-	119-90-4	1,300	G	5,700	G	190,000	C
DIMETHYLAMINOAZOBENZENE, P-	60-11-7	3.9	G	17	G	190,000	C
DIMETHYLANILINE, N,N-	000121-69-7	440	G	5600	G	10,000	C
DIMETHYLBENZIDINE, 3,3'-	000119-93-7	1.9	G	8.6	G	10,000	C
[DIMETHYLHYDRAZINE, 1,1-]	[57-14-7]	[0.64] [N]		[3-3] [N]		[3-8] [N]	
DIMETHYLPHENOL, 2,4-	105-67-9	4,400	G	10,000	C	10,000	C
DINITROBENZENE, 1,3-	99-65-0	22	G	280	G	190,000	C
DINITROPHENOL, 2,4-	51-28-5	440	G	5,600	G	190,000	C
DINITROTOLUENE, 2,4-	121-14-2	58	G	260	G	190,000	C
DINITROTOLUENE, 2,6- (2,6-DNT)	606-20-2	220	G	2,800	G	190,000	C
DINOSEB	88-85-7	220	G	2,800	G	190,000	C
DIOXANE, 1,4-	123-91-1	41	N	210	N	240	N
DIPHENAMID	957-51-7	6,600	G	84,000	G	190,000	C
DIPHENYLAMINE	122-39-4	5,500	G	70,000	G	190,000	C

All concentrations in mg/kg

- G - Ingestion
- H - Inhalation
- C - Cap

APPENDIX A
TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL
A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential		Non-Residential			
		0-15 feet		Surface Soil 0-2 feet	Subsurface Soil 2-15 feet		
DIPHENYLHYDRAZINE, 1,2-	122-66-7	22	G	99	G	190,000	C
DIQUAT	85-00-7	480	G	6,200	G	190,000	C
DISULFOTON	298-04-4	2.7	N	7.6	N	8.7	N
DIURON	330-54-1	440	G	5,600	G	190,000	C
ENDOSULFAN	115-29-7	1,300	G	17,000	G	190,000	C
ENDOSULFAN I (ALPHA)	959-98-8	1,300	G	17,000	G	190,000	C
ENDOSULFAN II (BETA)	33213-65-9	1,300	G	17,000	G	190,000	C
ENDOSULFAN SULFATE	1031-07-8	1,300	G	17,000	G	190,000	C
ENDOTHALL	145-73-3	4,400	G	56,000	G	190,000	C
ENDRIN	72-20-8	66	G	840	G	190,000	C
EPICHLOROHYDRIN	106-89-8	19	N	53	N	60	N
ETHEPHON	16672-87-0	1,100	G	14,000	G	190,000	C
ETHION	563-12-2	110	G	1,400	G	10,000	C
ETHOXYETHANOL, 2- (EGEE)	110-80-5	[40,000] 3,800	[G] N	10,000	C	10,000	C
ETHYL ACETATE	141-78-6	10,000	C	10,000	C	10,000	C
ETHYL ACRYLATE	140-88-5	23	N	120	N	140	N
ETHYL BENZENE	100-41-4	10,000	C	10,000	C	10,000	C
ETHYL DIPROPYLTHIOCARBAMATE, S- (EPTC)	759-94-4	5,500	G	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	20,000	G	190,000	C	190,000	C
ETHYLENE GLYCOL	107-21-1	10,000	C	10,000	C	10,000	C
ETHYLENE THIOUREA (ETU)	96-45-7	18	G	220	G	190,000	C
ETHYL-P-NITROPHENYL PHENYLPHOSPHOROTHIOATE	2104-64-5	2.2	G	28	G	190,000	C
FENAMIPHOS	22224-92-6	55	G	700	G	190,000	C
FENVALERATE (PYDRIN)	51630-58-1	5,500	G	10,000	C	10,000	C
FLUOMETURON (FLUOMETRON IN EPA FEB 96)	2164-17-2	2,900	G	36,000	G	190,000	C
FLUORANTHENE	206-44-0	8,800	G	110,000	G	190,000	C
FLUORENE	86-73-7	8,800	G	110,000	G	190,000	C
FLUOROTRICHLOROMETHANE (FREON 11)	75-69-4	10,000	C	10,000	C	10,000	C
FONOFOS	944-22-9	140	N	380	N	440	N
FORMALDEHYDE	50-00-0	24	N	130	N	150	N
FORMIC ACID	64-18-6	10,000	C	10,000	C	10,000	C
FOSETYL-AL	039148-24-8	190,000	C	190,000	C	190,000	C
FURAN	110-00-9	220	G	2,800	G	10,000	C
FURFURAL	98-01-1	660	G	2,600	N	3,000	N
GLYPHOSATE	1071-83-6	22,000	G	190,000	C	190,000	C
HEPTACHLOR	76-44-8	4	G	18	G	190,000	C
HEPTACHLOR EPOXIDE	1024-57-3	2	G	8.7	G	190,000	C
HEXACHLOROBENZENE	118-74-1	11	G	50	G	190,000	C
HEXACHLOROBUTADIENE	87-68-3	44	G	560	G	10,000	C
HEXACHLOROCYCLOPENTADIENE	77-47-4	[1,500] 1,300	G	10000	C	10000	C
HEXACHLOROETHANE	67-72-1	220	G	2800	G	190,000	C
HEXANE	110-54-3	3,800	N	10,000	C	10,000	C
HEXYTHIAZOX (SAVEY)	78587-05-0	5,500	G	70,000	G	190,000	C
HYDRAZINE/HYDRAZINE SULFATE	302-01-2	0.065	N	0.34	N	0.39	N
HYDROQUINONE	123-31-9	8,800	G	110,000	G	190,000	C
INDENO[1,2,3-CD]PYRENE	193-39-5	25	G	110	G	190000	C
IPRODIONE	36734-19-7	8,800	G	110,000	G	190,000	C
ISOBUTYL ALCOHOL	78-83-1	10,000	C	10,000	C	10,000	C
ISOPHORONE	78-59-1	10,000	C	10,000	C	10,000	C

All concentrations in mg/kg

G - Ingestion

H - Inhalation

C - Cap

APPENDIX A
TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL
A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential		Non-Residential			
		0-15 feet		Surface Soil 0-2 feet	Subsurface Soil 2-15 feet		
KEPONE	143-50-0	1.1	G	5	G	190,000	C
MALATHION	121-75-5	1,400	N	4,000	N	4,600	N
MALEIC HYDRAZIDE	123-33-1	110,000	G	190,000	C	190,000	C
MANEB	12427-38-2	1,100	G	14,000	G	190,000	C
MERPHOS OXIDE	78-48-8	6.6	G	84	G	10,000	C
METHACRYLONITRILE	126-98-7	13	N	37	N	43	N
METHAMIDOPHOS	10265-92-6	11	G	140	G	190,000	C
METHANOL	67-56-1	10,000	C	10,000	C	10,000	C
METHOMYL	16752-77-5	5,500	G	70,000	G	190,000	C
METHOXYCHLOR	72-43-5	1,100	G	14,000	G	190,000	C
METHOXYETHANOL, 2-	109-86-4	220	G	1,100	N	1,200	N
METHYL ACETATE	79-20-9	10,000	C	10,000	C	10,000	C
METHYL ACRYLATE	96-33-3	6,600	G	10,000	C	10,000	C
METHYL CHLORIDE	74-87-3	180	N	920	N	1,000	N
METHYL ETHYL KETONE	78-93-3	10,000	C	10,000	C	10,000	C
METHYL ISOBUTYL KETONE	108-10-1	1,500	N	4,300	N	4,900	N
METHYL METHACRYLATE	80-62-6	10,000	C	10,000	C	10,000	C
METHYL METHANESULFONATE	66-27-3	180	G	800	G	190,000	C
METHYL PARATHION	298-00-0	17	N	48	N	55	N
METHYL STYRENE (MIXED ISOMERS)	25013-15-4	1,300	G	17,000	G	190,000	C
METHYL TERT-BUTYL ETHER (MTBE)	1634-04-4	[10,000] 620	[C]	[10,000] [C]		[10,000] [C]	
METHYLENE BIS(2-CHLOROANILINE), 4,4'-	101-14-4	140	G	610	G	190,000	C
METHYLNAPHTHALENE, 2-	91-57-6	[8800] 4400	G	10,000	C	10,000	C
METHYLSTYRENE, ALPHA	98-83-9	15,000	G	190,000	C	190,000	C
NAPHTHALENE	91-20-3	[8,800] 4,400	G	56,000	G	190,000	C
NAPHTHYLAMINE, 1-	134-32-7	9.9	G	44	G	190,000	C
NAPHTHYLAMINE, 2-	91-59-8	9.9	G	44	G	190,000	C
NAPROPAMIDE	15299-99-7	22,000	G	190,000	C	190,000	C
NITROANILINE, M-	99-09-2	13	G	160	G	190,000	C
NITROANILINE, O-	88-74-4	13	G	160	G	190,000	C
NITROANILINE, P-	100-01-6	13	G	160	G	190,000	C
NITROBENZENE	98-95-3	110	G	1,400	G	10,000	C
NITROPHENOL, 2-	88-75-5	[14,000] 1,800	G	[170,000] 22,000	G	190,000	C
NITROPHENOL, 4-	100-02-7	[14,000] 1,800	G	[170,000] 22,000	G	190,000	C
NITROPROPANE, 2-	79-46-9	0.12	N	0.61	N	0.70	N
NITROSODIETHYLAMINE, N-	55-18-5	0.0073	N	0.038	N	0.044	N
NITROSODIMETHYLAMINE, N-	62-75-9	0.023	N	0.12	N	0.13	N
NITROSO-DI-N-BUTYLAMINE, N-	924-16-3	3.3	G	15	G	10,000	C
NITROSODI-N-PROPYLAMINE, N-	621-64-7	2.6	G	11	G	10,000	C
NITROSODIPHENYLAMINE, N-	86-30-6	3700	G	16,000	G	190,000	C
NITROSO-N-ETHYLUREA, N-	759-73-9	0.13	G	0.57	G	190,000	C
OCTYL PHTHALATE, DI-N-	117-84-0	4,400	G	10,000	C	10,000	C
OXAMYL (VYDATE)	23135-22-0	5,500	G	70,000	G	190,000	C
PARATHION	56-38-2	1,300	G	10,000	C	10,000	C
PCB-1016 (AROCLOR)	12674-11-2	15	G	200	G	10,000	C
PCB-1221 (AROCLOR)	11104-28-2	36	G	160	G	10,000	C
PCB-1232 (AROCLOR)	11141-16-5	36	G	160	G	10,000	C

All concentrations in mg/kg

- G - Ingestion
- H - Inhalation
- C - Cap

APPENDIX A
TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL
A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential	Non-Residential	
		0-15 feet	Surface Soil 0-2 feet	Subsurface Soil 2-15 feet
PCB-1242 (AROCLOR)	53469-21-9	36 G	160 G	10,000 C
PCB-1248 (AROCLOR)	12672-29-6	9.9 G	44 G	10,000 C
PCB-1254 (AROCLOR)	11097-69-1	4.4 G	44 G	10,000 C
PCB-1260 (AROCLOR)	11096-82-5	30 G	130 G	190,000 C
PEBULATE	1114-71-2	10,000 C	10,000 C	10,000 C
PENTACHLOROBENZENE	608-93-5	180 G	2,200 G	190,000 C
PENTACHLORONITROBENZENE	82-68-8	69 G	310 G	190,000 C
PENTACHLOROPHENOL	87-86-5	150 G	660 G	190,000 C
PHENACETIN	62-44-2	8,100 G	36,000 G	190,000 C
PHENANTHRENE	85-01-8	66,000 G	190,000 C	190,000 C
PHENOL	108-95-2	130,000 G	190,000 C	190,000 C
PHENYLENEDIAMINE, M-	108-45-2	1,300 G	17,000 G	190,000 C
PHENYLPHENOL, 2-	90-43-7	9,200 G	41,000 G	190,000 C
PHORATE	298-02-2	13 N	37 N	43 N
PHTHALIC ANHYDRIDE	85-44-9	190,000 C	190,000 C	190,000 C
PICLORAM	1918-02-1	15,000 G	190,000 C	190,000 C
PRONAMIDE	23950-58-5	17,000 G	190,000 C	190,000 C
PROPANIL	709-98-8	1,100 G	14,000 G	190,000 C
PROPHAM	122-42-9	4,400 G	56,000 G	190,000 C
PROPYLBENZENE, N-	103-65-1	8,800 G	10,000 C	10,000 C
PROPYLENE OXIDE	75-56-9	75 G	330 G	[500] 510 N
PYRENE	129-00-0	6,600 G	84,000 G	190,000 C
PYRIDINE	110-86-1	67 N	190 N	210 N
QUINOLINE	91-22-5	1.5 G	6.6 G	10,000 C
QUIZALOFOP (ASSURE)	76578-14-8	2,000 G	25,000 G	190,000 C
RONNEL	299-84-3	11,000 G	140,000 G	190,000 C
SIMAZINE	122-34-9	150 G	660 G	190,000 C
STRYCHNINE	57-24-9	66 G	840 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	36,000 G	190,000 C
TERBUFOS	13071-79-9	1.7 N	4.6 N	5.3 N
TETRACHLOROBENZENE, 1,2,4,5-	95-94-3	66 G	840 G	190,000 C
TETRACHLORODIBENZO-P-DIOXIN, 2,3,7,8- (TCDD)	1746-01-6	0.00012 G	0.00053 G	190,000 C
TETRACHLOROETHANE, 1,1,1,2-	630-20-6	690 G	3,100 G	190,000 C
TETRACHLOROETHANE, 1,1,2,2-	79-34-5	5.5 N	28 N	33 N
TETRACHLOROETHYLENE (PCE)	127-18-4	340 G	1,500 G	3,300 N
TETRACHLOROPHENOL, 2,3,4,6-	58-90-2	6,600 G	84,000 G	190,000 C
TETRAETHYL LEAD	78-00-2	0.022 G	0.28 G	10,000 C
TETRAETHYLDITHIOPYROPHOSPHATE	3689-24-5	33 N	92 N	110 N
THIOFANOX	39196-18-4	66 G	840 G	190,000 C
THIRAM	137-26-8	1,100 G	14,000 G	190,000 C
TOLUENE	108-88-3	7,600 N	10,000 C	10,000 C
TOLUIDINE, M-	108-44-1	75 G	330 G	10,000 C
TOLUIDINE, O-	95-53-4	[90] 75 G	[440] 330 G	10,000 C
TOLUIDINE, P-	106-49-0	94 G	420 G	190,000 C
TOXAPHENE	8001-35-2	16 G	72 G	190,000 C
TRIALATE	2303-17-5	2,900 G	36,000 G	190,000 C
TRIBROMOMETHANE (BROMOFORM)	75-25-2	290 N	1,500 N	1,700 N
TRICHLORO-1,2,2-TRIFLUOROETHANE, 1,1,2-	76-13-1	190,000 C	190,000 C	190,000 C
TRICHLOROBENZENE, 1,2,4-	120-82-1	2,200 G	10,000 C	10,000 C

All concentrations in mg/kg
G - Ingestion
H - Inhalation
C - Cap

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	Non-Residential	
			Surface Soil 0-2 feet	Subsurface Soil 2-15 feet
TRICHLOROENZENE, 1,3,5-	108-70-3	[2,200] G 1,300	[28,000] G 17,000	190,000 C
TRICHLOROETHANE, 1,1,1-	71-55-8	10,000 G	10,000 C	10,000 C
TRICHLOROETHANE, 1,1,2-	79-00-5	20 N	100 N	120 N
TRICHLOROETHYLENE (TCE)	79-01-6	190 N	970 N	1,100 N
TRICHLOROPHENOL, 2,4,5-	95-95-4	22,000 G	190,000 C	190,000 C
TRICHLOROPHENOL, 2,4,6-	88-06-2	[4,600] 66 G	[7,200] 840 G	190,000 C
TRICHLOROPHENOXYACETIC ACID, 2,4,5- (2,4,5-T)	93-76-5	2,200 G	28,000 G	190,000 C
TRICHLOROPHENOXYPROPIONIC ACID, 2,4,5- (2,4,5-TP)(SILVEX)	93-72-1	1,800 G	22,000 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	0.16 N	0.82 N	0.95 N
TRICHLOROPROPENE, 1,2,3-	96-19-5	1,100 G	10,000 C	10,000 C
TRIFLURALIN	1582-09-8	1,700 G	10,000 G	190,000 C
TRIMETHYLBENZENE, 1,3,4- (TRIMETHYLBENZENE, 1,2,4-)	95-63-6	110 N	320 N	360 N
TRIMETHYLBENZENE, 1,3,5-	108-67-8	110 N	320 N	360 N
TRINITROTOLUENE, 2,4,6-	118-96-7	110 G	1400 G	190,000 C
VINYL ACETATE	108-05-4	3,800 N	10,000 C	10,000 C
VINYL BROMIDE (BROMOETHENE)	593-60-2	160 G	720 G	190,000 C
VINYL CHLORIDE	75-01-4	[3-8] 12 [N] G	[20] 53 [N] G	[22] 220 N
WARFARIN	81-81-2	66 G	840 G	190,000 C
XYLENES (TOTAL)	1330-20-7	[40,000] [C] 8,000 N	10,000 C	10,000 C
ZINEB	12122-67-7	11,000 G	140,000 G	190,000 C

All concentrations in mg/kg

G - Ingestion

H - Inhalation

C - Cap

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TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL

Revised 10/3/00

B. Soil to Groundwater Numeric Values¹

REGULATED SUBSTANCE	CASRN	Used Aquifers												Soil Buffer Distance (feet)
		TDS ≤ 2500						TDS > 2500						
		Residential			Non-Residential			Residential			Non-Residential			
		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	220	2,700 E	[360] 380	[4,300] 3,700 E	[360] 380	[4,300] E	[360] 380	[4,300] E	[360] 380	[4,300] E	[360] 380	[4,300] E	15
ACENAPHTHYLENE	208-96-8	220	2,500 E	[300] 810	[4,400] 8,900 E	[300] 1,600	[4,400] E	[300] 1,600	[4,400] E	[300] 1,600	[4,400] E	[300] 1,600	[4,400] E	15
ACEPHATE	30580-19-1	7.6	0.9 E	30	3.6 E	760	90 E	3,000	360 E	7.6	0.9 E	30	3.6 E	NA
ACETALDEHYDE	75-07-0	1.9	0.23 E	[6-7] 5.2	[0.60] 0.63 E	190	23 E	[6-7] 520	[60] 63 E	1.9	0.23 E	[6-7] 5.2	[0.60] 0.63 E	NA
ACETONE	67-64-1	370	41 E	1,000	110 E	10,000	4,100 E	10,000	10,000 C	3,700	410 E	10,000	1,100 E	NA
ACETONITRILE	75-05-8	[6-8] 17	[0.66] 1.8 E	[42] 38	[4-3] 3.8 E	[680] 1,700	[66] 180 E	[4,200] 3,500	[420] 380 E	[68] 170	[6-8] 18 E	[420] 350	[42] 38 E	NA
ACETOPHENONE	98-86-2	370	200 E	1,000	[660] 540 E	10,000	10,000 C	10,000	10,000 C	370	200 E	1,000	[660] 540 E	NA
ACETYLAMINOFLUORENE, 2-(2AAF)	53-96-3	0.017	0.07 E	0.068	0.28 E	1.7	7 E	6.8	28 E	17	70 E	68	280 E	20
ACROLEIN	10-702-8	0.0085	0.00062 E	0.012	0.0014 E	0.56	0.062 E	1.2	0.14 E	0.065	0.0062 E	0.12	0.014 E	NA
ACRYLAMIDE	79-06-1	0.0033	0.00057 E	0.014	0.0024 E	0.33	0.057 E	1.4	0.24 E	0.0033	0.00057 E	0.014	0.0024 E	NA
ACRYLIC ACID	79-10-7	0.28	0.051 E	0.58	0.11 E	28	5.1 E	58	11 E	28	5.1 E	58	11 E	NA
ACRYLONITRILE	107-13-1	0.063	[0.0088] E	0.27	[0.038] 0.037 E	6.3	[0.88] 0.87 E	27	[2-8] 3.7 E	6.3	[0.88] 0.87 E	27	[2-8] 3.7 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	0.7	0.12 E	0.7	0.12 E	70	12 E	70	12 E	700	120 E	700	120 E	NA
ALDRIN	309-00-2	0.00087	0.1 E	0.0037	0.44 E	0.087	10 E	0.37	44 E	0.087	10 E	0.37	44 E	10
ALLYL ALCOHOL	107-18-6	4.9	0.58 E	10	1.2 E	490	58 E	1,000	120 E	490	58 E	1,000	120 E	NA
AMINOBIIPHENYL, 4-	92-67-1	0.0031	0.0012 E	0.012	[0.0046] E	0.31	0.12 E	1.2	[0-46] 0.46 E	3.1	1.2 E	12	[4-6] 4.6 E	NA
AMITROLE	61-82-6	0.07	[0.028] 0.028 E	0.28	[0.11] 0.12 E	7	[2-8] 2.8 E	28	[11] 12 E	70	[28] 28 E	280	[110] 120 E	NA
AMMONIA	7884-41-7	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	0.28	0.16 E	0.58	0.34 E	28	16 E	58	34 E	0.28	0.16 E	0.58	0.34 E	NA
ANTHRACENE	120-12-7	[4-3] 6.6	[230] 350 E	[4-3] 6.6	[230] 350 E	[4-3] 6.6	[230] 350 E	[4-3] 6.6	[230] 350 E	[4-3] 6.6	[230] 350 E	[4-3] 6.6	[230] 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
BAYGON (PROPOXUR)	114-28-1	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	180	880 E	200	970 E	200	970 E	200	970 E	180	880 E	200	970 E	20
BENTAZON	25057-99-0	110	16 E	310	45 E	11,000	1,600 E	31,000	4,500 E	110	16 E	310	45 E	NA
BENZENE	71-43-2	0.6	0.13 E	0.6	0.13 E	50	13 E	50	13 E	60	13 E	50	13 E	NA
BENZIDINE	92-87-5	0.00028	0.38 E	0.0011	1.5 E	0.028	38 E	0.11	150 E	0.28	380 E	1.1	1,500 E	5
BENZO[A]ANTHRACENE	56-55-3	0.09	[80] 79 E	0.36	320 E	[4-4] 1.1	[4,200] 860 E	[4-4] 1.1	[4,200] 860 E	[4-4] 1.1	[4,200] E	[4-4] 1.1	[4,200] E	6
BENZO[A]PYRENE	50-32-8	0.02	46 E	0.02	46 E	0.38	[870] 860 E	0.38	[870] 860 E	0.38	[870] 860 E	0.38	[870] 860 E	5
BENZO[B]FLUORANTHENE	205-99-2	0.09	120 E	0.12	[160] 170 E	0.12	[160] 170 E	0.12	[160] 170 E	0.12	[160] 170 E	0.12	[160] 170 E	5
BENZO[G]HPIPERYLENE	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	0.055	[600] 610 E	0.055	[600] 610 E	0.055	[600] 610 E	0.055	[600] 610 E	0.055	[600] 610 E	0.055	[600] 610 E	5
BENZOIC ACID	65-85-0	15,000	2,900 E	41,000	[7,900] 7,800 E	190,000	[66,000] E	190,000	[66,000] E	15,000	2,900 E	41,000	[7,900] E	NA
BENZOTRICHLORIDE	98-07-7	0.0051	0.012 E	0.02	0.048 E	0.51	1.2 E	2	4.8 E	5.1	12 E	20	48 E	30
BENZYL ALCOHOL	100-51-6	1,100	400 E	3,100	1,100 E	10,000	10,000 C	10,000	10,000 C	1,100	400 E	3,100	1,100 E	NA
BENZYL CHLORIDE	100-44-7	0.087	0.051 E	0.37	0.22 E	8.7	5.1 E	37	22 E	8.7	5.1 E	37	22 E	NA
BHC, ALPHA	319-84-6	0.01	0.046 E	0.041	0.19 E	1	4.6 E	4.1	19 E	10	46 E	41	190 E	20
BHC, BETA-	319-85-7	0.037	0.22 E	0.14	0.82 E	3.7	22 E	[44] 30	[82] 59 E	[37] 30	[220] 59 E	[440] 30	[820] 59 E	15
BHC, DELTA-	319-86-8	[4-4] 2.2	[6-4] 11 E	[2-4] 6.1	[46] 30 E	[440] 220	[640] 1100 E	[240] 610	[4,600] E	[4,400] 800	[6,400] E	[2,400] 800	[40,000] E	20
BHC, GAMMA (LINDANE)	58-89-9	0.02	[0.071] 0.072 E	0.02	[0.071] 0.072 E	2	[7.1] 7.2 E	2	[7.1] 7.2 E	20	[71] 72 E	20	[71] 72 E	20
BIPHENYL, 1,1-	92-52-4	180	790 E	510	2,200 E	720	3,100 E	720	3,100 E	720	3,100 E	720	3,100 E	20
BIS(2-CHLOROETHYL)ETHER	111-44-4	0.013	0.0039 E	0.055	0.017 E	1.3	0.39 E	5.5	1.7 E	1.3	0.39 E	5.5	1.7 E	NA

¹ For other options see Section 250.308

All concentrations in mg/kg

E - Number calculated by the soil to groundwater equation in Section 250.308

C - Cap

NA - The soil buffer distance option is not available for this substance

APPENDIX A

Revised 10/3/00

TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL
B. Soil to Groundwater Numeric Values¹

REGULATED SUBSTANCE	CASRN	Used Aquifers								Non-Use Aquifers				Soil Buffer Distance (feet)
		TDS ≤ 2500 ²				TDS > 2500				Residential		Non-Residential		
		Residential		Non-Residential		Residential		Non-Residential		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	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value			
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	0.000069	0.00001 E	0.00029	0.000044 E	0.0069	0.001 E	0.029	0.0044 E	0.0069	0.001 E	0.029	0.0044 E	NA
BIS(2-ETHYLHEXYL) PHTHALATE	117-81-7	0.6	130 E	0.6	130 E	[24] 29	[2400] 6300 E	[24] 29	[7,400] E	[34] 29	[7,400] E	[34] 29	[7,400] E	10
BIPHENOL A	80-05-7	180	700 E	510	2,000 E	12,000	46,000 E	12,000	46,000 E	12,000	46,000 E	12,000	46,000 E	20
BROMACIL	314-10-9	8	2 E	8	2 E	800	200 E	800	200 E	8	2 E	8	2 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
BROMODICHLOROMETHANE	75-27-4	10	3.4 E	10	3.4 E	1,000	340 E	1,000	340 E	10	3.4 E	10	3.4 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
BROMOXNYL	1889-84-8	73	63 E	200	170 E	7,300	6,300 E	13,000	11,000 E	73	63 E	200	170 E	NA
BROMOXNYL OCTANOATE	1889-99-2	8	360 E	8	360 E	8	360 E	8	360 E	8	360 E	8	360 E	15
BUTADIENE, 1,3-	106-99-0	0.015	0.0082 E	0.065	0.027 E	1.5	0.62 E	6.5	2.7 E	1.5	0.62 E	6.5	2.7 E	NA
BUTYL ALCOHOL, N-	71-36-3	97	12 E	200	24 E	9,700	1,200 E	10,000	2,400 E	970	120 E	2,000	240 E	NA
BUTYLATE	2008-41-9	35	51 E	35	51 E	3,500	5,100 E	3,500	5,100 E	35	51 E	35	51 E	30
BUTYL BENZENE, N-	104-51-8	150	950 E	410	2,600 E	1,500	9,500 E	1,500	9,500 E	150	950 E	410	2,600 E	15
BUTYL BENZENE, SEC-	135-98-8	150	350 E	410	980 E	1,700	4,000 E	1,700	4,000 E	150	350 E	410	980 E	30
BUTYL BENZENE, TERT-	99-06-8	150	270 E	410	740 E	3,000	5,400 E	3,000	5,400 E	150	270 E	410	740 E	30
BUTYL BENZYL PHTHALATE	85-68-7	270	10,000 C	270	10,000 C	270	10,000 C	270	10,000 C	270	10,000 C	270	10,000 C	10
CAPTAN	133-08-2	19	12 E	[24] 50	[46] 31 E	[200] 50	[200] 31 E	[200] 50	[200] 31 E	[200] 50	[200] 31 E	[200] 50	[200] 31 E	NA
CARBARYL	63-25-2	70	[42] 41 E	70	[42] 41 E	7,000	[4,200] E	7,000	[4,200] E	[6,300]	[6,000] E	[6,300]	[6,000] E	NA
CARBAZOLE	88-74-8	33	21 E	13	83 E	120	760 E	120	760 E	120	760 E	120	760 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	190	160 E	410	350 E	10,000	10,000 C	10,000	10,000 C	190	160 E	410	350 E	NA
CARBON TETRACHLORIDE	56-23-6	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	5234-88-4	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-	75-98-3	14,000	2,300 E	29,000	4,800 E	140,000	23,000 E	140,000	23,000 E	14,000	2,300 E	29,000	4,800 E	NA
CHLORO-1-PROPENE, 3- (ALLYL CHLORIDE)	107-05-1	0.28	0.095 E	0.58	0.13 E	28	6.5 E	58	13 E	28	6.5 E	58	13 E	NA
CHLOROACETOPHENONE, 2-	532-27-4	0.031	0.0093 E	0.088	0.026 E	3.1	0.83 E	8.8	2.6 E	31	9.3 E	88	26 E	NA
CHLOROANILINE, P-	106-47-8	15	19 E	41	[51] 52 E	[300] 1,600	[400] 1,800 E	[300] 4,100	[400] 5,200 E	15	19 E	41	[51] 52 E	NA
CHLORO BENZENE	106-90-7	10	[6.2] 6.1 E	10	[6.2] 6.1 E	1000	[620] 610 E	1,000	[620] 610 E	1,000	[620] 610 E	1,000	[620] 610 E	NA
CHLORO BENZILATE	510-15-6	0.24	1.6 E	0.96	[6.4] 6.3 E	24	160 E	96	[640] 630 E	240	1600 E	960	[6,400] E	15
CHLORO BUTANE, 1-	109-69-3	1,500	2,300 E	4,100	6,400 E	10,000	10,000 C	10,000	10,000 C	1,500	2,300 E	4,100	6,400 E	30
CHLORODIBROMOMETHANE	124-48-1	10	3.2 E	10	3.2 E	1,000	320 E	1,000	320 E	1,000	320 E	1,000	320 E	NA
CHLORODIFLUOROMETHANE	75-45-6	10	2.6 E	10	2.6 E	1,000	260 E	1,000	260 E	10	3 E	10	3 E	NA
CHLOROETHANE	75-00-3	[2,800] 23	[600] 5 E	[6,800] 20	[1,200] 12 [C] E	[10,000] E	[10,000] [C] E	[10,000] E	[10,000] [C] E	[10,000] E	[10,000] [C] E	[10,000] E	[10,000] [C] E	NA
[CHLOROETHYL VINYL ETHER, 2-]	[440-76-8]	[24]	[3.1] [6] E	[64]	[6.5] [6] E	[2400]	[240] [6] E	[6400]	[660] [6] E	[24]	[3.1] [6] E	[64]	[6.5] [6] E	[NA]
CHLOROFORM	67-66-3	10	2.5 E	10	2.5 E	1,000	250 E	1,000	250 E	10	2.5 E	10	2.5 E	NA
CHLORONAPHTHALENE, 2-	91-58-7	290	6,200 E	[670] 820	[14,000] E	[670] 1,200	[14,000] E	[670] 1,200	[14,000] E	290	6,200 E	[670] 820	[14,000] E	15
CHLORONITROBENZENE, P-	100-00-5	3.7	4.9 E	14	18 E	370	490 E	1,400	1,800 E	4	5 E	14	18 E	NA
CHLOROPHENOL, 2-	95-67-8	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	1.9	0.45 E	4.1	0.97 E	190	45 E	410	97 E	190	45 E	410	97 E	NA
CHLOROPROPANE, 2-	75-29-6	28	21 E	58	44 E	2,800	2,100 E	5,800	4,400 E	28	21 E	58	44 E	NA
CHLOROTHALONIL	1897-45-8	6	15 E	24	61 E	60	150 E	60	150 E	6	15 E	24	61 E	30
CHLORTOLUENE, 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
CHLORPYRIFOS	2921-88-2	2	23 E	2	23 E	[130] 110	[1,600] E	[120] 110	[1,600] E	2	23 E	2	23 E	15
CHLORSULFURON	64902-72-3	180	25 E	510	71 E	13,000	1,800 E	13,000	1,800 E	180	25 E	510	71 E	NA
CHLORTHAL-DIMETHYL (DACTHAL) (DCPA)	1861-32-1	50	650 E	50	650 E	50	620 E	50	620 E	50	620 E	50	620 E	15

¹ For other options see Section 250.308

All concentrations in mg/kg

E - Number calculated by the soil to groundwater equation in Section 250.308

C - Cap

NA - The soil buffer distance option is not available for this substance

APPENDIX A
 TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL
 B. Soil to Groundwater Numeric Values¹

Revised 10/3/00

REGULATED SUBSTANCE	CASRN	Used Aquifers												Soil Buffer Distance (feet)
		TDS ≤ 2500						TDS > 2500						
		Residential			Non-Residential			Residential			Non-Residential			
		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	
CHRYSENE	218-01-9	[0.48] 0.19	[220] 230 E	[0.48] 0.19	[220] 230 E	[0.48] 0.19	[220] 230 E	[0.48] 0.19	[220] 230 E	[0.48] 0.19	[220] 230 E	[0.48] 0.19	[220] 230 E	5
CRESOL(S)	1319-77-3	[4.9] 18	[0.85] 3.1 E	[10] 51	[1.7] 8.9 E	[490] 1800	[85] 310 E	[1,000] 5,100	[170] 890 E	[490] 1,800	[85] 310 E	[1,000] 5,100	[170] 890 E	NA
CRESOL, O- (METHYLPHENOL, 2-)	95-48-7	180	84 E	510	180 E	10,000	8,400 E	10,000	10,000 C	10,000	8,400 E	10,000	10,000 C	NA
CRESOL, M (METHYLPHENOL, 3-)	108-39-4	180	36 E	510	100 E	10,000	3,600 E	10,000	10,000 C	10,000	10,000 C	10,000	10,000 C	NA
CRESOL, P (METHYLPHENOL, 4-)	106-44-5	18	4.2 E	51	12 E	1,800	420 E	5,100	1,200 E	18,000	4,200 E	51,000	12,000 E	NA
CRESOL, P-CHLORO-M-	59-50-7	18	37 E	51	[100] 110 E	1,800	3,700 E	5,100	[10,000] E	18	37 E	51	[100] 110 E	30
CROTONALDEHYDE	4170-30-3	0.0079	0.00089 E	0.034	0.0043 E	0.79	0.099 E	3.4	0.43 E	0.79	0.099 E	3.4	0.43 E	NA
CROTONALDEHYDE, TRANS-	123-73-9	0.0079	0.00089 E	0.034	0.0043 E	0.79	0.099 E	3.4	0.43 E	0.79	0.10 E	3.4	0.43 E	NA
CUMENE	98-82-8	[2.6] 110	[48] 780 E	[6.4] 230	[37] 1,600 E	[260] 5,000	[4,800] [6]	[620] 5,000	[3700] [6]	[260] 5,000	[4,800] [6]	[620] 5,000	[3,700] C	15
CYCLOHEXANONE	108-94-1	4,900	1,400 E	10,000	2,800 E	10,000	10,000 C	10,000	10,000 C	4,900	1,400 E	10,000	2,800 E	NA
CYFLUTHRIN	88359-37-5	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
CYROMAZINE	66215-27-8	27	84 E	77	240 E	2,700	8,400 E	7,700	24,000 E	27	84 E	77	240 E	20
DDD, 4,4'-	72-54-8	0.062	6.8 E	0.27	[29] 30 E	6.2	680 E	16	[1,700] E	6.2	680 E	16	[1,700] E	10
DEE, 4,4'-	72-55-9	[0.43] 0.19	[28] 41 E	[0.43] 0.76	[28] 170 E	[0.43] 4	[28] 870 E	[0.43] 4	[28] 870 E	[0.43] 4	[28] 870 E	[0.43] 4	[28] 870 E	10
DDT, 4,4'-	50-29-3	[0.47] 0.19	[400] 110 E	[0.47] 0.55	[400] 330 E	[0.47] 0.55	[400] 330 E	[0.47] 0.55	[400] 330 E	[0.47] 0.55	[400] 330 E	[0.47] 0.55	[400] 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	0.25	0.15 E	1	0.59 E	25	15 E	100	59 E	25	15 E	100	59 E	NA
DIAMINOTOLUENE, 2,4-	95-80-7	0.021	0.0042 E	0.081	0.016 E	2.1	0.42 E	8.1	1.6 E	21	4.2 E	81	16 E	NA
DIAZINON	333-41-5	0.06	0.082 E	0.06	0.082 E	6	8.2 E	6	8.2 E	0.06	0.082 E	0.06	0.082 E	30
DIBENZO[A,H]ANTHRACENE	53-70-3	0.008	41 E	0.038	160 E	[0.06] 0.06	[230] 270 E	[0.06] 0.06	[230] 270 E	[0.06] 0.06	[230] 270 E	[0.06] 0.06	[230] 270 E	5
DIBROMO-3-CHLOROPROPANE, 1,2-	96-12-8	0.02	[0.0091] E	0.02	[0.0091] E	2	[0.91] 0.92 E	2	[0.91] 0.92 E	2	[0.91] 0.92 E	2	[0.91] 0.92 E	NA
DIBROMOBENZENE, 1,4-	106-37-6	37	150 E	100	410 E	2,000	8,200 E	2,000	8,200 E	37	150 E	100	410 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	9.7	3.7 E	20	7.7 E	970	370 E	2,000	770 E	970	370 E	2,000	770 E	NA
DIBUTYL PHTHALATE, N-	84-74-2	370	1,500 E	1,000	4100 E	[4,300]	[6,300] [6]	[4,300]	[6,300] [6]	[4,300]	[6,300] [6]	[4,300]	[6,300] [6]	20
DICHLORO-2-BUTENE, 1,4-	764-41-0	0.0016	0.0008 E	0.0089	0.0039 E	0.16	0.08 E	0.89	0.39 E	0.0016	0.0008 E	0.0089	0.0039 E	NA
DICHLOROBENZENE, 1,2-	95-50-1	60	[60] 58 E	60	[60] 58 E	6,000	[6,000] E	6,000	[6,000] E	6,000	[6,000] E	6,000	[6,000] E	NA
DICHLOROBENZENE, 1,3-	641-73-1	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	0.15	[8.4] 8.3 E	0.58	[33] 32 E	15	[840] 830 E	58	[3,300] E	150	[8,400] E	[33,000] 310	[33,000] 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	2.7	0.65 E	11	2.7 E	270	65 E	1,100	270 E	27	6.5 E	110	27 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-	158-59-2	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-	186-80-5	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	[0.075] 0.075 E	0.5	[0.075] 0.075 E	50	[7.5] 7.5 E	50	[7.5] 7.5 E	50	[7.5] 7.5 E	50	[7.5] 7.5 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
DICHLOROPHENOXYACETIC ACID, 2,4- (2,4-D)	94-75-7	7	1.8 E	7	1.8 E	700	180 E	700	180 E	700	180 E	700	180 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	0.66	0.12 E	2.6	0.46 E	66	12 E	260	46 E	66	12 E	260	46 E	NA
DICHLOROPROPIONIC ACID (DALAPON), 2,2-	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	0.052	0.012 E	0.22	0.052 E	5.2	1.2 E	22	5.2 E	0.052	0.012 E	0.22	0.052 E	NA
DICYCLOPENTADIENE	77-73-6	0.055	0.12 E	0.12	0.26 E	5.5	12 E	12	26 E	0.055	0.12 E	0.12	0.26 E	30
DIELDRIN	60-57-1	0.0041	0.11 E	0.016	0.44 E	0.41	11 E	1.6	44 E	4.1	110 E	16	440 E	15
DIETHYL PHTHALATE	84-86-2	500	160 E	500	160 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

¹ For other options see Section 250.308

All concentrations in mg/kg

E - Number calculated by the soil to groundwater equation in Section 250.308

C - Cap

NA - The soil buffer distance option is not available for this substance

APPENDIX A

TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL
B. Soil to Groundwater Numeric Values¹

Revised 10/3/00

REGULATED SUBSTANCE	CASRN	Used Aquifers								Non-Use Aquifers				Soil Buffer Distance (feet)
		TDS ≤ 2500				TDS > 2500				Residential		Non-Residential		
		Residential		Non-Residential		Residential		Non-Residential		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	
DIMETHOATE	60-51-5	0.73	0.28 E	2	0.77 E	73	28 E	200	77 E	730	280 E	2,000	770 E	NA
DIMETHOXYBENZIDINE, 3,3-	118-90-4	4.7	16 E	19	64 E	470	1,600 E	1,900	6,400 E	4,700	16,000 E	6,000	20,000 E	20
DIMETHYLAMINOAZOBENZENE, P-	60-11-7	0.014	0.037 E	0.057	0.15 E	1.4	3.7 E	5.7	15 E	14	37 E	[23] 57	[60] 150 E	20
DIMETHYLANILINE, N,N-	000121-69-7	7.3	4.1 E	20	11 E	730	410 E	2,000	1,100 E	730	410 E	2,000	1,100 E	NA
DIMETHYLBENZIDINE, 3,3-	000119-93-7	0.0072	0.4 E	0.028	1.5 E	0.72	40 E	2.8	150 E	7.2	400 E	28	1,500 E	10
[DIMETHYLHYDRAZINE, 1,1-]	[67-44-7]	0.0087	0.0087 E	0.037	0.0044 E	0.87	0.087 E	3.7	[0.44] [8]	[0.087] [8]	[0.087] [8]	[0.37] [0.44] [8]	[NA]	[NA]
DIMETHYLPHENOL, 2,4-	105-67-9	73	[31] 32 E	200	[85] 87 E	7,300	[3,100] E	10,000	[8,500] 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
DINITROPHENOL, 2,4-	51-28-5	1.9	0.21 E	4.1	0.46 E	190	21 E	410	46 E	19	2.1 E	41	4.6 E	NA
DINITROTOLUENE, 2,4-	121-14-2	0.21	0.05 E	0.84	0.2 E	21	5 E	84	20 E	210	50 E	840	200 E	NA
DINITROTOLUENE, 2,6- (2,6-DNT)	606-20-2	3.7	1.1 E	10	3 E	370	110 E	1,000	300 E	3,700	1,100 E	10,000	3,000 E	NA
DINOSEB	68-85-7	0.7	0.29 E	0.7	0.29 E	70	29 E	70	29 E	70	29 E	70	29 E	NA
DIOXANE, 1,4-	123-91-1	0.56	0.073 E	2.4	0.31 E	56	7.3 E	240	31 E	5.6	0.73 E	24	3.1 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	20	12 E	20	12 E	2,000	1,200 E	2,000	1,200 E	20,000	12,000 E	20,000	12,000 E	NA
DIPHENYLHYDRAZINE, 1,2-	122-66-7	0.083	0.19 E	0.33	0.58 E	8.3	15 E	[23] 28	[68] 44 E	[83] 28	[480] 44 E	[230] 28	[680] 44 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	0.03	[0.08] 0.078 E	0.03	[0.08] 0.078 E	3	[8] 7.8 E	3	[8] 7.8 E	3	[8] 7.8 E	3	8 E	20
DIURON	330-54-1	1	[0.87] 0.88 E	1	[0.87] 0.88 E	100	[87] 88 E	100	[87] 88 E	1	[0.87] 0.88 E	1	[0.87] 0.88 E	NA
ENDOSULFAN	115-29-7	5.8	30 E	12	81 E	48	250 E	48	250 E	48	250 E	48	250 E	15
ENDOSULFAN I (ALPHA)	959-98-8	22	110 E	[63] 50	[280] 280 E	[63] 50	[280] 280 E	[63] 50	[280] 280 E	22	110 E	[63] 50	[280] 280 E	15
ENDOSULFAN II (BETA)	33213-65-9	22	130 E	[28] 45	[470] 280 E	[28] 45	[470] 280 E	[28] 45	[470] 280 E	22	130 E	[28] 45	[470] 280 E	15
ENDOSULFAN SULFATE	1031-07-8	12	[72] 70 E	12	[72] 70 E	12	[72] 70 E	12	[72] 70 E	12	[72] 70 E	12	[72] 70 E	15
ENDOTHALL	145-73-3	10	[4.2] 4.1 E	10	[4.2] 4.1 E	1,000	[420] 410 E	1,000	[420] 410 E	10	[4.2] 4.1 E	10	[4.2] 4.1 E	NA
ENDRIN	72-20-8	0.2	[5.4] 5.5 E	0.2	[5.4] 5.5 E	20	[540] 550 E	20	[540] 550 E	0.2	[5.4] 5.5 E	0.2	[5.4] 5.5 E	15
EPICHLOROHYDRIN	106-89-8	0.28	0.056 E	0.58	0.12 E	28	5.6 E	58	12 E	28	5.6 E	58	12 E	NA
ETHEPHON	16672-87-0	18	2.1 E	51	5.8 E	1,800	210 E	5,100	580 E	18	2.1 E	51	5.8 E	NA
ETHION	563-12-2	1.8	39 E	5.1	110 E	[60] 85	[4,300] E	[60] 85	[4,300] E	1.8	39 E	5.1	110 E	15
ETHOXYETHANOL, 2- (EEGE)	110-80-9	[200] 55	[56] 7.8 E	[820] 120	[420] 17 E	[40,000] 5,500	[5,500] 780 E	10,000	[40,000] E	[40,000] 5,500	[5,500] 780 E	10,000	[40,000] E	NA
ETHYL ACETATE	141-78-8	870	220 E	1,800	[480] 470 E	10,000	10,000 C	10,000	10,000 C	10,000	10,000 C	10,000	10,000 C	NA
ETHYL ACRYLATE	140-88-6	0.31	0.12 E	1.3	[0.48] 0.5 E	31	12 E	130	[48] 50 E	31	12 E	130	[48] 50 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 DIPROPYLTHIOCARBAMATE, S- (EPTC)	759-94-4	91	65 E	280	180 E	9,100	6,500 E	10,000	10,000 C	91	65 E	280	180 E	NA
ETHYL ETHER	60-29-7	180	53 E	410	[110] 120 E	10,000	5,300 E	10,000	10,000 C	180	53 E	410	[110] 120 E	NA
ETHYL METHACRYLATE	97-63-2	87	14 E	180	30 E	8,700	1,400 E	18,000	3,000 E	87	14 E	180	30 E	NA
ETHYLENE GLYCOL	107-21-1	[700] 1400	[85] 170 E	[700] 1400	[85] 170 E	10,000	[8,500] E	10,000	[8,500] E	10,000	[8,500] E	10,000	[8,500] E	NA
ETHYLENE THIOUREA (ETU)	98-45-7	0.3	0.034 E	0.3	0.034 E	30	3.4 E	30	3.4 E	300	34 E	300	34 E	NA
ETHYLP-NITROPHENYL PHENYLPHOSPHOROTHIOATE	2104-84-3	0.037	0.12 E	0.1	0.31 E	3.7	12 E	10	31 E	0.037	0.12 E	0.1	0.31 E	20
FENAMIPHOS	22224-92-6	0.2	0.17 E	0.2	0.17 E	20	17 E	20	17 E	0.2	0.17 E	0.2	0.17 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 (FLUCOMETRON IN EPA FEB 96)	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	[27] 28	[3,300] 3,200 E	[27] 28	[3,300] 3,200 E	[27] 28	[3,300] 3,200 E	[27] 28	[3,300] E	[27] 28	[3,300] E	[27] 28	[3,300] E	10
FLUORENE	86-73-7	[49] 150	[380] 3,000 E	[49] 150	[380] 3,800 E	[49] 150	[380] 3,800 E	[49] 150	[380] 3,800 E	[49] 150	[380] E	[49] 150	[380] E	15
FLUOROTRICHLOROMETHANE (FREON 11)	75-69-4	200	[90] 87 E	200	[90] 87 E	10,000	[9,000] E	10,000	[9,000] E	10,000	[9,000] E	10,000	[9,000] E	NA
FONOFOS	944-22-9	1	[2.8] 2.9 E	1	[2.8] 2.9 E	100	[280] 290 E	100	[280] 290 E	1	[2.8] 2.9 E	1	[2.8] 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
FORMIC ACID	64-18-6	1,900	210 E	4,100	480 E	10,000	10,000 C	10,000	10,000 C	10,000	2,100 E	10,000	4,800 E	NA
FOSETYL-AL	039148-24-8	11,000	9,700 E	31,000	27,800 E	180,000	180,000 C	180,000	180,000 C	11,000	9,700 E	31,000	27,800 E	NA

¹ For other options see Section 250.308

All concentrations in mg/kg

E - Number calculated by the soil to groundwater equation in Section 250.308

C - Cap

NA - The soil buffer distance option is not available for this substance

APPENDIX A

TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL
B. Soil to Groundwater Numeric Values¹

Revised 10/3/00

REGULATED SUBSTANCE	CASRN	Used Aquifers												Soil Buffer Distance (feet)
		TDS ≤ 2500						TDS > 2500						
		Residential			Non-Residential			Residential			Non-Residential			
		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	
FURAN	110-90-9	0.97	0.42 E	2	0.87 E	27	42 E	200	87 E	97	42 E	200	87 E	NA
FURFURAL	98-01-1	11	1.4 E	29	3.7 E	1,100	140 E	2,900	370 E	11	1.4 E	29	3.7 E	NA
GLYPHOSATE	1071-83-6	70	[630] 620 E	70	[630] 620 E	7,000	[63,000] 82,000 E	7,000	[63,000] 82,000 E	70	[630] 620 E	70	[630] 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	1024-67-3	0.02	[1] 1.1 E	0.02	[1] 1.1 E	2	[100] 110 E	2	[100] 110 E	20	[1,000] 1,100 E	20	[1,000] 1,100 E	10
HEXACHLOROBENZENE	118-74-1	0.1	0.96 E	0.1	0.96 E	[0.62] 0.6	[6] 5.8 E	[0.62] 0.6	[6] 5.8 E	[0.62] 0.6	[6] 5.8 E	[0.62] 0.6	[6] 5.8 E	15
HEXACHLOROBUTADIENE	87-68-3	0.1	1.2 E	0.1	1.2 E	10	120 E	10	120 E	100	1,200 E	100	1,200 E	15
HEXACHLOROCHLOROPENTADIENE	77-47-4	5	91 E	5	91 E	[340] 180	[6,200] 3,300 E	[340] 180	[6,200] 3,300 E	[340] 180	[6,200] 3,300 E	[340] 180	[6,200] 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	66 E	10	66 E	15
HEXANE	110-84-3	55	[510] 500 E	120	1,100 E	950	8,700 E	950	8,700 E	55	[510] 500 E	120	1,100 E	15
HEXYTHIAZOX (SAVEY)	78587-05-0	50	820 E	50	820 E	50	820 E	50	820 E	50	820 E	50	820 E	15
HYDRAZINE/HYDRAZINE SULFATE	302-01-2	0.00088	0.00098 E	0.0038	0.00042 E	0.088	0.098 E	0.38	0.042 E	0.0088	0.00098 E	0.038	0.0042 E	NA
HYDROQUINONE	123-31-9	150	20 E	410	55 E	15,000	2,000 E	41,000	5,500 E	150,000	20,000 E	410,000	55,000 E	NA
INDENO[1,2,3-CD]PYRENE	193-39-5	0.09	7,000 E	0.36	28,000 E	6.2	190,000 C	6.2	190,000 C	6.2	190,000 C	6.2	190,000 C	5
IPRODIONE	36734-19-7	150	430 E	410	1,200 E	1,300	3,700 E	1,300	3,700 E	150	430 E	410	1,200 E	20
ISOBUTYL ALCOHOL	78-83-1	290	76 E	610	160 E	10,000	7,600 E	10,000	7,600 E	10,000	7,600 E	10,000	7,600 E	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
KEPONE	143-50-0	0.0041	0.56 E	0.016	2.2 E	0.41	56 E	1.6	220 E	4.1	560 E	16	2200 E	10
MALATHION	121-75-5	[20] 10	[67] 34 E	[20] 10	[67] 34 E	[2,000] 1,000	[6,700] 3,400 E	[2,000] 1,000	[6,700] 3,400 E	[2,000] 1,000	[6,700] 3,400 E	[2,000] 1,000	[6,700] 3,400 E	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	18	2 E	51	5.8 E	1,800	200 E	2,300	260 E	18	2 E	51	6 E	NA
MERPHOS OXIDE	78-48-8	0.11	15 E	0.31	41 E	11	1,500 E	31	4,100 E	0.11	15 E	0.31	41 E	10
METHACRYLONITRILE	126-98-7	0.19	0.031 E	0.41	0.067 E	19	3.1 E	41	6.7 E	0.19	0.031 E	0.41	0.067 E	NA
METHAMIDOPHOS	10285-92-8	0.18	0.022 E	0.51	0.063 E	18	2.2 E	51	6.3 E	0.18	0.022 E	0.51	0.063 E	NA
METHANOL	67-56-1	490	58 E	1,000	120 E	10,000	5,800 E	10,000	10,000 C	10,000	5,800 E	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	[40] 4.5	[4,600] 710 E	[40] 4.5	[4,600] 710 E	[40] 4.5	[4,600] 710 E	[40] 4.5	[4,600] 710 E	10
METHOXYETHANOL 2-	109-86-4	3.7	0.41 E	10	1.1 E	370	41 E	1,000	110 E	3.7	0.41 E	10	1.1 E	NA
METHYL ACETATE	78-20-9	3700	890 E	10,000	1,900 E	10,000	10,000 C	10,000	10,000 C	3,700	890 E	10,000	1,900 E	NA
METHYL ACRYLATE	96-33-3	110	27 E	310	77 E	10,000	2,700 E	10,000	2,700 E	10,000	2,700 E	10,000	2,700 E	NA
METHYL CHLORIDE	74-87-3	0.3	0.038 E	0.3	0.038 E	30	3.8 E	30	3.8 E	30	3.8 E	30	3.8 E	NA
METHYL ETHYL KETONE	78-93-3	280	[53] 54 E	580	110 E	10,000	[5,300] 5,400 E	10,000	10,000 C	10,000	[5,300] 5,400 E	10,000	10,000 C	NA
METHYL ISOBUTYL KETONE	108-10-1	[22] 19	[3.4] 2.9 E	[47] 41	[7.3] 6.3 E	[2,200] 1,900	[340] 290 E	[4,700] 4,100	[730] 630 E	[2,200] 1,900	[340] 290 E	[4,700] 4,100	[730] 630 E	NA
METHYL METHACRYLATE	80-62-6	[78] 190	[44] 28 E	[460] 410	[22] 58 E	[7,800] 10,000	[4,400] 2,600 E	10,000	[2,200] 5,600 E	[7,800] 10,000	[4,400] 2,600 E	10,000	[2,200] 5,600 E	NA
METHYL METHANESULFONATE	66-27-3	0.67	0.083 E	2.6	0.32 E	67	8.3 E	260	32 E	0.67	0.083 E	2.6	0.32 E	NA
METHYL PARATHION	298-00-0	0.2	0.42 E	0.2	0.42 E	20	42 E	20	42 E	20	42 E	20	42 E	30
METHYL STYRENE (MIXED ISOMERS)	25013-15-4	22	120 E	81	340 E	2,200	12,000 E	810	34,000 E	22	120 E	81	340 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
METHYLENE BIS(2-CHLOROANILINE), 4,4'-	101-14-4	0.51	3.9 E	2	15 E	51	390 E	200	1,500 E	0.51	3.9 E	2	15 E	15
METHYLNAPHTHALENE, 2-	91-57-6	[460] 73	[6,000] 2,900 E	[440] 200	[40,000] 8,000 E	2,500	10,000 C	2,500	10,000 C	[460] 73	[6,000] 2,900 E	[440] 200	[40,000] 8,000 E	15
METHYLSTYRENE, ALPHA	98-83-9	68	120 E	140	250 E	6,800	12,000 E	14,000	25,000 E	68	120 E	140	250 E	30
NAPHTHALENE	91-20-3	[2] 10	[5] 25 E	[2] 10	[5] 25 E	[200] 1,000	[500] 2,500 E	[200] 1,000	[500] 2,500 E	[2,000] 3,000	[5,000] 7,500 E	[2,000] 3,000	[5,000] 7,500 E	30
NAPHTHYLAMINE, 1-	134-32-7	0.037	0.3 E	0.14	1.1 E	3.7	30 E	14	110 E	37	300 E	140	1,100 E	15
NAPHTHYLAMINE, 2-	91-59-8	0.037	0.012 E	0.14	0.046 E	3.7	1.2 E	14	4.6 E	37	12 E	140	46 E	NA
NAPROPAMIDE	15299-99-7	370	860 E	1,000	2,300 E	7,000	16,000 E	7,000	16,000 E	370	860 E	1,000	2,300 E	30
NITROANILINE, M-	99-09-2	0.21	0.033 E	0.58	0.091 E	21	3.3 E	58	9.1 E	0.21	0.033 E	0.58	0.091 E	NA

¹ For other options see Section 250.308

All concentrations in mg/kg

E - Number calculated by the soil to groundwater equation in Section 250.308

C - Cap

NA - The soil buffer distance option is not available for this substance

APPENDIX A
 TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL
 B. Soil to Groundwater Numeric Values¹

Revised 10/3/00

REGULATED SUBSTANCE	CASRN	Used Aquifers								Non-Use Aquifers				Soil Buffer Distance (feet)
		TDS ≤ 2500				TDS > 2500				Residential		Non-Residential		
		Residential		Non-Residential		Residential		Non-Residential		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	
NITROANILINE, O-	88-74-4	0.21	[0.037] 0.038 E	0.58	0.1 E	21	[3.7] 3.8 E	58	10 E	0.21	[0.037] 0.038 E	0.58	0.1 E	NA
NITROANILINE, P-	100-01-6	0.21	0.031 E	0.58	0.086 E	21	3.1 E	58	8.6 E	0.21	0.031 E	0.58	0.086 E	NA
NITROBENZENE	98-95-3	1.8	0.79 E	5.1	2.2 E	180	79 E	510	220 E	1.800	790 E	5,100	2,200 E	NA
NITROPHENOL, 2-	88-75-5	[230] 23	[47] 5.8 E	[630] 82	[130] 17 E	[23,000] 2,900	[4,700] 590 E	[63,000] 8,200	[13,000] 1,700	[190,000] 23,000	[43,000] 5,900	[490,000] 63,000	[130,000] 17,000	NA
NITROPHENOL, 4-	100-02-7	6	[4.2] 4.1 E	6	[4.2] 4.1 E	600	[420] 410 E	600	[420] 410 E	6,000	[4,200] 4,100	6,000	[4,200] 4,100	NA
NITROPROPANE, 2-	79-46-9	0.0016	0.00026 E	0.0068	0.0011 E	0.16	0.026 E	0.68	0.11 E	0.016	0.0026 E	0.068	0.011 E	NA
NITROSODIETHYLAMINE, N-	55-18-5	0.0001	0.000018 E	0.00043	[0.000075] 0.000076	0.01	0.0018 E	0.043	[0.0075] 0.0076	0.001	0.00018 E	0.0043	[0.00075] 0.00076	NA
NITROSODIMETHYLAMINE, N-	62-75-9	0.00031	0.000041 E	0.0013	0.00017 E	0.031	0.0041 E	0.13	0.017 E	0.0031	0.00041 E	0.013	0.0017 E	NA
NITROSO-DI-N-BUTYLAMINE, N-	924-16-3	0.0027	0.0033 E	0.011	0.014 E	0.27	0.33 E	1.1	1.4 E	0.27	0.33 E	1.1	1.4 E	NA
NITROSO-DI-N-PROPYLAMINE, N-	621-64-7	0.0094	0.0013 E	0.037	0.0051 E	0.94	0.13 E	3.7	0.51 E	9.4	1.3 E	37	5.1 E	NA
NITROSODIPHENYLAMINE, N-	86-30-6	13	20 E	53	[82] 83 E	1,300	2,000 E	3,500	[5,400] 5,500	3,500	[5,400] 5,500	3,500	[5,400] 5,500	30
NITROSO-N-ETHYLUREA, N-	758-73-9	0.00047	0.000054 E	0.0019	0.00022 E	0.047	0.0054 E	0.19	0.022 E	0.047	0.0054 E	0.19	0.022 E	NA
OCTYL PHTHALATE, DI-N-	117-84-0	73	10,000 C	200	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
PARATHION	56-38-2	22	130 E	61	380 E	2,000	10,000 C	2000	10,000 C	22	130 E	61	380 E	15
PCB-1016 (AROCLOR)	12674-11-2	0.26	72 E	0.72	200 E	26	6,900 E	25	6,900 E	0.26	72 E	0.72	200 E	10
PCB-1221 (AROCLOR)	11104-28-2	0.13	0.63 E	0.52	2.5 E	13	63 E	52	250 E	0.13	0.63 E	0.52	2.5 E	20
PCB-1232 (AROCLOR)	11141-16-5	0.13	[0.52] 0.5 E	0.52	[2.1] 2 E	13	[52] 50 E	52	[210] 200 E	0.13	[0.52] 0.5 E	0.52	[2.1] 2 E	20
PCB-1242 (AROCLOR)	53469-21-9	0.13	16 E	0.52	62 E	[43] 10	[4,600] 1,200	[24] 10	[2,900] 1,200	0.13	16 E	0.52	62 E	10
PCB-1248 (AROCLOR)	12672-29-6	0.037	18 E	0.14	67 E	[0.6] 8	[290] 1,800 E	[0.6] 8	[290] 2,800 E	[0.037] 0.04	18 E	0.14	67 E	10
PCB-1254 (AROCLOR)	11097-69-1	0.037	75 E	0.14	280 E	[4.2] 4	[2,400] 7,500	[4.2] 8	[2,400] 10,000 C	[0.037] 0.04	75 E	0.14	280 E	5
PCB-1280 (AROCLOR)	11096-82-5	[0.025] 0.11	[110] 500 E	[0.11] 0.43	[500] 1,900 E	[2.5] 8	[11,000] 35,000	8	36,000 E	[0.025] 0.11	[110] 500 E	[0.11] 0.43	[500] 1,900 E	5
PEBULATE	1114-71-2	180	300 E	510	860 E	9,200	10,000 C	9,200	10,000 C	180	300 E	510	860 E	30
PENTACHLOROBENZENE	608-93-5	2.9	230 E	8.2	660 E	[24] 74	[4,900] 5,900	[24] 74	[4,900] 5,900	[24] 74	[4,900] 5,900	[24] 74	[4,900] 5,900	10
PENTACHLORONITROBENZENE	82-68-8	0.29	5 E	1	20 E	29	500 E	44	[880] 870 E	44	[880] 870 E	44	[880] 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
PHENACETIN	62-44-2	30	12 E	120	[47] 46 E	3,000	1,200 E	12,000	[4,700] 4,600	30,000	12,000 E	76,000	[30,000] 29,000	NA
PHENANTHRENE	85-01-8	[420] 110	[44,000] 10,000 E	[420] 110	[44,000] 10,000 E	[420] 110	[44,000] 10,000 E	[420] 110	[44,000] 10,000 E	[420] 110	[44,000] 10,000 E	[420] 110	[44,000] 10,000 E	10
PHENOL	108-95-2	400	66 E	400	66 E	40,000	6,600 E	40,000	6,600 E	40,000	6,600 E	40,000	6,600 E	NA
PHENYLENEDIAMINE, M-	108-45-2	22	3.1 E	61	8.6 E	2,200	310 E	6,100	860 E	22,000	3,100 E	61,000	8,600 E	NA
PHENYLPHENOL, 2-	90-43-7	34	490 E	130	1,800 E	3,400	49,000 E	13,000	190,000 E	34,000	490,000 C	70,000	1,900,000 C	15
PHORATE	298-02-2	0.19	0.41 E	0.41	0.88 E	19	41 E	41	88 E	0.19	0.41 E	0.41	0.88 E	30
PHTHALIC ANHYDRIDE	85-44-9	7,300	2,300 E	20,000	6,200 E	190,000	190,000 C	190,000	190,000 C	190,000	190,000 C	190,000	190,000 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
PRONAMIDE	23950-68-5	5	[3] 3.1 E	5	[3] 3.1 E	500	[300] 310 E	500	[300] 310 E	5	[3] 3.1 E	5	[3] 3.1 E	NA
PROPANIL	708-98-8	18	9.2 E	51	26 E	1,800	920 E	5,100	2,600 E	18	9.2 E	51	26 E	NA
PROPHAM	122-42-9	73	17 E	200	48 E	7,300	1,700 E	20,000	4,800 E	73	17 E	200	48 E	NA
PROPYLBENZENE, N-	103-65-1	[37] 150	[7.1] 290 E	[100] 410	[190] 780 E	[3,700] 5,200	[7,100] 9,900	[5,200]	9,900 E	[37] 150	[7.1] 290 E	[100] 410	[190] 780 E	30
PROPYLENE OXIDE	75-68-9	0.28	[0.048] 0.048 E	1.1	0.19 E	28	[4.8] 4.9 E	110	19 E	0.28	[0.048] 0.048 E	1.1	0.19 E	NA

¹ For other options see Section 250.308

All concentrations in mg/kg

E - Number calculated by the soil to groundwater equation in Section 250.308

C - Cap

NA - The soil buffer distance option is not available for this substance

APPENDIX A
 TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL
 B. Soil to Groundwater Numeric Values¹

Revised 10/3/00

REGULATED SUBSTANCE	CASRN	Used Aquifers								Non-Use Aquifers				Soil Buffer Distance (feet)
		TDS ≤ 2500				TDS > 2500				Residential		Non-Residential		
		Residential		Non-Residential		Residential		Non-Residential		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	
PYRENE	129-00-0	[4.3] 13	[220] 2,200 E	[4.3] 13	[220] 2,200 E	[4.3] 13	[220] 2,200 E	[4.3] 13	[220] 2,200 E	[4.3] 13	[220] 2,200 E	[4.3] 13	[220] 2,200 E	10
PYRIDINE	110-86-1	0.97	0.11 E	2	0.22 E	97	11 E	200	22 E	9.7	1.1 E	20	2.2 E	NA
QUINOLINE	91-22-9	0.0055	0.018 E	0.022	0.074 E	0.55	1.8 E	2.2	7.4 E	5.5	18 E	22	74 E	20
QUICALOPOP (ASSURE)	76578-14-8	30	47 E	30	47 E	30	47 E	30	47 E	30	47 E	30	47 E	30
RONNEL	299-84-3	180	280 E	510	800 E	4,000	6,200 E	4,000	6,200 E	180	280 E	510	800 E	30
SIMAZINE	122-34-9	0.4	[0.16] 0.15 E	0.4	[0.16] 0.15 E	40	[16] 15 E	40	[16] 15 E	0.4	[0.16] 0.15 E	0.4	[0.16] 0.15 E	NA
STRYCHNINE	57-24-9	1.1	[0.9] 0.89 E	3.1	2.5 E	110	[90] 89 E	310	250 E	1,100	[900] 890 E	3,100	2,500 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	0.09	[0.13] 0.12 E	0.09	[0.13] 0.12 E	9	[13] 12 E	9	[13] 12 E	0.09	[0.13] 0.12 E	0.09	[0.13] 0.12 E	30
TETRACHLORO BENZENE, 1,2,4,5-	95-94-3	1.1	5.1 E	3.1	14 E	58	270 E	58	270 E	58	270 E	58	270 E	20
TETRACHLORODIBENZO-P-DIOXIN, 2,3,7,8- (TCDD)	1746-01-8	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	1800 E	700	1,800 E	700	1,800 E	700	1,800 E	30
TETRACHLOROETHANE, 1,1,2,2-	79-34-9	[0.074] 0.03	[0.023] 0.03	[0.32] 0.03	[0.099] 0.0093	[7.4] 3	[2.3] 0.93 E	[32] 3	[9.9] 0.93 E	[7.4] 3	[2.3] 0.93 E	[32] 3	[9.9] 0.93 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	29	450 E	61	950 E	2,900	45,000 E	6,100	95,000 E	2,900	45,000 E	6,100	95,000 E	15
TETRAETHYL LEAD	78-00-2	0.00037	0.0046 E	0.001	0.012 E	0.037	0.46 E	0.1	1.2 E	0.37	4.6 E	1	12 E	15
TETRAETHYLDITHIOPYROPHOSPHATE	3589-24-9	0.49	0.73 E	1	1.5 E	49	73 E	100	150 E	0.49	0.73 E	1	1.5 E	30
THIOFANOX	39196-18-4	1.1	0.12 E	3.1	0.34 E	110	12 E	310	34 E	1.1	0.12 E	3.1	0.34 E	NA
THIRAM	137-28-9	18	47 E	51	130 E	1,800	4,700 E	3,000	7,800 E	18	47 E	51	130 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
TOLUIDINE, M-	108-44-1	0.28	0.13 E	1.1	[0.5] 0.51 E	28	13 E	110	[50] 51 E	0.28	0.13 E	1.1	0.5 E	NA
TOLUIDINE, O-	95-53-4	[0.37] 0.28	[0.42] 0.32 E	[4.4] 1.1	[4.6] 1.2 E	[37] 28	[42] 32 E	[440] 110	[460] 120 E	[370] 280	[420] 320 E	[4400] 1,100	[4,600] 1,200	NA
TOLUIDINE, P-	106-49-0	0.35	0.32 E	1.4	1.3 E	35	32 E	140	130 E	0.35	0.32 E	1.4	1.3 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
TRIALATE	2303-17-5	47	240 E	130	680 E	400	2,000 E	400	2,000 E	47	240 E	130	680 E	15
TRIBROMOMETHANE (BROMOFORM)	75-26-2	10	[4.3] 4.4 E	10	[4.3] 4.4 E	1,000	[430] 440 E	1,000	[430] 440 E	1,000	[430] 440 E	1,000	[430] 440 E	NA
TRICHLORO-1,2,2-TRIFLUOROETHANE, 1,1,2-	76-13-1	8,300	26,000 E	17,000	53,000 E	17,000	53,000 E	17,000	53,000 E	17,000	53,000 E	17,000	53,000 E	20
TRICHLOROBENZENE, 1,2,4-	120-82-1	7	[28] 27 E	7	[28] 27 E	700	[2,800] 2,700	700	[2,800] 2,700	[4,000] 4,400	10,000 C	[4,600] 4,400	10,000 C	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	0.6	0.16 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, 2,4,6-	95-95-4	370	2,300 E	1,000	6,100 E	37,000	190,000 C	100,000	190,000 C	100,000	190,000 C	100,000	190,000 C	15
TRICHLOROPHENOL, 2,4,6-	88-06-2	[6] 1.1	[47] 3.1 E	[24] 3.1	[67] 8.9 E	[600] 110	[4,700] 310 E	[2,400] 310	[6700] 890 E	[6,000] 1,100	[47,000] 3,100	[24,000] 3,100	[67,000] 8,800	20
TRICHLOROPHENOXYACETIC 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
TRICHLOROPHENOXYPROPIONIC 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-	598-77-8	18	3.1 E	51	8.7 E	1,800	310 E	5,100	870 E	18	3.1 E	51	8.7 E	NA
TRICHLOROPROPANE, 1,2,3-	96-18-4	4	[3.3] 3.2 E	4	[3.3] 3.2 E	400	[330] 320 E	400	[330] 320 E	400	[330] 320 E	400	[330] 320 E	NA
TRICHLOROPROPENE, 1,2,3-	96-18-5	18	11 E	51	30 E	1,800	1,100 E	5,100	3,000 E	18	11 E	51	30 E	NA
TRIFLURALIN	1582-98-9	0.5	0.96 E	0.5	0.98 E	50	96 E	50	98 E	0.5	0.96 E	0.5	0.98 E	30
TRIMETHYLBENZENE, 1,3,4- (TRIMETHYLBENZENE, 1,2,4-)	95-53-9	1.6	9 E	3.5	20 E	160	900 E	350	2,000 E	160	900 E	350	2,000 E	15
TRIMETHYLBENZENE, 1,3,5-	108-67-8	1.6	2.8 E	3.5	6.2 E	160	280 E	350	620 E	1.6	2.8 E	3.5	6.2 E	30
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	55	6.5 E	120	14 E	5,500	650 E	10,000	1,400 E	55	6.5 E	120	14 E	NA

¹ For other options see Section 250.308

All concentrations in mg/kg

E - Number calculated by the soil to groundwater equation in Section 250.308

C - Cap

NA - The soil buffer distance option is not available for this substance

TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL
B. Soil to Groundwater Numeric Values¹

REGULATED SUBSTANCE	CASRN	Used Aquifers								Non-Use Aquifers				Soil Buffer Distance (feet)
		TDS ≤ 2500				TDS > 2500				Residential		Non-Residential		
		Residential		Non-Residential		Residential		Non-Residential		Residential		Non-Residential		
		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	
VINYL BROMIDE (BROMOETHENE)	593-60-2	0.14	0.088 E	0.58	0.28 E	14	6.8 E	58	28 E	1.4	0.68 E	5.8	2.8 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	[0.00000009 2] 1.1	[0.00000022] E 2.6	[0.00000009 2] 3.1	[0.00000022] E 7.4	[0.00000009 3] 110	[0.00000002 E 2] 280	[0.00000009 2] 310	[0.00000002 E 2] 740	[0.00000009 2] 1,100	[0.00000022] E 2.6	[0.00000009 2] 1,700	[0.00000022] E 4.100	30
XYLENES (TOTAL)	1330-20-7	1,000	[850] 990 E	1,000	[850] 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	180	28 E	510	81 E	1,000	180 E	1,000	180 E	180	28 E	510	81 E	NA

¹ For other options see Section 250.308

All concentrations in mg/kg

E - Number calculated by the soil to groundwater equation in Section 250.308

C - Cap

NA - The soil buffer distance option is not available for this substance

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	Non-Residential 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	1,100 G	190,000 C
ARSENIC	7440-38-2	12 G	53 G	190,000 C
[ASBESTOS]	[12001-29-5]	[1,100] [N]	[5,500] [N]	[190,000] [N]
BARIUM AND COMPOUNDS	7440-39-3	15,000 G	190,000 C	190,000 C
BERYLLIUM	7440-41-7	[4.2] 440 G	[18] 5,600 G	190,000 C
BORON AND COMPOUNDS	7440-42-8	20,000 G	190,000 C	190,000 C
CADMIUM	7440-43-9	[119] 47 G	[1,400] 210 G	190,000 C
CHROMIUM III	16065-83-1	190,000 C	190,000 C	190,000 C
CHROMIUM VI	18540-29-9	[1,100] 94 G	[1,4000] 420 G	190,000 C
COBALT	7440-48-4	[13,000] 4,400 G	[17,0000] 56,000 G	190,000 C
COPPER	7440-50-8	[190,000] 8,200 [G] G	[190,000] [G] 100,000 G	190,000 C
CYANIDE, FREE	57-12-5	4,400 G	56,000 G	190,000 C
IRON	7439-89-6	66,000 G	190,000 C	190,000 C
LEAD	7439-92-1	500 U	1,000 S	190,000 C
MANGANESE	7439-96-5	31,000 G	190,000 G	190,000 C
MERCURY	7439-97-6	[19] 66 G	[240] 840 G	190,000 C
NICKEL	7440-02-0	4,400 G	56,000 G	190,000 C
SELENIUM	7782-49-2	1,100 G	14,000 G	190,000 C
SILVER	7440-22-4	1,100 G	14,000 G	190,000 C
THALLIUM	7440-28-0	[18] 15 G	[220] 200 G	190,000 C
TIN	7440-31-5	130,000 G	190,000 C	190,000 C
VANADIUM	7440-62-2	[13] 1,500 G	[160] 20,000 G	190,000 C
ZINC	7440-66-6	66,000 G	190,000 C	190,000 C

All concentrations in mg/kg [except asbestos, which is in fibers/kg]

- R - Residential
- NR - Non-Residential
- G - Ingestion
- H - Inhalation
- C - Cap
- U - UBK Model
- S - SEGH Model
- NA - Not Applicable

APPENDIX A

Table 4 - Medium-Specific Concentrations (MSCs) for Inorganic Regulated Substances in Soil
B. Soil to Groundwater Numeric Values¹

REGULATED SUBSTANCE	CASRN	Used Aquifers								Non-use Aquifers				Soil Buffer Distance (feet)	
		TDS ≤ 2500				TDS > 2500				R		NR			
		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	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	5	150	5	150	500	15,000	500	15,000	5,000	150,000	5,000	150,000	15	
[ASBESTOS]	[42004-29-5]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
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	[6.0] 60	6.7	60	6.7	6,000	670	6,000	670	60,000	6,700	60,000	6,700	NA	
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	[48] 10	[340] 190	[54] 10	[970] 190	[4800] 1000	[34000] 19000	[5400] 1000	[97000] 19000	[48000] 10000	190000	[54000] 10000	190000	15	
COBALT	7440-48-4	[220] 73	[24] 8.1	[640] 200	[68] 22	[22,000] 7,300	[2,400] 810	[64,000] 20,000	[6,800] 2,200	[490,000] 73,000	[24,000] 8,100	190000	[68,000] 22,000	NA	
COPPER	7440-50-8	100	36,000	100	36,000	10,000	190,000	10,000	190,000	100,000	190,000	100,000	190,000	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	
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	
MANGANESE	7439-96-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
MERCURY	7439-97-6	0.2	10	0.2	10	20	1,000	20	1,000	200	10,000	200	10,000	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	
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	
THALLIUM	7440-28-0	0.2	14	0.20	14	20	1,400	20	1,400	200	14,000	200	14,000	15	
TIN	7440-31-5	2200	240	6,100	680	190,000	24,000	190,000	68,000	190,000	190,000	190,000	190,000	NA	
VANADIUM	7440-62-2	[0.24] 26	[240] 26000	[0.58] 72	[580] 72000	[24] 2600	[24000] 190000	[58] 7200	[58000] 190000	[240] 26000	190000	[580] 72000	190000	5	
ZINC	7440-66-6	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

G - Ingestion

H - Inhalation

C - Cap

U - UBK Model

S - SEGH Model

NA - Not Applicable

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

Regulated Substance	CAS	RfDo (mg/kg-d)	CSFo (mg/kg-d)-1	RfDI (mg/kg-d)	CSFI (mg/kg-d)-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)	Degradation Coefficient (K/yr ¹)
ACENAPHTHENE	83-32-9	0.06 I		0.06 I		4900		[2-42] 3.8	1.58				279	1.24
ACENAPHTHYLENE	208-96-8	0.06 S		0.06 S		4500		[2-83] 18.1	5.67				280	2.11
ACEPHATE	30560-19-1	0.004	0.0087			3		818000	6					
ACETALDEHYDE	75-07-0		0.0077 I	[0.0028] 0.0028 I	0.0077 I	4.1	X	1000000	[44] 1	13100	15100	X	20	
ACETONE	67-64-1	0.1 I		8.86 D		0.31	X	1000000	[44] 1	13100	15000	X	56	18.07
ACETONITRILE	75-05-8	[0.006]		[0.006] 0.017 I		0.5	X	[74000] 1000000	[44] 1	13100	15000	X	82	4.50
ACETOPHENONE	98-86-2	0.1 I		0.1 I		170		5500	[42] 1			X	203	
ACETYLAMINOFLUORENE, 2- (2AAF)	63-96-3		3.8 C		[4-56] 3.8 C	1600		[5-28] 10.13	[44] 7				303	0.69
ACROLEIN	107-02-8	0.02 H		[5-7442867442 I 8574E-06] 0.0000057		0.56	X	[242800] 208000	[44] 1,2,4	13100	15100	X	53	4.50
ACRYLAMIDE	79-06-1	0.0002 I	4.5 I	0.0002 I	4.55 I	25	X	[540000] 2151000	[44] 4			X	192.6	
ACRYLIC ACID	79-10-7	0.5 I		0.000286 I		29	X	1000000	[44] 2	13000	14900	X	141	1.39
ACRYLONITRILE	107-13-1	0.001 H	0.54 I	0.000571 I	0.238 I	11	X	[74600] 73500	[44] 1	13100	15100	X	77	5.50
ALACHLOR	15972-60-8	0.01 I	0.08 H	0.01	0.08 H	110		140	[6] 2				100	
ALDICARB	116-06-3	0.001 I		0.001 I		22		6000	[9] 2				287	0.40
ALDRIN	309-00-2	0.0003 I	17 I	0.0003 I	17.15 I	48000		[0-48] 0.02	[44] 4,5,6				146	0.22
ALLYL ALCOHOL	107-18-8	0.005 I		0.005 I		3.2	X	[300000] 1000000	[44] 2	13100	15000	X	97	18.07
AMINOBIHENYL, 4-	92-67-1		21 C		21 C	110		[244] 1200	[44] 5				302	18.07
AMITROLE	61-82-5		0.94 C		0.945 C	120		280000	[7] 4				200	0.69
AMMONIA	7664-41-7	0.97 H		0.0286 I		3	X	310000	2.57	13100	15000	X	-33.3	
AMMONIUM SULFAMATE	7773-06-0	0.2 I		0.2		3		2160000	10				200	
ANILINE	62-53-3	[0.0046] 0.007 N	0.0057 I	0.000286 I	0.0056 C	190	X	[38000] 33800	[44] 1	13000	14900	X	184	
ANTHRACENE	120-12-7	0.3 I		0.3		21000		[0-9434] 0.086	[44] 1,5,6,7,8,9				340	0.28
ATRAZINE	1912-24-9	0.035 I	0.222 H	0.035	0.222 H	130		70	[8] 2,4,5				200	
BAYGON (PROPOXUR)	114-26-1	0.004 I		0.004		31		2000	2.45				decomp.	4.50
BENOMYL	17804-35-2	0.05 I				1,900		2	5					
BENTAZON	25057-89-0	0.03 I				13		500	2					
BENZENE	71-43-2	0.003 N	0.029 I	0.0017 N	[0.02806] 0.027 I	58	X	[4790] 1780.6	[44] 1,2,3,4	13100	15000	X	81	0.36
BENZIDINE	92-87-6	0.003 I	230 I	0.003	230 I	530,000		520	1.24				400	15.81
BENZO[ANTHRACENE]	56-55-3	0.73 N		0.73 N	[0.386] 0.31 I	350000		[0.614] 1.56					438	0.19
BENZO[APYRENE]	50-32-8	7.3 I		7.3 I	[3.86] 3.1 N	910000		0.0038	1.58				495	0.24
BENZO[BIFLUORANTHENE]	205-99-2	0.73 N		0.73 N	[0.386] 0.31 I	550000		0.0012	5.67				357	0.21
BENZO[GHI]PERYLENE	191-24-2	0.06 S		0.06 S		2800000		0.00026	1.56				500	0.19
BENZO[K]FLUORANTHENE	207-08-8		0.073 N	0.06	[0.386] 0.031 I	4400000		0.00055	5.67				480	0.06
BENZOIC ACID	65-85-0	4 I		4 I		32		[3400] 2700	2.3,4,5				248	
BENZOTRICHLORIDE	98-07-7		13 I			920		53	1.5,19				220.8	121413.00
BENZYL ALCOHOL	100-51-6	0.3 H		0.3 H		100		[42900] 40000	[6] 1,2,3			X	205	
BENZYL CHLORIDE	100-44-7		0.17 I		0.1715 C	190	X	[526] 483	[44] 1	13000	15000	X	179	20.90
BHC, ALPHA	319-84-6	[0.0003] 0.008 D	6.3 I	[0.0003] 0.0008 S	6.3 I	1800		[2] 1.7	4.5,6,7				288	0.94
BHC, BETA-	319-85-7	[0.0003] 0.0006 D	1.8 I	[0.0003] 0.0006 D	1.855 I	2300		[6] 0.1	[6] 5				60	1.02
BHC, DELTA-	319-86-8	[0.0003] 0.0008 S		[0.0003] 0.0008 S		1900		[24-3] 2	[42] 5				60	1.28
BHC, GAMMA (LINDANE)	58-89-9	0.0003 I	[4-4] 1.3 H	0.0003 I	1.085 C	1400		7.3	[44] 4,5,6				323	1.05
BIPHENYL, 1,1-	92-52-4	0.05 I		0.05 I		1,700		7.2	1				255	18.07
BIS(2-CHLOROETHYL)ETHER	111-44-4		1.1 I		1.155 I	76	X	[47900] 10200	[44] 1,4,5	13000	14900	X	179	0.69
BIS(2-CHLORO-ISOPROPYL)ETHER	108-60-1	0.04 I	0.07 H	0.04 I	0.035 H	62	X	1700	[42] 5	13000	14900	X	189	0.69
BISCHLOROMETHYLETHER	542-88-1		220 I		217 I	16	X	22000	[2] 6	13100	15100	X	105	57270.57
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	0.02 I	0.014 I	0.02 I	0.014 N	87000		[0-24] 0.285	[44] 4,5,6			X	384	0.66
BISPHENOL A	80-05-7	0.05 I				1,500		120	4				220	0.68
BROMACIL	314-40-9	[0-43] 0.1 M				58		815	2					
BROMOCHLOROMETHANE	74-97-5	[0-43] 0.01 M				27	X	16700	4	13100	15000	X	68	

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

Regulated Substance	CAS	RfDo (mg/kg-d)	CSFo (mg/kg-d)-1	RfDI (mg/kg-d)	CSFI (mg/kg-d)-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)	Degradation Coefficient (K)(yr ⁻¹)
BROMODICHLOROMETHANE	75-27-4	0.02 I	0.062 I	0.02 I	0.1295 C	93	X	[6726] 4500	[4] 6	13100	15000	X	87	
BROMOMETHANE	74-83-9	0.0014 I		0.0014 I		170	X	[46220] 17500	[4] 2	13100	15000	X	4	6.66
BROMOXNYL	1689-94-5	0.02 I				300		130	2					
BROMOXNYL OCTANOATE	1689-99-2	0.02 I				18,000		0.08	12					5.75
BUTADIENE, 1,3-	106-99-0		3.4 G		0.98 I	120		735	1				-4.5	4.50
BUTYL ALCOHOL, N-	71-36-3	0.1 I		0.1 I		3.2	X	[62099] 74000	[4] 1	13000	14900	X	118	4.68
BUTYLATE	2008-41-5	0.05 I				540	X	45	2	13200	15200	X		138
BUTYL BENZENE, N-	104-51-8	[0.04] 0.04 N				2,500	X	15	1.6, 7	13100	15100	X	183.1	
BUTYL BENZENE, SEC-	135-98-8	[0.04] 0.04 N				890	X	17	1.6, 7	13100	15000	X	173.6	
BUTYL BENZENE, TERT-	98-06-6	[0.04] 0.04 N				680	X	30	1.6, 7	13100	15000	X	189	
BUTYL BENZYL PHTHALATE	85-88-7	0.2 I		0.2 I		34000		2.89	[4] 4.5, 6			X	370	1.39
CAPTAN	133-06-2	0.13 I	0.0035 H	0.13 I	0.00231 C	200		[3.2] 0.5	[4] 4				259	569.39
CARBARYL	63-25-2	0.1 I		0.1 I		190		[62.6] 120	[4] 2, 4, 6				315	4.22
CARBAZOLE	86-74-8		0.02 H			2,500		1.2	1.5, 6				359	
CARBOFURAN	1563-66-2	0.005 I		0.005 I		43		700	[4] 2				200	
CARBON DISULFIDE	75-15-0	0.1 I		0.2 I		300	X	[4488] 2100	[4] 1, 2, 3	13100	15100	X	46	
CARBON TETRACHLORIDE	56-23-5	0.0007 I	0.13 I	0.00067 N	0.0525 I	160	X	[604.6] 725	[4] 1, 2, 3	13100	15000	X	77	0.07
CARBOXIN	5234-68-4	0.1 I				260		170	5.6, 8					
CHLORAMBEN	133-90-4	0.015 I		0.015 I		20		700	2				210	
CHLORDANE	57-74-9	[0.0006] I	[4.3] 0.35 I	[0.0006] I	[4.3] 0.35 I	98000		0.058	[4] 4.5, 7				175	0.091
CHLORO-1,1-DIFLUOROETHANE, 1-	75-68-3			14.3 I		22		1400	4				-9.2	
CHLORO-1-PROPENE, 3-(ALLYL CHLORIDE)	107-05-1	0.000286 I	0.021 G	0.000286 I	0.021 G	48	X	[3270] 3300	[4] 1, 3, 5, 7, 10	13100	15000	X	45	18.07
CHLOROACETOPHENONE, 2-	532-27-4	0.0000857 I		0.0000857 I		76		1100	3				247	4.50
CHLORANILINE, P-	106-47-8	0.004 I		0.004 I		460		[2.9] 3900	[2] 1				232	
CHLOROBENZENE	108-90-7	0.02 I		0.00571 H		200	X	[487] 490	[4] 3			X	132	0.84
CHLOROBENZILATE	510-15-6	0.02 I	0.27 H	0.02 I	0.273 H	2600		13	[4] 4			X	415	3.60
CHLOROBUTANE, 1-	108-69-3	0.4 H				580	X	880	1, 2, 3, 4	13200	15000	X	73.6	
CHLORODIBROMOMETHANE	124-48-1	0.02 I	0.084 I	0.02 I	0.0945 C	83	X	[4000] 4200	[2] 4.6, 7, 8	13100	15100	X	116	1.39
CHLORODIFLUOROMETHANE	75-45-6	14 I				58	X	2899	4	13200	15000		-40.8	
CHLOROETHANE	75-00-3	[2.9] 0.4 I	0.0029 N	2.86 I		42	X	[6678] 5700	[4] 1	13100	15000	X	12	4.50
(CHLOROETHYL VINYL ETHER, 2-)	[440-75-8]	[0.028] I		[0.028] I		[6.6] [6]		[46000]	[2] 4.6, 7	[43409]	[46406]	[5]	[468]	
CHLOROFORM	67-66-3	0.01 I	0.0061 I	[0.04] 0.00009 N	0.0805 I	56	X	[2950] 8000	[4] 1, 2, 3	13100	15000	X	61	0.01
CHLORONAPHTHALENE, 2-	91-58-7	0.08 I		0.08 I		8500		[6.74] 11.7	[5] 1				256	
CHLORONITROBENZENE, P-	100-00-5		0.018 H			480		220	1				242	
CHLOROPHENOL, 2-	95-57-8	0.005 I		0.005 I		400	X	[28600] 24000	[6] 1, 3, 4	12900	14900	X	175	
CHLOROPRENE	126-99-8	0.02 H		0.002 H		50	X	[2445] 1735	[4] 9	13100	15000	X	59	0.59
CHLOROPROPANE, 2-	75-29-6			0.0285 H		280	X	3100	1.3, 5	13200	15000	X	47.2	
CHLOROTHALONIL	1897-45-6	0.015 I	0.011 H		0.0031 C	980		0.6	2				350	
CHLOROTOLUENE, O-	95-49-8	0.02 I				780	X	422	14, 15	13100	15000	X	158.87	
CHLOROPYRIFOS	2921-88-2	0.003 I		0.003 I		4600		[1.3] 1.12	[3] 2, 4, 5, 7				200	
CHLORSULFURON	64902-72-3	0.05 I				11		192	2.5, 6, 8, 9				182	
CHLORTHAL-DIMETHYL (DACTHAL) (DCPA)	1861-32-1	0.01 I				6,500		0.6	2.5, 7				380	1.37
CHRYSENE	218-01-9		0.0073 N		[0.00388] I	490000		[0.0048] 0.0019	[5] 1				448	0.126
CRESOL(S)	1319-77-3	0.005 S		[0.006] I	0.0031	25	X	[49320] 20000	[4] 2	13000	14900	X	139	5.16
CRESOL, O- (METHYL PHENOL, 2-)	95-48-7	0.05 I				97	X	2500	3.5, 6	12900	14800	X	191	18.07
CRESOL, M (METHYL PHENOL, 3-)	108-39-4	0.05 I				35		2500	2		X		202	5.16
CRESOL, P (METHYL PHENOL, 4-)	106-44-5	0.005 H				49		22000	6				202	9.03
CRESOL, P-CHLORO-M-	59-50-7	0.005 S		[0.006] I		780		[3850] 3845	[6] 2				235	
CROTONALDEHYDE	4170-30-3		1.9 S		1.9 S	5.6	X	[484000] 180000	[4] 3			X	104	18.07
CROTONALDEHYDE, TRANS-	123-73-9		1.9 H		1.9 H	6.1	X	156000	1	13100	15100	X	104	18.07
CUMENE	98-82-8	[0.04] 0.1 I		0.0026743 I	0.11	2800	X	[49.9] 50	[4] 1.5, 6	13100	15100	X	152	15.51
CYCLOHEXANONE	108-94-1	5 I		5 I		66	X	[5000] 36500	[4] 1, 2, 4, 5	13000	14900	X	157	
CYFLUTHRIN	68358-37-5	0.025 I				130,000	X	0.001	2	13000	15000	X		
CYROMAZINE	66215-27-8	0.0075 I				1,200		11000	12				222	
DDD, 4,4'-	72-54-8		0.24 I		0.2415 C	44000		0.18	5.6, 7				193	0.02

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Regulated Substance	CAS	RfDo (mg/kg-d)	CSFo (mg/kg-d)-1	RfDI (mg/kg-d)	CSFI (mg/kg-d)-1	Koc	VOC7	Aqueous Sol (mg/L)	Aqueous Sol Reference ¹	TF Vol from Surface Soil	TF Vol from SubSurface Soil	Organic Liquid	Boiling Point (degrees C)	Degradation Coefficient (K)(yr ⁻¹)
DDE, 4,4'-	72-85-9		0.34		0.34 ☐	87000		[0.0043] 0.04	5				348	0.02
DDT, 4,4'-	50-29-3	0.0005	0.34	0.0005 r	0.34	240000		[0.0047] 0.0025	5,6.7				260	0.02
DI(2-ETHYLHEXYL)ADIPATE	103-23-1	0.6	0.0012			47,000,000		200	5	13000	14900	X	214	4.50
DIALLATE	2303-16-4		0.061 H		0.061 Hr	190	X	[44] 40	[44] 2,4,6,8	12900	14800	X	150	1.39
DIAMINOTOLUENE, 2,4-	95-80-7		3.2 H		4 ☐	36		7470	4				292	0.69
DIAZINON	333-41-5	0.0009 H		0.0009 Hr		500		[40] 50	[46] 2,4,6,8				308	
DIBENZO[A,H]ANTHRACENE	53-70-3		7.3 N		[42] 3.1	1800000		[0.0006] 0.0006	1,6,8				524	0.13
DIBROMO-3-CHLOROPROPANE, 1,2-	96-12-8	0.0000571 r	1.4 H	0.0000571	0.00242 H	140	X	[420] 1000	[43] 4	13000	15000	X	196	0.69
DIBROMOBENZENE, 1,4-	106-37-6	0.01				1,600		20	1				220.4	
DIBROMOMETHANE, 1,2- (ETHYLENE DIBROMIDE)	106-93-4	0.0000571 Hr	85	0.0000571 H	0.77	54	X	[4462] 4150	[44] 1,2,3,5	13100	15100	X	131	2.11
DIBROMOMETHANE	74-95-3	0.01 H		0.01 Hr		110	X	[44920] 11400	[44] 1	13100	15100	X	96	4.50
DIBUTYL PHTHALATE, N-	84-74-2	0.1		0.1 r		1600		[43] 400	[44] 1,2,3			X	340	11.00
DICHLORO-2-BUTENE, 1,4-	784-41-0				9.3 H	180		850	9				158	
DICHLOROBENZENE, 1,2-	96-50-1	0.09		0.0571 H		350	X	[83,96] 147	[44] 1,4,5,6,7	13100	15100	X	180	0.69
DICHLOROBENZENE, 1,3-	541-73-1	[0.089] 0.03 N		[0.089]		360	X	[426] 108	[44] 1	13100	15100	X	173	0.69
DICHLOROBENZENE, P-	106-46-7	[0.229] 0.03 N	0.024 H	0.229	[0.0385] 0.022 N	510		[84,31] 82.9	[44] 1				174	0.69
DICHLOROBENZIDINE, 3,3'-	81-94-1		0.45		1.19 ☐	22000		[42,3] 3.11	[44] 4,5,6				368	0.69
DICHLORODIFLUOROMETHANE (FREON 12)	75-71-8	0.2		0.0571 H		360	X	290	[61] 1	13200	15000	X	-30	0.69
DICHLOROETHANE, 1,1-	75-34-3	0.1 H	0.0057 ☐	0.143 H	0.0068 ☐	62	X	[6060] 5000	[61] 2	13100	15000	X	57	0.16
DICHLOROETHANE, 1,2-	107-06-2	0.03 N	0.091	0.23 D	0.091	38	X	[8808] 8412	[44] 1,2,3,4	13100	15000	X	83	0.69
DICHLOROETHYLENE, 1,1-	75-35-4	0.009	0.6	0.009 r	0.175	65	X	[2260] 2500	[44] 1,4,5	13100	15000	X	32	0.19
DICHLOROETHYLENE, CIS-1,2-	156-59-2	0.01		0.01 r		49	X	[800] 3500	[47] 1	13100	15000	X	60	0.01
DICHLOROETHYLENE, TRANS-1,2-	156-60-5	0.02		0.02 r		47	X	6300	[61] 1	13100	15000	X	48	0.01
DICHLOROMETHANE (METHYLENE CHLORIDE)	75-09-2	0.06	0.0075	0.857 H	0.00165	16	X	[43000] 20000	[44] 1,2,3	13100	15000	X	40	4.50
DICHLOROPHENOL, 2,4-	120-83-2	0.003		0.003 r		160		4500	[44] 1				210	6.88
DICHLOROPHENOXYACETIC ACID, 2,4- (2,4-D)	94-76-7	0.01		0.01 r		69		677	[44]				[460] 215	1.39
DICHLOROPROPANE, 1,2-	78-57-5	[0.00428] 0.09 ☐	0.068 H	[0.00428]	[0.068] 0.038 ☐	47	X	2700	[44] 1,3,4	13100	15000	X	96	0.10
DICHLOROPROPENE, 1,3-	542-75-6	[0.00031] 0.03	[0.18] 0.1	0.0057	[0.18] 0.014	27	X	2700	6	13100	15000	X	108	22.38
DICHLOROPROPIONIC ACID (DALAPON), 2,2-	75-99-0	0.03		0.03 r		62	X	[893000] 500000	[46] 5	13000	14900	X	190	2.11
DICHLORVOS	62-73-7	0.0005	0.29	0.000143	0.291 ☐	60		10000	[44] 2,4,5				140	
DICYCLOPENTADIENE	77-73-6	0.03 H		0.0000571 H		810	X	40	5			X	167	
DIELDRIN	60-57-1	0.00005 r	16	0.00005 r	16.1	11000		[0,2] 0.17	4,5,6			X	385	0.12
DIETHYL PHTHALATE	84-66-2	0.6		0.8 r		81		[808] 1080	[44] 4,5,6			X	298	2.25
DIFLUBENZURON	35367-38-5	0.02				1,000		0.2	2				201	
DIMETHOATE	60-51-5	0.0002		0.0002 r		110		25000	[43] 4				200	2.26
DIMETHOXYBENZIDINE, 3,3'-	119-90-4		0.014 H			1,300		80	9				331	0.69
DIMETHYLAMINOAZOBENZENE, P-	60-11-7		4.6 ☐		4.65 ☐	1000		[0,20] 13.6	[43] 7				200	4.50
DIMETHYLANILINE, N,N-	121-59-7	0.002				180	X	1200	5,6,7,9	13000	14900	X	192	0.69
DIMETHYLBENZIDINE, 3,3'-	119-93-7		9.2 H		9.2 Hr	22,000		1300	10				300	18.07
(DIMETHYLHYDRAZINE, 1,1-)	[67-14-3]		[1,73]		[1,73]	[0,2]	[X]	[1000000]	[4]	[13000]	[16000]	[X]	[63]	[6,75]
DIMETHYLPHENOL, 2,4-	105-67-9	0.02		0.02 r		130		[7870] 7880	[44] 1,4,6,7			X	211	18.07
DINITROBENZENE, 1,3-	99-65-0	0.0001		0.0001 r		160		[469] 523	3,5,6,7				300	0.69
DINITROPHENOL, 2,4-	51-28-5	0.002		0.002 r		0.79		[2767] 5900	[44] 2,4,5,6,7				[443]	0.48
DINITROTOLUENE, 2,4-	121-14-2	0.002	0.31 ☐	0.002 r	0.31 ☐	51		270	[44] 4,5,6				300	0.69
DINITROTOLUENE, 2,6- (2,6-DNT)	806-20-2	0.001 H		0.001 Hr		74		[482] 200	[44] 8				300	0.69
DINOSEB	88-85-7	0.001		0.001 r		120		[82] 50	[4] 5				[42] 223	1.03
DIOXANE, 1,4-	123-91-1		0.011		0.027 ☐	7.8	X	1000000	[44] 5	13000	14900	X	101	0.69
DIPHENAMID	957-51-7	0.03				200		280	6				210	
DIPHENYLAMINE	122-39-4	0.025		0.025 r		190		300	[43] 3				302	4.50
DIPHENYLHYDRAZINE, 1,2-	122-68-7		0.8		0.77	680		[68] 0.252	[43] 6				309	0.69
DIQUAT	85-00-7	0.0022		0.0022 r		2.6		700000	[2] 5				355	
DISULFOTON	298-04-4	0.00004		0.00004 r		1000	X	25	[9] 4,5,6	13400	15400	X	133	6.02
DIURON	330-54-1	0.002		0.002 r		300		42	[9] 2,4,6				[485]	
ENDOSULFAN	115-28-7	0.006		0.006 r		2,000		0.48	4				106	2.78
ENDOSULFAN I (ALPHA)	959-98-8	0.006 S		0.006 Sr		2000		[0.63] 0.6	[6] 6				200	

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.

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

Regulated Substance	CAS	RfDo (mg/kg-d)	CSFo (mg/kg-d)-1	RfDI (mg/kg-d)	CSFI (mg/kg-d)-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)	Degradation Coefficient (K/yr ²)	
ENDOSULFAN II (BETA)	33213-85-9	0.006 S		0.006 Sr		2300		[0.28] 0.45	[8] 8				390		
ENDOSULFAN SULFATE	1031-07-8	0.006 S		0.006 Sr		2300		0.117	[8] 7.9				200		
ENDOTHALL	145-73-3	0.02 I		0.02 I		120		100000	[4] 2				200		
ENDRIIN	72-20-8	0.0003 I		0.0003 I		11000		[0.28] 0.23	[6] 4.6,7.9				245		
EPICHLOROHYDRIN	108-89-8	0.002 H	0.0099 I	0.000288 I	0.0042 I	35	X	[88000] 85800	[44] 1.3,4	13000	14900	X	116	4.50	
ETHEPHON	16672-87-0	0.005 I				2		1240000		12			201		
ETHION	563-12-2	0.0005 I		0.0005 I		8700		[0.61] 0.85	[48] 4.6,9,10			X	200		
ETHOXYETHANOL, 2- (EGEE)	110-90-5	0.4 H		[0.4] 0.057 I		12	X	1000000	[46] 2	13200	15000	X	136	4.50	
ETHYL ACETATE	141-78-6	0.9 I		0.9 I		59	X	[80000] 80800	1,2,3,4,5,6	13100	15000	X	77	18.07	
ETHYL ACRYLATE	140-88-5		0.048 H		0.048 H	110	X	15000	[44] 1,2,6	13100	15100	X	100	18.07	
ETHYL BENZENE	100-41-4	0.1 I		0.285 I		220	X	[206] 181	[44] 1,3,4	13100	15000	X	136	1.11	
ETHYL DIPROPYLTHIOCARBAMATE S- (EPTC)	759-94-4	0.025 I				240	X	385		2	12900	14900	X	127	
ETHYL ETHER	60-29-7	0.2 I		0.2 I		68	X	[60000] 60400	[3] 1	13100	15100	X	36		
ETHYL METHACRYLATE	97-53-2	0.09 H		0.09 H		22		4535.5	9,10				117		
ETHYLENE GLYCOL	107-21-1	2 I		2 I		4.4	X	1000000	[41] 2	13100	15100	X	198	10.54	
ETHYLENE THIOUREA (ETU)	98-45-7	0.00008 I	0.11 H	0.00008 I	0.045 G	0.23		20000		2				4.50	
ETHYL P-NITROPHENYL PHENYLPHOSPHOROTHIOATE	2104-64-5	0.0001 I				1,200		3.1		4			215		
FENAMPHOS	22224-92-6	0.00025 I		0.00025 I		300		[208] 328	[8] 2				200		
FENVALERATE (PYDRIN)	51830-58-1	0.025 I		0.025 I		4,400		0.085	6	20500	25800	X	300		
FLUCOMETURON	2184-17-2	0.013 I				68		97.5	2,5,6,8						
FLUORANTHENE	206-44-0	0.04 I		0.04 I		49000		[0.268] 0.26	1,5,6				375	0.29	
FLUORENE	86-73-7	0.04 I		0.04 I		7900		[0.48] 1.9	[6] 1				298	2.11	
FLUOROTRICHLOROMETHANE (FREON 11)	75-69-4	0.3 I		0.2 H		130	X	[4249] 1080	1,4,5,6	13100	15000	X	24	0.35	
FONOFOS	944-22-9	0.002 I		0.002 I		1100	X	13	[8] 5,6,8	13400	15500	X	130		
FORMALDEHYDE	50-00-0	0.2 I	0.0455 I	[0.2] 0.0011 D	0.0455 I	3.8	X	[50000] 55000	[44] 1	13100	15100	X	-21	18.07	
FORMIC ACID	64-18-6	2 H		2 H		0.54	X	1000000	[46] 2	13000	14900	X	101	18.07	
FOSETYL-AL	39148-24-8	3 I				310		120000		2					
FURAN	110-00-9	0.001 I				130	X	10000		1	13100	15000	X	31,38	2.25
FURFURAL	98-01-1	0.003 I		0.0143 H		6.3	X	[80000] 91000	1,2,3	13000	14900	X	162		
GLYPHOSATE	1071-83-6	0.1 I		0.1 I		3500		12000	[4] 1,5,6				186		
HEPTACHLOR	76-44-8	0.0005 I	4.5 I	0.0005 I	4.55 I	6800		0.18	[43] 4,6,7				310	46.84	
HEPTACHLOR EPOXIDE	1024-57-3	0.00013 I	9.1 I	0.00013 I	9.1 I	21000		[0.275] 0.275	[6] 4,6,7,8				200	0.23	
HEXACHLOROBENZENE	118-74-1	0.0008 I	1.6 I	0.0008 I	1.61 I	3800		[0.0062] 0.006	[44] 1,4,5				319	0.06	
HEXACHLOROBUTADIENE	87-68-3	0.0002 H	0.078 I	0.0002 H	0.077 I	4700		[3.2] 2.88	[44] 4,5,6,7			X	216	0.69	
HEXACHLOROCYCLOPENTADIENE	77-47-4	[0.0007] 0.008 I		[0.0002] 0.0002 H		7200		[3.4] 1.8	[44] 5,6,7			X	239	4.50	
HEXACHLOROETHANE	67-72-1	0.001 I	0.014 I	0.001 I	0.014 I	2200		50	[44] 1				187	0.69	
HEXANE	110-54-3	0.06 H		0.0571 I		3600	X	[0.47] 0.6	[3] 1,5,6	13100	15000	X	69		
HEXYTHIAZOX (SAVEY)	78587-05-0	0.025 I				6,500		0.6		2					
HYDRAZINEHYDRAZINE SULFATE	302-01-2		3 I			17 I	0.0053 X	1000000		2	13000	15000	X	113.5	18.07
HYDROQUINONE	123-31-9	0.04 H		0.04 H		10		70000	2,3,5				285	18.07	
INDENO[1,2,3-CD]PYRENE	183-39-5		0.73 N		[0.385] 0.31 I	31000000		0.062		6			536	0.17	
IPRODIONE	36734-19-7	0.04 I				1,100		13		2					
ISOBUTYL ALCOHOL	78-83-1	0.3 I		0.3 I		60	X	[86000] 81000	1,2,3,4,5	13000	14900	X	108	17.57	
ISOPHORONE	78-59-1	0.2 I	0.00095 I	0.2 I	0.00095 I	31		12000	2,4,5			X	215	4.50	
KEPONE	143-60-0	0.0005 D	16 C		16.1 C	55000		7.8	[3] 4				350	0.17	
MALATHION	121-75-5	0.02 I	[0.00096] 0.00096	0.02 I	[0.00096] 0.00096	1300	X	[446] 143	[3] 4	14000	16300	X	157	2.46	
MALEIC HYDRAZIDE	123-33-1	0.5 I		0.5 I		2.8		6000	[46] 4				280		
MANEB	12427-38-2	0.005 I				1		23	9,13						
MERPHOS OXIDE	78-48-8	0.0003 I				53,000	X	2.3	8,10,12	13100	15100	X	150		
METHACRYLONITRILE	126-98-7	0.0001 I		0.0002 H		21	X	[26000] 25700	[42] 1	13100	15100	X	90		
METHAMIDOPHOS	10265-92-6	0.00005 I				8		2000000	5						
METHANOL	67-56-1	0.5 I		0.5 I		2.8	X	1000000	[44] 2	13100	15100	X	65	36.14	
METHOMYL	16752-77-5	0.025 I		0.025 I		20		58000	[9] 2				144		
METHOXYCHLOR	72-43-6	0.005 I	[0.00096] 0.00096	0.005 I	[0.00096] 0.00096	63000		[0.91] 0.045	[44] 4,5,6				346	0.69	
METHOXYETHANOL, 2-	108-86-4	0.001 H		0.00571 I			X	1000000		2	13100	15000	X	124.3	4.50
METHYL ACETATE	78-20-9	1 H				30	X	243500	4,5,6	13100	15100	X	56.9		

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

Regulated Substance	CAS	RfDo (mg/kg-d)	CSFo (mg/kg-d)-1	RfDi (mg/kg-d)	CSFi (mg/kg-d)-1	Koc	VOC7	Aqueous Sol (mg/L)	Aqueous Sol Reference ¹	TF Vol from Surface Soil	TF Vol from SubSurface Soil	Organic Liquid	Boiling Point (degrees C)	Degradation Coefficient (K/yr) ¹
METHYL ACRYLATE	96-33-3	0.03 H				55	X	52000	1.2,5	13100	15100	X	70	18.07
METHYL CHLORIDE	74-87-3	0.004 M	0.013 H	0.029 D	0.0063 H	6	X	[6228] 8180	[44] 1.2,3,4	13200	16000	X	-24	4.50
METHYL ETHYL KETONE	78-93-3	0.6 I		0.286 I		32	X	[239000] 275000	[44] 1.2,3,4,5	13100	15100	X	80	2.57
METHYL ISOBUTYL KETONE	108-10-1	0.08 H		[0.0229] 0.023 H		17	X	[48000] 19550	[44] 1.2,4,5	13100	15100	X	117	18.07
METHYL METHACRYLATE	80-62-6	[0.08] 1.4 I		[0.08] 0.2 I		10	X	[48000] 15800	[44] 1	13100	15100	X	100	4.5045
METHYL METHANESULFONATE	68-27-3		0.099 C		0.098 C	5.2		200000	[42] 2				203	
METHYL PARATHION	298-00-0	0.00025 I		0.00025 I		790	X	[60] 25	[9] 4.5,6	13500	15600	X	133	3.61
METHYL STYRENE (MIXED ISOMERS)	25013-15-4	0.005 H		0.011 H		2,200		89	9					
METHYL TERT-BUTYL ETHER (MTBE)	1634-04-4	0.857 I	0.0018 C	0.857 I	0.0018 C	12	X	[64000] 45000	[44] 1.2,4,6	13100	15100	X	55	0.693
METHYLENE BIS(2-CHLOROANILINE) 4,4'	101-14-4	0.0007 H	0.13 H	0.0007 H	0.13 H	3,000		13.9	10					
METHYLNAPHTHALENE, 2-	91-57-6	[0.04] 0.02 S		[0.00286] S	0.00086	16000		[24.6] 26	[6] 1			X	241	
METHYLSTYRENE, ALPHA	98-83-9	0.07 H				660	X	560	9			X	165.4	
NAPHTHALENE	91-20-3	[0.04] 0.02 I		[0.00286] I	0.00086	950		[34] 30	[44] 3				218	0.98
NAPHTHYLAMINE, 1-	134-32-7		1.8 S		1.8 S	3200		[4698] 1690	[44] 2				301	0.89
NAPHTHYLAMINE, 2-	91-59-8		1.8 C		1.8 C	87		[262] 6.4	[44] 8				306	0.89
NAPROPAMIDE	15299-99-7	0.1 I				880		70	2					
NITROANILINE, M-	89-09-2	0.000571 S		0.000571 S		18		[890] 100	[6] 3				306	
NITROANILINE, O-	88-74-4	0.000571 H		0.000571 H		27		[4290] 1200	[6] 6				284	
NITROANILINE, P-	100-01-6	0.000571 S		0.000571 S		15		800	[6] 2				332	
NITROBENZENE	98-95-3	0.0005 I		[0.0096744] H	0.0006	130		[4900] 2000	[44] 2			X	211	0.64
NITROPHENOL, 2-	88-75-5	[0.062] 0.008 S		[0.062] 0.008 S		37		2100	[43]	1.2,3,4,5,6			216	9.01
NITROPHENOL, 4-	100-02-7	[0.062] 0.008 N		[0.062] 0.008 N		230		16000	[44] 2				279	26.81
NITROPROPANE, 2-	79-46-9	0.00571 I	[0.46] 2.4 H	0.00571 I	[0.46] 2.4 H	20	X	[47900] 18700	[44] 1.3,4,5	13000	14900	X	120	0.89
NITROSODIETHYLAMINE, N-	65-18-5		150 I		151 I	26	X	93000	[44] 10	13000	14900	X	176	0.89
NITROSODIMETHYLAMINE, N-	62-75-9		51 I		49 I	8.5	X	1000000	[44] 2	13000	14900	X	154	0.89
NITROSO-DI-N-BUTYLAMINE, N-	924-16-3		5.4 I		5.6 I	450		1200	9,10,13			X	226	0.89
NITROSO-DI-N-PROPYLAMINE, N-	621-64-7	0.095 D	7 I	0.095 D	7 C	11		[8894] 9900	[44] 6			X	208	0.89
NITROSODIPHENYLAMINE, N-	86-30-6		0.0049 I		0.0091 C	580		35	[44] 1				269	3.72
NITROSO-N-ETHYLUREA, N-	759-73-9		140 H		27 C	2		13000	9				125	1734.48
OCTYL PHTHALATE, DI-N-	117-84-0	0.02 H		0.02 H		980000000		3	[44] 5			X	234	0.89
OXAMYL (VYDATE)	23135-22-0	0.025 I		0.025 I		7.1		280000	[9] 2				101	
PARATHION	56-38-2	0.006 H		0.006 H		2300		[6.64] 20	[44] 2,4,5,6,7			X	376	
PCB-1016 (AROCLOR)	12674-11-2	0.00007 I	0.09 N	0.00007 I	0.09 N	110000		[0.049] 0.25	5			X	340	
PCB-1221 (AROCLOR)	11104-28-2		0.5 S		0.5 S	1900		[0.2] 0.59	5			X	340	
PCB-1232 (AROCLOR)	11141-16-5		0.5 S		0.5 S	1500		1.45	[6] 7			X	340	
PCB-1242 (AROCLOR)	63469-21-9		0.5 N		[0.06] 0.5 N	48000		[0.24] 0.1	6			X	340	
PCB-1248 (AROCLOR)	12672-29-6		1.8 S		1.8 S	190000		[0.006] 0.054	[6] 7,9,11			X	340	
PCB-1254 (AROCLOR)	11097-69-1	0.00002 I	1.8 N	0.00002 I	1.8 N	810000		[0.012] 0.057	5			X	340	
PCB-1260 (AROCLOR)	11096-82-5		0.6 N		0.6 N	1800000		0.08	5			[34] 385		
PEBULATE	1114-71-2	0.05 H				630	X	92	5	13000	14900	X	142	
PENTACHLOROBENZENE	808-93-5	0.0008 I		0.0008 I		32000		[0.24] 0.74	[3] 1,5,6,7				277	0.37
PENTACHLORONITROBENZENE	82-88-8	0.003 I	0.26 H	0.003 I	0.26 H	7900		[0.59] 0.44	[44] 4,6,8				328	0.36
PENTACHLOROPHENOL	87-86-5	0.03 I	0.12 I	0.03 I	0.12 I	20000		14	[44] 1,2,4,5				310	0.17
PHENACETIN	62-44-2		0.0022 C		0.0022 C	110		[290] 763	[42] 2,3,9				200	4.50
PHENANTHRENE	85-01-8	0.3 S		0.3 S		38000		[4.48] 1.1	1.6				341	0.83
PHENOL	108-95-2	0.6 I		0.6 I		22	X	[82800] 84300	[44] 1,2,3,4			X	182	36.14
PHENYLENEDIAMINE, M-	108-45-2	0.006 I		0.006 I		12		[447874] 351000	3				286	4.50
PHENYLPHENOL, 2-	90-43-7		0.00194 H			5,700		700	5				280	18.07
PHORATE	298-02-2	0.0002 H		0.0002 H		810	X	50	[42] 2	13100	15100	X	118	
PHTHALIC ANHYDRIDE	85-44-9	2 I		0.0343 H		79		[6208] 6170	[44] 2				285	13490.40

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Table 5 - Physical and Toxicological Properties
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Regulated Substance	CAS	RfD _o (mg/kg-d)	CSF _o (mg/kg-d) ⁻¹	RfD _i (mg/kg-d)	CSF _i (mg/kg-d) ⁻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)	Degradation Coefficient (K/yr ⁻¹)				
PICLORAM	1918-02-1	0.07				15		430	2									
POLYCHLORINATED BIPHENYLS (AROCLORS) (PCBS)	1338-36-3		2		2			0.0505	10.13									
PRONAMIDE	23950-58-5	0.075		0.075		200		15	[42] 2				321					
PROPANIL	708-96-8	0.005				180		225	2									
PROPHAM	122-42-9	0.02				51		250	5									
PROPYLBENZENE, N-	103-65-1	0.04				720	X	52	6	13100	15100	X	159.2					
PROPYLENE OXIDE	75-56-9	0.00857	0.24	0.00857	[0.0432] 0.013	25	X	[600000] 405000	[44] 1	13100	15000	X	34					
PYRENE	129-00-0	0.03		0.03		68000		[0.043] 0.132	[6] 1				393	0.07				
PYRIDINE	110-85-1	0.001		0.001		0.0088	X	1000000	[43] 2	13100	15000	X	115	18.07				
QUINOLINE	91-22-6		12			1300		60000	1.3,6		14900	X	237.7	12.65				
QUINALOFOP (ASSURE)	76578-14-8	0.009				580		0.3	2				220					
RONNEL	289-84-3	0.05	H			580		40	2				151					
SIMAZINE	122-34-9	0.005		0.12	H	110		5	[4] 5				225					
STRYCHNINE	57-24-9	0.0003		0.0003		280		[300] 143	[43] 5				270	4.50				
STYRENE	100-42-5	0.2		0.286		910	X	[320] 300	[43] 5	13100	15100	X	145	1.20				
TERTHURON	34014-18-1	0.07				620		2500	2									
TERRACIL	5802-51-2	0.013				53		710	2									
TERTBUFOS	13071-79-9	0.000025	H	0.000025	H	510	X	[4.5] 5	[3] 6	13000	15000	X	69					
TETRACHLOROBENZENE, 1,2,4,5-	95-94-3	0.0003		0.0003		1,500		0.583	1.5,6,7				245	0.69				
TETRACHLORODIBENZO-P-DIOXIN, 2,3,7,8- (TCDD)	1746-01-6	0.000000001	D	150000	H	[446000] 150000	H	4300000	0.000193	[43] 6			412	0.21				
TETRACHLOROETHANE, 1,1,1,2-	630-20-6	0.03		0.026		0.0256		880	X	1100			130.5	3.79				
TETRACHLOROETHANE, 1,1,2,2-	79-34-5	0.06	N	[0.27] 0.2		0.06	N	0.203		[43] 2	13100	15100	X	147	0.56			
TETRACHLOROETHYLENE (PCE)	127-18-4	0.01		0.052	N	[0.0857] 0.14	N	0.00203	N	300	X	[280] 162	[43] 1,2,3,4,5	13100	15000	X	121	0.03
TETRACHLOROPHENOL, 2,3,4,6-	58-90-2	0.03		0.03		6200		[4000] 183	[4] 6				150	0.69				
TETRAETHYL LEAD	78-00-2	0.0000001		0.0000001		4900		[0.23] 0.8	[4] 5				200	4.50				
TETRAETHYL DITHIOPYROPHOSPHATE	3688-24-6	0.0005		0.0005		550	X	25	2	13000	14900	X	136					
THIOFANOX	39196-18-4	0.0003	H			0.022		6200	9									
THIRAM	137-26-8	0.005		0.005		1000		30	[3] 4				200					
TOLUENE	108-88-3	0.2		0.114		130	X	[626] 532.4	[43] 1,2,3,4	13100	15000	X	111	9.01				
TOLUIDINE, M-	108-44-1		0.24	S		0.24	Sr	[46444] 15030	[48] 6				203					
TOLUIDINE, O-	95-63-4		[0.48] 0.24	H		[0.4786] 0.24	Hr	[46600] 15000	[43] 1,3,5				200	18.07				
TOLUIDINE, P-	106-49-0		0.19	H		0.19	Hr	[6640] 7410	[6] 1,2,3				200					
TOXAPHENE	8001-35-2	0.001	D	1.1		0.001	Dx	1.12		1500			432					
TRIALATE	2303-17-5	0.013				2,000		4	5				117					
TRIBROMOMETHANE (BROMOFORM)	75-25-2	0.02		0.0079		0.02	Hr	0.00385		130	X	[3040] 3050	[43] 1,2,3,4	13100	15100	X	149	0.69
TRICHLORO-1,2,2-TRIFLUOROETHANE, 1,1,2-	78-13-1	30		8.57	H	1,200	X	170	1				47.7	0.35				
TRICHLOROBENZENE, 1,2,4-	120-82-1	0.01		0.0036	G	0.0571	H	[48] 44.4	[43] 1,4,6,7				213	0.69				
TRICHLOROBENZENE, 1,3,5-	108-70-3	[0.04] 0.008	M			0.0571	S	[6.04] 5.8	[3] 5				208					
TRICHLOROETHANE, 1,1,1-	71-55-6	[0.573] 0.28	N			[0.573] 0.63	N	100	X	1495	[43] 1,4,5,6	13100	15000	X	74	0.05		
TRICHLOROETHANE, 1,1,2-	79-00-6	0.004		0.057		0.004	Hr	0.056		78	X	4420	[11] 1	13100	15100	X	114	0.03
TRICHLOROETHYLENE (TCE)	79-01-8	[0.002] 0.008	N	0.011	N	0.143	D	0.00595	N	93	X	1100	[43] 1	13100	15000	X	87	0.02
TRICHLOROPHENOL, 2,4,5-	98-95-4	0.1		0.1		2400		[3290] 1000	[43] 1,2,4				246	0.14				
TRICHLOROPHENOL, 2,4,6-	88-06-2	[0.042] 0.0003		0.011		[0.042] 0.0003		0.01085		1100			[800] 850	[43] 1,2,4,5		246	0.14	
TRICHLOROPHENOXYACETIC ACID, 2,4,5- (2,4,5-T)	93-76-5	0.01		0.01		43		[249] 278	[3] 2,4,5				279	1.39				
TRICHLOROPHENOXYPROPIONIC ACID, 2,4,5- (2,4,5-TPY)(SILVEX)	93-72-1	0.008		0.008		1700		140	[4] 2				200					
TRICHLOROPROPANE, 1,1,2-	598-77-6	0.005				24	X	2700	14	13100	15000	X	117					
TRICHLOROPROPANE, 1,2,3-	98-18-4	0.006		7	H	[0.006744] 0.0014	N	7	Hr	280	X	[4806] 1895	[46] 1,4,6	13100	15100	X	157	0.35
TRICHLOROPROPENE, 1,2,3-	96-19-5	0.005	H			190	X	2700	14	13100	15000	X	142					
TRIFLURALIN	1582-09-8	0.0075		0.0077		0.0075	Hr	0.0077	Hr	720			2.5,6,7					
TRIMETHYLBENZENE 1,3,4- (TRIMETHYLBENZENE 1,2,4-)	95-63-6	0.05	N	0.0017	N	2,200	X	56	1	13100	15000	X	169	4.50				
TRIMETHYLBENZENE 1,3,5-	108-67-8	0.05	N	0.0017	N	680	X	48.9	1	13100	15100	X	164.7					
TRINITROTOLUENE 2,4,6-	118-96-7	0.0005		0.03		1		100	2				240					
VINYL ACETATE	108-05-4			0.0571		2.8	X	20000	[43] 1	13200	15000	X	73					
VINYL BROMIDE (BROMOETHENE)	993-90-2	0.000857	Hr	0.11	Hr	0.000857		0.11	H	150			4182	12	15.8	0.09		
VINYL CHLORIDE	75-01-4	0.003		[1.9] 1.5		0.029		[0.294] 0.03		10	X	[8800] 2700	[43] 1	13200	15000	X	-13	0.09

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.

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

Regulated Substance	CAS	RfDo (mg/kg-d)	CSFo (mg/kg-d)-1	RfDi (mg/kg-d)	CSFI (mg/kg-d)-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)	Degradation Coefficient (K/yr ¹)
WARFARIN	81-81-2	0.0003 I		0.0003 Ir		910		00.0000000 09+2] 17	[9] 4				356	4.50
XYLENES (TOTAL)	1330-20-7	2 I		[2] 0.12 D		350	X	175	[40] 13	13100	15000	X	140	0.89
ZINEB	12122-67-7	0.05 I				19		10	4					

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)

M = EPA Drinking Water Regulations and Health Advisories

N = EPA NCEA Provisional Values

r = route-to-route extrapolation

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.

APENDIX A
Table 5 - Physical and Toxicological Properties
B. Inorganic Regulated Substances

Regulated Substance	CAS	RfDo (mg/kg-d)	CSFo (mg/kg-d)-1	RfDi (mg/kg-d)	CSFi (mg/kg-d)-1	Kd
ALUMINUM	7429-90-5	1 N		0.001 N		
ANTIMONY	7440-36-0	0.0004 I		0.0004 Ir		45
ARSENIC	7440-38-2	0.0003 I	1.5 I	0.0003 Ir	15 I	29
[ASBESTOS]	[12001206]				[806]	
BARIUM AND COMPOUNDS	7440-39-3	0.07 I		[0.000143] H 0.0001		41
BERYLLIUM	7440-41-7	[0.005] 0.002 I	[4.3]	[0.005] Ir 0.00000571	8.4 I	790
BORON AND COMPOUNDS	7440-42-8	0.09 I		0.0057 H		
CADMIUM	7440-43-9	0.0005 I	0.38 C	0.0005 Ir	6.3 I	75
CHROMIUM III	16065-83-1	[4] 1.5 I		[0.00000571]		1800000
CHROMIUM VI	18540-29-9	[0.005] 0.003 I	0.19 C	[0.005] I 0.00003	42 I	19
COBALT	7440-48-4	[0.06] 0.02 N		[0.0000086] D 0.000005		
COPPER	7440-50-8	[2690] 0.0371 H				360
CYANIDE, TOTAL	57-12-6	0.02 I		0.02 Ir		9.9
IRON	7439-89-6	0.3 N		0.3 Nr		
LEAD	7439-92-1		0.0085 C		0.042 C	890
MANGANESE	7439-96-5	[0.047] 0.14 I		0.0000143 I		
MERCURY	7439-97-6	[0.0000867] M 0.0003		0.000086 I		52
NICKEL	7440-02-0	0.02 I		[0.02] D 0.0000571	0.84 Is	65
SELENIUM	7782-49-2	0.005 I		0.005 Ir		5
SILVER	7440-22-4	0.005 I		0.005 Ir		8.3
THALLIUM	7440-28-0	[0.00008] I 0.00007		[0.00008] Ir 0.00007		71
TIN	7440-31-5	0.6 H		0.6 Hr		
VANADIUM	7440-62-2	[0.0000571] H 0.007		0.000057 D		1000
ZINC	7440-66-6	0.3 I		0.3 Ir		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)

M = EPA Drinking Water Regulations and Health Advisories

N = EPA NCEA Provisional Values

r = route-to-route extrapolation

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	64197	5	100	100	100	0.5
ACETIC ANHYDRIDE	108247	5	100	100	100	0.5
AMYL ACETATE, N-	628637	5	100	100	100	0.5
AMYL ACETATE, SEC-	626380	5	100	100	100	0.5
ANTU (ALPHA-NAPHTHYLTHIOUREA)	86884	5	100	100	100	0.5
AZINPHOS-METHYL (GUTHION)	86500	5	100	100	100	0.5
BETA PROIOLACTONE	57578	5	100	100	100	0.5
[BIS(2-CHLORO-1-METHYLETHYL)ETHER]	[408604]	[5]	[100]	[100]	[100]	[0.5]
BIS(2-CHLOROETHOXY)METHANE	111911	5	100	100	100	0.5
BROMOPHENYL PHENYL ETHER, 4-	101553	5	100	100	100	0.5
BUTYL ACETATE, N-	123864	5	100	100	100	0.5
BUTYL ACETATE, SEC-	105464	5	100	100	100	0.5
BUTYL ACETATE, TERT-	540885	5	100	100	100	0.5
BUTYLAMINE, N-	109739	5	100	100	100	0.5
CALCIUM CHROMATE	13765190	5	100	100	100	0.5
CALCIUM CYANAMIDE	156627	5	100	100	100	0.5
CARBONYL FLUORIDE	353504	5	100	100	100	0.5
CATECHOL	120809	5	100	100	100	0.5
CHLOROACETALDEHYDE	107200	5	100	100	100	0.5
CHLOROETHYL VINYL ETHER, 2-	110-75-8	5	100	100	100	0.5
CHLOROPHENYL PHENYL ETHER, 4-	7005723	5	100	100	100	0.5
CYCLOHEXANE	110827	5	100	100	100	0.5
DECABORANE	17702419	5	100	100	100	0.5
DIBENZOFURAN	132649	5	100	100	100	0.5
DICHLORO-2-BUTENE, TRANS-1,3-	110576	5	100	100	100	0.5
DIETHANOLAMINE	111422	5	100	100	100	0.5
DIETHYLAMINE	109897	5	100	100	100	0.5
DIGLYCIDYL ETHER (DGE)	2238075	5	100	100	100	0.5
DIMETHYL PHTHALATE	131113	5	100	100	100	0.5
DIMETHYL SULFATE	77781	5	100	100	100	0.5
DIMETHYLPHENETHYLAMINE, ALPHA, ALPHA-	122098	5	100	100	100	0.5
DINITRO-O-CRESOL, 4,6-	534521	5	100	100	100	0.5
DIOXATHION	78342	5	100	100	100	0.5
ETHYL METHANESULFONATE	62500	5	100	100	100	0.5
ETHYLAMINE	75047	5	100	100	100	0.5
ETHYLENE CHLORHYDRIN	107073	5	100	100	100	0.5
FAMPHUR	52857	5	100	100	100	0.5
FENSULFOTHION	115902	5	100	100	100	0.5
HEXACHLOROPROPENE	1888717	5	100	100	100	0.5
HEXANONE, 2- (METHYL N-BUTYL KETONE)	591786	5	100	100	100	0.5
IODOMETHANE	74884	5	100	100	100	0.5
ISOAMYL ACETATE	123922	5	100	100	100	0.5
ISOBUTYL ACETATE	110190	5	100	100	100	0.5
ISODRIN	465736	5	100	100	100	0.5
ISOPHORONE DIISOCYANATE	4098719	5	100	100	100	0.5
ISOSAFROLE	120581	5	100	100	100	0.5
LITHIUM	7439932	5	100	100	100	0.5
LITHIUM HYDRIDE	7580678	5	100	100	100	0.5
MANGANESE CYCLOPENTADIENYL TRICARBONYL	12079651	5	100	100	100	0.5
METHYL HYDRAZINE	60344	5	100	100	100	0.5
METHYL ISOAMYL KETONE	110123	5	100	100	100	0.5
METHYL ISOCYANATE	624839	5	100	100	100	0.5
METHYL MERCAPTAN	74931	5	100	100	100	0.5
METHYLAMINE	74895	5	100	100	100	0.5
METHYLCHLOROPHENOXYACETIC ACID (MCPA)	94749	5	100	100	100	0.5
MEVINPHOS	7786347	5	100	100	100	0.5
MONOCROTOPHOS	6923224	5	100	100	100	0.5
NAPHTHOQUINONE, 1,4-	130154	5	100	100	100	0.5
NITRIC ACID	7897372	5	100	100	100	0.5
NITROQUINOLINE-1-OXIDE, 4-	56575	5	100	100	100	0.5
OSMIUM TETROXIDE	20816120	5	100	100	100	0.5
PENTABORANE	19624227	5	100	100	100	0.5
PENTACHLOROETHANE	76017	5	100	100	100	0.5
PERCHLOROMETHYL MERCAPTAN	594423	5	100	100	100	0.5
PHENYL MERCAPTAN	108985	5	100	100	100	0.5
PICOLINE, 2-	109068	5	100	100	100	0.5

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

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	
PROPANOL, 1-	71238	5	100	100	100	0.5
PROPANOL, 2- (ISOPROPYL ALCOHOL)	67630	5	100	100	100	0.5
PROPIONIC ACID	79094	5	100	100	100	0.5
PROPIONITRILE (ETHYL CYANIDE)	107120	5	100	100	100	0.5
PROPYLENE IMINE	75558	5	100	100	100	0.5
PYRETHRUM	8003347	5	100	100	100	0.5
QUINONE (p-BENZOQUINONE)	106514	5	100	100	100	0.5
RESORCINOL	108463	5	100	100	100	0.5
SELENIUM HEXAFLUORIDE	7783791	5	100	100	100	0.5
SODIUM BISULFITE	7631905	5	100	100	100	0.5
SULFIDE	18496258	5	100	100	100	0.5
SULFUR MONOCHLORIDE	10025679	5	100	100	100	0.5
SULFURIC ACID	7664939	5	100	100	100	0.5
TELLURIUM	13494809	5	100	100	100	0.5
TELLURIUM HEXAFLUORIDE	7783804	5	100	100	100	0.5
TEPP (TETRAETHYL PYROPHOSPHATE)	107493	5	100	100	100	0.5
TETRAHYDROFURAN	109999	5	100	100	100	0.5
TETRANITROMETHANE	509148	5	100	100	100	0.5
THIONAZIN	297972	5	100	100	100	0.5
TRIETHYLAMINE	121448	5	100	100	100	0.5
TRIETHYLPHOSPHOROTHIOATE, O,O,O-	126681	5	100	100	100	0.5
TRINITROGLYCEROL (NITROGLYCERIN)	55630	5	100	100	100	0.5

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

TABLE 8
CONSTITUENTS OF POTENTIAL ECOLOGICAL CONCERN

<i>METALS</i>	<i>ORGANICS cont'd</i>
Arsenic III	Dichlorobenzene, 1,3-
Arsenic V	Dichlorobenzene, 1,4-
Barium	Dichlorobenzene, 1,1-
Beryllium	Dieldrin
Cadmium	Diethyl phthalate
Chromium III	Di-n-butyl phthalate
Chromium VI	Endosulfan (mixed isomers)
Cobalt	Endosulfan, alpha
Copper	Endosulfan, beta
Iron	Endrin
Lead	Ethylbenzene
Manganese	Fluoranthene
Mercury, inorganic	Fluorene
Mercury, methyl	Heptachlor
Molybdenum	Hexachloroethane
Nickel	Hexachlorocyclohexane (Lindane)
Selenium	Kepone *
Vanadium	Malathion
Zinc	Methoxychlor
Cyanide	Mirex *
<i>ORGANICS</i>	Naphthalene
Acenaphthene	Pentachlorobenzene
Aldrin *	Pentachlorophenol
Benzene	Polynuclear aromatic hydrocarbons
Benzo(a)pyrene	Polychlorinated biphenyls (PCB)
Biphenyl	Phenanthrene
Bis(2-ethylhexyl)phthalate	Pyrene
Bromophenyl phenyl ether, 4-	Tetrachloroethane, 1,1,2,2-
Butylbenzyl phthalate	Tetrachloroethylene
Chlordane *	Tetrachloromethane
Chlorobenzene	Toluene
DDT (and metabolites)	Toxaphene
Diazinon	Tribromomethane
Dibenzofuran	Trichlorobenzene, 1,2,4-
Dichlorobenzene, 1,2-	Trichloroethane, 1,1,1-
	Trichloroethylene
	Xylene[<u><i>p-m</i></u>]- <u>S</u>

Notice of Final Rulemaking
Department of Environmental Protection
Environmental Quality Board
(25 Pa. Code, Chapter 250)

(ADMINISTRATION OF LAND RECYCLING PROGRAM)

Order

The Environmental Quality Board (Board) by this order amends 25 Pa. Code, Chapter 250 (relating to administration of land recycling program). The amendments provide up-to-date scientific information on toxicity and other parameters of substances and corresponding changes along with corrections to the Statewide health standard medium-specific concentrations (numeric standards). The amendments also contain policy clarifications and changes to address issues raised during implementation of the land recycling program and during the Department of Environmental Protection's (Department) 1998-99 land recycling program evaluation.

This order was adopted by the Board at its meeting of September 18, 2001.

A. Effective Date

These amendments will go into effect upon publication in the *Pennsylvania Bulletin* as final rulemaking.

B. Contact Persons

For further information Thomas K. Fidler, Chief, Division of Land Recycling and Cleanup Program, P.O. Box 8471, Rachel Carson State Office Building, Harrisburg, PA 17105- 8471, (717) 783-7816, or Kurt Klapkowski, Assistant Counsel, Bureau of Regulatory Counsel, P.O. Box 8464, Rachel Carson State Office Building, Harrisburg, PA 17105-8464, (717) 787-7060. Persons with a disability may use the AT&T Relay Service by calling 1-800-654-5984 (TDD users) or 1-800-654-5988 (voice users). This rulemaking is available electronically through the Department's web site (www.dep.state.pa.us).

C. Statutory Authority

This rulemaking is being made under the authority of Sections 104(a), 301(c) and 303(a) of the Land Recycling and Environmental Remediation Standards Act (35 P.S. §§ 6026.101-6026.908) (Act 2). Section 104(a) authorizes the Board to adopt Statewide health standards, appropriate mathematically valid statistical tests to define compliance with Act 2 and other regulations that may be needed to implement the provisions of Act 2. Section 301(c) authorizes the Department to establish by regulation procedures for determining attainment of remediation standards when practical quantitation limits set by the U.S. Environmental Protection Agency (EPA)

have a health risk that is greater than the risk levels established in Act 2. Section 303(a) authorizes the Board to promulgate Statewide health standards for regulated substances for each environmental medium and methods used to calculate the standards.

D. Background and Purpose

Aside from minor typographical or technical corrections to the Act 2 regulations, there are two basic reasons for the changes in this regulatory proposal. One is more up-to-date scientific information on parameters that affect the calculation of the Statewide health standard medium-specific concentrations (MSCs). The second is policy clarifications or developments that the Board determined would improve implementation of the Statewide health standard and attainment provisions in the land recycling program. These policy amendments primarily concern the process involved in nonuse aquifer determinations and attainment demonstrations at petroleum release sites.

The Cleanup Standards Scientific Advisory Board (CSSAB) was consulted on the proposed rulemaking and this final rule as well. In areas where they had concerns, the CSSAB suggested language that has been incorporated into this proposal. On February 3, 2000, the CSSAB voted to recommend approval of the proposed regulation package. The CSSAB considered the final rulemaking at its February 22, 2001 and March 26, 2001 meetings. At the March meeting the CSSAB voted to recommend to the Board approval of the final amendments.

E. Summary of Comments and Responses and Changes Made in the Final Rulemaking

Notice of the proposed rulemaking was published at 30 Pa.B. 3946 (August 5, 2000). The proposal, as corrected at 30 Pa.B. 4356 (August 19, 2000), set forth a 60-day comment period.

During the public comment period, the Board received written comments from eight individuals or groups. The Board considered the comments received in formulating the final-form regulations. The Department has prepared a comment and response document that addresses each comment on the proposed regulations. A copy of that document was presented to the Board along with this final rulemaking and is available from the contact persons listed in Section B.

The following is a summary of major comments received and changes that have been made to the proposed rulemaking. The summary is listed in the same order as the final-form regulations.

Section 250.1 Definitions

This section includes definitions for terms that are not found in the statute but were needed to clarify language in the statute and the regulations. The term “agricultural purposes” was added to clarify what they are and that they include food processing. The commentators agreed with the change.

Section 250.5 Public notice by applicant, and Section 250.6 Public participation.

Section 250.5 establishes requirements for public notice for a remediator of a site. Section 250.5(d) is a new subsection pertaining to areas not covered entirely by a nonuse aquifer areawide certification. The subsection requires that when a nonuse aquifer designation request under the Statewide health standard is made to the Department, the remediator shall send notice to every municipality and community water supplier servicing the area requested for nonuse aquifer designation. One commentator believed this would have the effect of deferring approval of nonuse aquifer determinations to the municipality, making the process of getting a nonuse aquifer determination even more difficult and time-consuming. The commentator recognized that it may be useful to contact the municipality and local community water supplier regarding current and planned future use of groundwater. However, the commentator believed that the approach under this subsection would create a new requirement to obtain a nonuse aquifer determination prior to completion of the final report. The commentator recommended that a nonuse aquifer determination request might be submitted prior to submission of the final report. The comment concluded that if the remediator could demonstrate that groundwater is not useable and that an ordinance is in place prohibiting groundwater use for drinking water, then the remediator’s nonuse aquifer determination should be approved.

The amendment does not add a requirement to obtain concurrence by the municipality or community water supplier prior to nonuse aquifer determination. The conditions upon which the Department will make its determination are based solely on demonstrating compliance with the requirements of Section 250.303. Approval of use of the nonuse aquifer groundwater standards is and will continue to be as it is specified in that section.

Commentators had concerns with the 45-day review period proposed in Section 250.5. One commentator felt the time period could be reduced or eliminated because the requirements of Section 250.303(c) may be met through the use of local ordinances. The purpose of the 45-day period is to allow the municipality and water supplier to identify information relevant to Section 250.303(c) that the Department may consider. During discussion with the CSSAB it became apparent that municipalities commonly meet once a month, and a 30-day comment period may not be enough time for the nonuse aquifer proposal to be considered by boards and to have public input. The Board does, however, believe that the use of local ordinances will serve to satisfy the requirements Section 250.303(c)(1) and (2). Under this process, water suppliers would be expected to be involved as part of satisfying Section

250.303(c), which provides the opportunity for water supplier input. The proposed rulemaking was modified to reflect the use of local ordinances. The purpose behind the 45-day period of review in Section 250.5(e) is to allow both the municipality and water supplier to identify information relevant to Section 250.303(c) that the Department may consider in making its final determination. In those cases where a local municipal ordinance prohibiting the use of groundwater does not exist, the 45-day review period is retained.

One commentator requested clarification on determining what was meant by receipt as it pertains to submission of a nonuse aquifer determination request. The phrase "receipt of a request" refers to the receipt by the municipality or community water supplier of a nonuse aquifer determination request. The method and procedures are specified in the technical guidance manual.

A commentator indicated that, regarding the requirements applicable to precertification requests and nonuse aquifer determinations, the proposed Section 250.6(e) should be expanded to allow public involvement plans to be developed by the parties remediating a site. The commentator noted that under the proposed Section 250.303(f) only municipalities and authorities could ask the Department for a nonuse determination. Only these entities would be required to develop a public involvement plan. The commentator indicated that the standards for Department approval of a remediator's request are specified in Section 250.303(b), but under the proposed amendments the approval standards would include satisfaction of Section 250.6, which is a set of requirements that can only be satisfied by a municipal authority or municipality. The commentator believed the disconnect between Section 250.303(b), as amended, and proposed Sections 250.303(f) and 250.6(e) can be remedied by expanding Section 250.6(e) to allow a public involvement plan to be developed by the party remediating a site.

The Department acknowledges that the proposed nonuse aquifer wording changes were not clear and has made clarifications in the final rulemaking in Sections 250.5, 250.6, and 250.303. The intent with respect to public notice and participation is that nonuse aquifer proposals made by remediators would not require a public involvement plan. Section 250.303(f) requires that a municipal ordinance prohibiting use of groundwater be in place to obtain an areawide certification. Since the process for developing such an ordinance contains sufficient public notice and comment, the Department does not believe that additional public participation in connection with an areawide certification request is necessary. Consequently, the proposed Section 250.6(e) has been deleted from the final rule.

Section 250.303 Aquifer determination; current use and currently planned use of aquifer groundwater.

This section identifies the criteria that must be met in order for a remediator to use the nonuse aquifer MSCs, and the area within which those criteria must be met;

establishes a 45-day review period for municipalities and water suppliers; and establishes a process for designating nonuse aquifer areawide certification when no specific site is involved.

One commentator was concerned that the proposal to limit the on-property area to which the requirements of Section 250.303(c) apply to the area of the site, rather than to the entire property, would in effect move the point of compliance inside the property boundary.

The rulemaking does not suggest that there are Points of Compliance (POC) internal to the property boundary. Section 250.303(b) does not attempt to apply standards within the property - "behind" the POC - as determined by Section 250.302 (relating to point of compliance). Instead, it establishes the geographic area within which the conditions in Section 250.303(c) must be met in order for the site to qualify for a nonuse aquifer standard. As written in the existing version of Chapter 250, the geographic area includes the area within the property, as well as a minimum of 1000 feet downgradient of the POC. This revision limits the geographic area within the property where the requirements of Section 250.303(c) apply to only that area which is contaminated (i.e., the "site"). The Board's intention in applying Section 250.303 is to assure that anywhere the contamination exists (even within the property), or may reasonably migrate (assuming a minimum of 1000 feet), that the requirements of Section 250.303(c) are met. Once the remediator is granted the use of the nonuse aquifer medium-specific concentration (MSCs), the demonstration of attainment must be made at the POC (normally the property boundary), as determined by Section 250.302.

Commentators were concerned that the 45-day period should be reduced to 30 days, that the requirements of Section 250.303(c) may be met through the use of local ordinances and that the section imposes a requirement that the municipality and water supplier must concur in the approval of the nonuse aquifer designation.

The Board initially planned to propose a 30-day comment period for municipalities and community water suppliers to review nonuse aquifer designation requests. As noted above, the Board recognizes that a 30-day time period may not be enough time for the nonuse aquifer proposal to be considered by municipalities and for the associated public input. Although this is not necessarily a factor with community water suppliers, the Board is declining to accept the commentators' suggestion and the final rule retains the 45-day period in the final rulemaking except where municipal ordinances are in place.

The Board believes there is merit to allowing appropriate local ordinances to satisfy requirements of Section 250.303(c)(1) & (2). Under this process, water suppliers should be involved as a part of satisfying Section 250.303(c)(3)-(4), which provides opportunity for their input. The final rulemaking includes the use of local ordinances to demonstrate compliance with the Section 250.303(c) requirements at an

individual site as well as in the designation of nonuse aquifer areas in the absence of a specific cleanup.

One commentator was concerned that the proposed amendment effectively added a requirement to obtain concurrence by the municipality and water supplier prior to approval of the nonuse aquifer determination by the Department. The amendment does not add a requirement to obtain concurrence by the municipality or community water supplier prior to nonuse aquifer determination. The conditions upon which the Department will make its determination are based solely on demonstrating compliance with the requirements of Section 250.303. Approval of use of the nonuse aquifer groundwater standards is and will continue to be as it is specified in that section. The purpose behind the notice and the 45-day period of review is to allow both the municipality and water supplier to identify information relevant to Section 250.303(c), which the Department may consider in making its final determination. For instance, the Department believes the municipality may be a source of knowledge of the existence of wells used for drinking water, and the water supplier should be a source of information of whether all properties are connected to public water— both examples of conditions relevant to Section 250.303(c) criteria.

It is true that by instituting a 45-day review period, this proposed amendment will require the remediator to wait a minimum of 45 days to receive the nonuse aquifer determination from the Department. It will be in the remediator's best interest to file the nonuse aquifer determination request at the time of, or as soon as possible after, the filing of the Notice of Intent to Remediate (NIR).

Commentators had concerns that Section 250.303(f) limited the ability to request a nonuse aquifer designation to municipalities and political subdivisions, and that the three-year sunset provision would make the designation difficult to obtain and implement. Parts of the comments are related to the misunderstanding that the proposed new subsection applied to remediators requesting a nonuse aquifer designation for a specific site. In fact, the Board intended those requirements to only apply in cases where municipalities or redevelopment authorities propose such a determination, in the absence of an NIR for a specific site. This process was intended to provide a tool for use by municipalities and redevelopment authorities to encourage the remediation and reuse of contaminated properties. Section 250.303(f) has been modified to provide that a municipal authority or political subdivision can demonstrate that the conditions of Section 250.303(c)(1)-(2) are satisfied by documenting that the requirements of Section 250.303(c) are met in the designation area and that the local municipalities have in place an ordinance which prohibits the use of groundwater for drinking or agricultural purposes and requires the lateral connection to a public water supply for every property.

The proposed requirement that the applicant request renewal of the areawide certification every three years is deleted from the final rule as the result of several commentators' concerns that it makes the process unworkable. In place of mandated

renewal timeframes, the Board has revised Section 250.303(d) to include a requirement that institutional controls or a postremediation care plan be included in a final report to provide documentation that the site continues to meet the requirements of the nonuse aquifer designation contained in Section 250.303(c). The final rule also provides a mechanism for determining when the postremediation care may be terminated.

Section 250.311 Evaluation of Ecological Receptors.

Sections 250.311(c) and (d) were modified to clarify that the Constituents of Potential Ecological Concern (CPECs) to be investigated by the screening process are those that are associated with the release being addressed by the current remediation, and not those that may be present as part of the site background or through historical releases at the site.

Section 250.703 General attainment requirements for soil.

A minor change was made to the wording of the proposed changes to this section to clarify the Department's intent that if the contaminated soil is removed from the site, attainment samples are to be taken from the base and sides of the excavation.

Section 250.707 Statistical Tests.

Section 250.707(b) was amended to include a procedure for demonstrating attainment of a Statewide health standard for petroleum releases when full characterization has not been completed prior to remediation. Several commentators supported this concept as being a cost-effective method for determining attainment and suggested that the methodology be extended to include all small spills, rather than just petroleum releases. Other commentators suggested that this methodology be extended to the background standard or to restrict its use to cleanups where the final report is submitted within 90 days of the spill or release.

As originally proposed, the amendment restricted the use of this methodology to remediations of regulated storage tanks spills being conducted under the Department's guidance document "Closure Requirements for Underground Storage Tank Systems." In the final rule, the use of this methodology is extended to include all releases of petroleum products, whether from regulated storage tanks or other sources. However, the Board disagrees with the idea of extending this methodology to all small spills. The Board and the CSSAB felt that it was critical to limit the concept to contaminants that could be easily detected by field observations and measurements and, therefore, could realistically be used in a biased sampling approach. Not all contaminants satisfy this condition because they do not readily exhibit properties that can be seen, smelled, etc. The Board and CSSAB felt that field observations and measurements could easily detect petroleum spills, and these present the bulk of the small spill cases under Act 2. Commentators also suggested extending this option to

the background standard, and restricting this option to remediations being completed within 90 days of the spill or release. The Board does not agree that the suggested changes are appropriate and so such options are not a part of the final rule.

Finally, the term “full site characterization” was clarified by adding a reference to the requirements of Section 250.204(b) (relating to final report). That section provides a detailed description of the items included in a full site characterization.

Appendix A Statewide Health MSC Tables

Changes to the MSC values from those published in the proposed amendment occurred as the result of new toxicological values being available since the publication of that amendment and the changes to several MCL values published by EPA in the same time period. Several commentators commented that the toxicological values as published in the final regulations should use the most current data available. Specifically mentioned were the oral slope factor for beryllium and reference doses for methyl methacrylate and vinyl chloride. Several commentators commented on the methodology for calculating the MSC values for PCBs.

Based upon changes made by EPA, the MCL or lifetime Health Advisory Level (HAL) was changed for six substances: ethylene glycol, malathion, chlorobenzene, naphthalene, 1,1,2,2-tetrachloroethane, and trinitroglycerol (nitroglycerin).

The oral slope factor for beryllium was removed since the value presented in the proposed amendment is no longer cited by any of the sources used in developing the toxicological values.

In the proposed amendment, changes to the oral and inhalation reference doses (RfDo and RfDi) were made for methyl methacrylate, but changes to the direct contact MSC for residential exposures were not. The residential direct contact value changed in the final regulation to 10,000 mg/kg. The proposed amendment did not correctly show that this value was being revised, so the MSC for methyl methacrylate was not included.

The RfDo for cobalt was revised to 0.02 mg/kg/day, and the RfDi to 0.000005 mg/kg/day.

The RfDo for 1,3-dichlorobenzene was revised to 0.03 mg/kg/day.

An oral slope factor of 0.0018 and an inhalation slope factor of 0.0018 were added for methyl tert-butyl ether.

The RfDo for 2,3,6-trichlorophenol was revised to 0.0003 mg/kg/day and an RfDi of 0.0003 mg/kg/day was added.

The RfDo for hexachlorocyclopentadiene was revised from 0.007 to 0.006 mg/kg/day and the RfDi was revised from 0.00002 to 0.00006 mg/kg/day.

For vinyl chloride, the RfDo was updated to 0.003 mg/kg/day, and the RfDi to 0.029 mg/kg/day.

In the proposed amendment, the groundwater MSCs for the individual PCB Aroclor formulations were removed and the MCL for total PCBs was used to provide more consistency with the requirement of Act 2 that the groundwater MSC comply with an MCL where one exists. The soil-to-groundwater numeric values for PCBs in soil were calculated using the MCL for total PCBs in groundwater as the endpoint for the generic value equation in Section 250.308. In consultation with the CSSAB and as the result of several comments on the proposed amendment, the Department has revised the methodology for calculating MSCs for PCBs in soil and groundwater. For PCBs in groundwater, Table 1 of Appendix A now includes both the MCL for total PCBs and the Aroclor-specific values calculated according to the methodology in Section 250.304. It is intended that the remediator have the choice between the MCL and the Aroclor-specific values for PCBs in groundwater. The generic value soil-to-groundwater numeric values in Table 3b of Appendix A have been calculated using the Aroclor-specific groundwater MSCs as the endpoint for the equation in Section 250.308. The 100X groundwater MSC value is also based on the Aroclor-specific value.

F. Benefits, Costs and Compliance

Executive Order 1996-1 requires a cost/benefit analysis of the final regulation.

Benefits

Remediators will benefit from the additional flexibility for demonstrating attainment on groundwater cleanups and in cases where small excavations of soil cleanups are performed. The remediators will also benefit from having information and standards that incorporate more current scientific information than was available during the last final regulation. Local governments will benefit from their ability to provide comments on nonuse aquifer area designations decisions and from their ability to "pre-certify" areas in their community as meeting the nonuse aquifer conditions of Section 250.303.

Compliance Costs

There are no direct increased costs from this proposed amendment. Indirectly, there are some increases in costs in some areas and decreases in costs in other areas. Increased costs for remediators will occur in cases where the local municipality requests a public involvement plan in the designation of a nonuse aquifer area. These

costs will be related to the development of a public participation plan, interaction with the municipality and project delays related to the additional time required to have the municipality involved in the process. Decreased costs will occur associated with the demonstration of compliance with a standard in cases of minor groundwater or soil contamination.

Compliance Assistance Plan

The land recycling program regularly provides outreach in two areas: updates to the technical guidance manual supporting Chapter 250, and annual client workshops where training on the regulations, guidance and policies takes place.

Paperwork Requirements

No new paperwork is required by this rulemaking. Additional paperwork will be required when an areawide certification of nonuse aquifer status is voluntarily sought under Section 250.303, although such a determination will ultimately lead to a reduction in paperwork for remediators who wish to use the areawide determination in future cleanups.

G. Sunset Review

This regulation will be reviewed in accordance with the sunset review schedule published by the Department to determine whether the regulation effectively fulfills the goals for which it was intended.

H. Regulatory Review

Under section 5(a) of the Regulatory Review Act (71 P.S. § 745.5(a)), on July 11, 2000, the Department submitted a copy of the notice of proposed rulemaking, published at 30 Pa.B. 3946, August 5, 2000, and corrected at 30 Pa.B. 4356, August 19, 2000, 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 these final-form regulations, the Department has considered all comments from IRRC, the Committees and the public.

Under section 5.1(d) of the Regulatory Review Act (71 P.S. § 745.5a(d)), on (blank) , these final-form regulations were deemed approved by the House and Senate Committees. Under section 5.1(e) of the Regulatory Review Act, IRRC met on (blank) and approved the final-form regulations.

I. Findings of the Board

The Board finds that:

- (1) Public notice of 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 *Pennsylvania Code* §§ 7.1 and 7.2.
- (2) A public comment period was provided as required by law, and all comments were considered.
- (3) These regulations do not enlarge the purpose of the proposal published at 30 Pa. Bulletin 3946 (August 5, 2000) and corrected at 30 Pa. Bulletin 4356 (August 19, 2000).
- (4) These regulations are necessary and appropriate for administration and enforcement of the authorizing acts identified in Section C of this order.

J. Order of the Board

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

- (a) The regulations of the Department of Environmental Protection, 25 *Pennsylvania Code*, Chapter 250, are amended by amending Chapter 250 to read as set forth in Annex A, with ellipses referring to the existing text of the regulations.
- (b) The Chairman of the Board shall submit this order and Annex A 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 Chairman shall submit this order and Annex A 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 Chairman of the Board shall certify this order and Annex A and deposit them with the Legislative Reference Bureau, as required by law.
- (e) This order shall take effect immediately.

BY:

David E. Hess
Chairman
Environmental Quality Board

**FINAL RULEMAKING
ADMINISTRATION OF THE LAND RECYCLING PROGRAM
COMMENT AND RESPONSE DOCUMENT**

INTRODUCTION

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

During the public comment period, the Department received approximately 38 comments from four companies and four organizations representing industry. Comments from the Independent Regulatory Review Commission are also addressed in this document.

Following is a list of corporations and organizations from which the Environmental Quality Board has received comments regarding the above referenced regulation during the official comment period. The ID number identifies each commentator who submitted a particular comment. That number is found in parentheses following the comment in the comment/response document.

The Document has been organized by issues commented on, rather than by rulemaking section. The reason for this is that some of the significant issues that were raised by commentators included proposed text in up to three major rulemaking sections, and one main section (250.303) dealt with three separate regulatory concept changes. The outline of the document is presented on the next page for the convenience of the reader.

OUTLINE FOR COMMENT AND RESPONSE DOCUMENT

- I. **Comments on Nonuse Aquifer and Associated Public Notice** (Comment #1-18)
 - A. **Modification of Section 250.303(b) to limit on-source-property area to area of "site" instead of whole property area.**
Comments #1-2 relate to Section 250.303(b).
 - B. **Incorporating notice and 45-day review period for municipalities and water suppliers.**
Comments 3-11 relate to Sections 250.5(d),(e), 250.303(c).
 - C. **Process for "precertification" of nonuse aquifer areas.**
Comments 12-18 relate to Sections 250.5(e), 250.6(e), 250.303(b), (c), and (f).

- II. **Comments Related to Calculation of MSCs** (Comment #19-27)
 - A. **Table 5 – Physical and Toxicological Properties**
Comments 19-22 relate to Annex A, Table 5.
 - B. **MSCs for PCB Mixtures**
Comments 23-25 relate to Tables 1, 3A, 3B, 5.
 - C. **Comments on Updating MSCs and Retaining the Site-specific Standard**
Comment 26 relates to Tables 1, 3A, 3B, and 5.
 - D. **Suggestion of faster DEP method for correcting errors in the standards tables in the regulations**
Comment 27 is general to the rulemaking.

- III. **Comments Related to Definitions** (Comment #28)
Comment #28 relates to Section 250.1

- IV. **Comments Related to Evaluation of Ecological Receptors** (Comment #29-30)
Comment 29-30 relate to Section 250.311
 - A. **Clarification of which CPECs apply to the use of the ecological screen**
 - B. **Clarification of the term "release"**

- V. **Comments Related to Demonstrating Attainment Option** (Comment #31-36)
Comments 31-36 relate to Sections 250.707 and 250.204.
 - A. **Attainment option should not be limited to petroleum releases**
 - B. **Concern of Use of Characterization Samples for Attainment**
 - C. **Is this provision for underground storage tanks only?**
 - D. **What is the meaning of "full site characterization"?**
 - E. **Are traditional attainment methods allowed if full site characterization is done?**
 - F. **What does the statement mean that all samples must meet the Statewide health standard?**

I D	Name/Address	Zip	Submitted 1 pg Summary	Provided Testimony	Req Final Rulemaking
1	Melissa M Fredrick Environmental Scientist Michael Baker Corporation Airport Office Park, Bldg 3 420 Rouser Road Coraopolis, PA	15108			
2	Lynn Ratzell Manager - Environmental Management. PPL Generation LLC Two North Ninth Street Allentown PA	18101-1179			
3	Dan Regan The Energy Association of Pennsylvania dregan@pagas.org				
4	Elizabeth K. Hunt, Executive Director Methacrylate Producers Association, Inc. 1250 Connecticut Ave, NW Suite 700 Washington, D.C.	20036			
5	Elizabeth K. Hunt, Executive Director Basic Acrylic Monomer Manufacturers, Inc. Connecticut Ave., N.W., Ste 700 Washington DC	20036			
6	A. L. Holmstrom Corporate Remediation Manager Rohm and Haas Engineering Division Box 584 Bristol PA	19007			
7	Wayne Belko, Chairman PEA Environmental Committee 800 N. Third St., Suite 301 Harrisburg PA	17102	X		
8	BP Exploration & Oil, inc. C/o Monica Gambino Babst, Calland, Clements & Zomnir, P.C. Two Gateway Center Pittsburgh PA	15222			
9	Independent Regulatory Review Commission				

Acronyms

POC	Point of compliance
PCB	polychlorinated biphenyl
PIP	public involvement plan
NIR	notice of intent to remediate
MSC	medium-specific concentration
EQB	Environmental Quality Board
CSSAB	Cleanup Standards Scientific Advisory Board
UST	underground storage tank
MCL	maximum contaminant level
IRRC	Independent Regulatory Review Commission
CPEC	constituents of potential ecological concern
HAL	health advisory level

I. Nonuse Aquifer Issues

The proposed regulations included three separate concepts in the nonuse aquifer requirements. They are shown below as "A., B., and C." and are related to one or more of Sections 250.5, 250.6, and 250.303 of the proposed rule.

- A. Modification of Section 250.303(b) to limit on-source-property area to area of "site" instead of whole property area.**
Comments #1-2 relate to Section 250.303(b).

Comment 1:

Section 250.303(b). Three commentators agree with the clarification provided regarding aquifer determinations and the insertion of the phrase "the site on the" when performing groundwater use calculations. This limitation will help further clarify the application of this section of the regulations to actual sites. (2,3,7)

Response 1:

The Department thanks the commentators for their input.

Comment 2:

The commentator had concerns that changes to Section 250.303(b) would in effect make changes to the Points of Compliance (POC) for attainment demonstration, internal to the property line.

The commentator notes that the Environmental Quality Board (EQB) has proposed revisions to the language of 25 Pa. Code §250.303(b). The revisions would mandate that the requirements for nonuse aquifer determination of subsection (c) are met within "the site on" the property rather than within the property. The EQB explains that this wording is needed because large properties could be disqualified even though the plumes are relatively small in comparison. Although BP understands the EQB's position on this issue, we question whether by designating the "site" within the property, the Department will be establishing points of compliance internal to the property boundary. BP would oppose any effort to impose points of compliance within the property boundary. Section 103 of Act 2 expressly defines the point of compliance for groundwater as "the property boundary or some point beyond. 35 P.S. §6026.103. It would be inappropriate to establish a point of compliance by regulation that conflicts with the statutory definition. BP does, however, support a mechanism whereby, on a case-by-case basis, a responsible party could request that the point of compliance be established within the boundary to accommodate issues that might arise, including issues related to nonuse aquifer designation. (8)

Response 2:

The Department did not intend to suggest that there are either Statewide health standard or site-specific standard groundwater Points of

Compliance (POC) internal to the property boundary. It is the DEP's understanding that the Act 2 numeric standards are to be applied at the POC. Section 250.303(b) is not attempting to apply standards within the property ("behind" the POC) as determined by Section 250.302. Rather, this section is intended to establish the geographic area to which the conditions in Section 250.303(c) must apply in order for the site to qualify for a nonuse aquifer standard. As written in the existing version of Chapter 250, the geographic area includes the area within the property, as well as a minimum of 1000 feet downgradient of the POC. This proposed revision is attempting to limit the geographic area within the property to only that area which is contaminated (i.e., the "site").

The DEP's intention in applying Section 250.303 is to assure that anywhere the contamination exists (even if that's within the property), OR may reasonably migrate (assuming a minimum of 1000 feet), that (1) there are no wells being used for drinking or agricultural use, (2) the properties overlying said area are connected to public water (which demonstrates a "safe" supply of water) and (3) the said area is a minimum distance away from a community groundwater well water supply source.

Once the remediator is granted the use of the Statewide health standard nonuse aquifer medium-specific concentration (MSCs), the demonstration of attainment must be demonstrated at the POC (normally property boundary) as determined by Section 250.302.

B. Incorporating notice and 45-day review period for municipalities and water suppliers.

Comments 3-11 relate to Sections 250.5(d),(e), 250.303(c).

Comment 3:

Commentators had concerns with the 45-day review period proposed in Section 250.5. One felt it should be reduced to 30 days. Another commentator believed that the requirements of Section 250.303(c) may be met through the use of local ordinances, suggesting that the 45-day review period of Section 250.5(e) may not be needed in those cases. (2,7)

Response 3:

DEP would like to acknowledge a suggestion made by PPL in their comment, that requirements of "Section 250.303(c) may be met through use of local ordinances." The DEP believes there is merit to stipulating that local ordinances could serve to satisfy requirements of Section 250.303(c)(1) &(2). Under this process, water suppliers would be expected to be connected as a part of satisfying Section 250.303(c), (3)-(4), which provides opportunity for their input. The proposed rulemaking was modified to reflect the use of local ordinances.

Comment 4:

Commentators suggested the 45-day comment period referenced in Section 250.5 should be changed to 30 days.

Three commentators did not object to the additional requirements associated with the nonuse aquifer determination and believe that the need to send a notice to the municipality and water supplier serving the affected area prior to seeking a nonuse status will help to improve the process. However, the commentators suggest that the proposed 45-day time frame for comments should be reduced to 30 days. This change would make the non-aquifer determination notice requirements consistent with those associated with the NIR for site-specific standards. The commentators suggest that the comment and review periods should be as consistent as possible throughout the regulations. This consistency will aid in the timely progression towards remediation and closure of the sites.
(2,3,7)

Response 4:

The Department discussed this issue with the Cleanup Standards Scientific Advisory Board (CSSAB) and initially planned to propose 30 days. During the discussions, it was realized that municipalities commonly meet once a month and the 30-day time period may not, in all cases, be enough time for the nonuse aquifer proposal to be considered by municipal boards. Although this is not necessarily a factor with community water suppliers, the Department is declining to accept the commentator's suggestion and is retaining the 45-day period in the final rulemaking except where municipal ordinances are in place.

Comment 5:

One commentator expressed concern that changes to Section 250.5 would have the effect of deferring approval of nonuse aquifer determinations to the municipality (e.g. in effect giving them veto power over the nonuse aquifer approval).

The EQB is proposing several changes to the procedure for obtaining nonuse aquifer determinations. The proposal contains a new requirement that applicants publish newspaper and municipal notices when a request for determination of nonuse aquifer is made. In addition, municipalities and public water suppliers will have an opportunity to comment on the nonuse aquifer designations made by the Department. In fact, the proposed amendments state that "at the time the request for a nonuse aquifer designation under the Statewide health standard is made to the Department," the remediator shall send notice to every municipality and community water supplier servicing the area requested for designation as nonuse. 25 Pa. Code § 250.5(d). The municipality and community water supplier are then provided 45 days to indicate to the Department and the remediator any information relevant to the nonuse status designation. Proposed 25 Pa. Code § 250.5.

Commentators recognize that it may be useful to contact the municipality and local community water system suppliers regarding current and planned future use of groundwater. In fact, BP notes that the EQB has

included within the proposed amendments to 25 Pa. Code § 250.303, a discussion of methods appropriate for determining planned future use, which include verification with community water system suppliers. BP, however, believes that the approach under proposed § 250.5(d) creates a new requirement to obtain a nonuse aquifer determination prior to completion of the final report. It has been BP's experience that obtaining a nonuse aquifer determination has been very difficult and time-consuming. To the extent that a remediator must essentially secure the concurrence of both the municipality and community water supplier, the process is likely to become even more difficult and time-consuming. In general, the municipalities are ill-equipped to respond to such determinations and community water suppliers will be reluctant to state that groundwater will not be used as drinkable water in the future. Furthermore, we have identified no authority under Act 2 for DEP to defer such determinations to the local municipalities. BP recommends that the final rule clearly state that a nonuse aquifer determination may be submitted prior to the submission of Act 2 reports, but that such a request is not required prior to submission of the final report. If the remediator can demonstrate that groundwater is not drinkable and that an ordinance is in place prohibiting its use as potable water or otherwise that the groundwater will not be used in the future as drinking water, the remediator's nonuse aquifer determination should be approved in a timely manner by the DEP as part of its review of an Act 2 report. (8)

Response 5:

This comment refers to the perception that the rulemaking amendment effectively adds a requirement to obtain concurrence by the municipality and water supplier prior to approval of the nonuse aquifer determination by the Department. In fact, express concurrence by the municipality or water supplier is not required. The conditions upon which the Department will make its determination are based on the status of facts and not on individual preferences. Approval of use of the nonuse aquifer groundwater standards is and will continue to be those specified in Section 250.303(c). The purpose behind the notice and the 45-day period of review is to allow both the municipality and water supplier to identify information relevant to Section 250.303(c), which the Department may consider in making its final determination. For instance, the Department believes the municipality may be a source of knowledge of the existence of wells used for drinking water, and the water supplier should be a source of information of whether all properties are connected to public water--both examples of conditions relevant to Section 250.303(c) criteria.

It is true that by instituting a 45-day review period, this proposed amendment will require the remediator to wait a minimum of 45 days to receive their nonuse aquifer determination from the Department. The remediator, should, in their interest, file the nonuse aquifer determination request at the time of, or as soon as possible after, the filing of the Notice of Intent to Remediate (NIR). The second part of the comment is a

suggestion that the existence of a local municipal ordinance prohibiting the use of groundwater for potable purposes could serve as a substitute for the 45-day review period. The Department believes there is merit to this suggestion and has modified the proposed regulations in Section 250.5(d).

Comment 6:

Section 250.5(d) states "the remediator shall send notice to every municipality and community water supplier servicing the area...." Will the remediator have to "send notice" through first class or registered mail? Will notice by phone or electronic mail suffice? The final-form regulation should include a clarification of the notice requirement. (9)

Comment 7:

Section 250.5(e) begins with the phrase "Upon receipt of a request...." What constitutes "receipt"? Additionally, upon receipt, the "municipality and community water supplier shall have 45 days to indicate...any information relevant to the requirements of §250.303." When does the 45-day time frame begin? The final-form regulation should indicate how receipt is documented. (9)

Comment 8:

We have several concerns with Section 250.303(f). First, the regulation refers to "receipt of a nonuse aquifer determination request, and receipt of the required public involvement plan." The final-form regulation should clarify what constitutes "receipt." (9)

Response to Comments 6,7,8:

The phrase "the remediator shall send notice" refers to a cover letter similar to the format of an NIR notice indicating the desire to have an area designated as a nonuse aquifer area. In this process a copy of the actual request that is submitted to the DEP must accompany the cover letter. The DEP anticipated that these notices would be sent by certified mail, just as the NIR notices are now sent. The Independent Regulatory Review Commission (IRRC) has raised an appropriate issue of the future role of electronic mail. The DEP is examining how this and other opportunities for "e-commerce" can be incorporated into the Department's procedures. Implementation of the e-commerce concept will take time.

The phrase "Receipt of a request" refers to the receipt, by the municipality and/or community water supplier, of the nonuse aquifer notice cover letter and copy of the request as sent to the DEP. If certified mail is used, proof of such receipt is clearly documented. Clarification of suggested form of the receipt is in the revised Technical Guidance Manual, Section I, B, (9).

The purpose of this receipt is for the municipality and community water supplier to have time to review and provide comments, which may be relevant to the determination of a nonuse aquifer as outlined in Section 250.303(c), to the DEP. The DEP will make its decision on a nonuse aquifer

determination request based on the satisfaction of the proposal of the conditions of Section 250.303(c).

Comment 9:

To harmonize the requirements applicable to precertification requests and nonuse determinations, proposed Section 250.6(e) should be expanded to allow public involvement plans to be developed by the parties remediating a site.

Under proposed Section 250.303(f), municipal authorities and political subdivisions are the only parties that can ask the Department of Environmental Protection ("DEP") for a nonuse determination. Accordingly, only these public bodies would be required to develop a public involvement plan under proposed Section 250.6(e).

These provisions, while consistent between themselves, fail to address what would appear to be the most likely scenario: a remediating party's desire to obtain a nonuse determination. The standards for Department approval of a remediating party's request are laid out in 25 Pa. Code § 250.303(b). Under the proposed amendments, the approval standards would include satisfaction of the Section 250.6, a set of requirements that can only satisfied by a municipal authority or political subdivision.

The disconnect between proposed Section 250.303(b), as amended, and proposed Sections 250.303(f) and 250.6(e) can be remedied by expanding Section 250.6(e) to allow a public involvement plan to be developed by the party remediating a site. This change would establish a direct link between remediating parties and the standards the Department will apply to such parties' requests for nonuse determinations. (3)

Comment 10:

First, subsection 250.6(e) requires that a public involvement plan "...shall be developed by the person making a precertification determination request under §250.303(f)..." Section 250.303(f) allows only municipal authorities and political subdivisions to make a precertification determination request. Is this the intent? Should a company interested in remediating the site also be able to develop a public involvement plan? (9)

Comment 11:

Commentators have concerns that changes to Sections 250.5, 250.6 and 250.303 will reduce the effectiveness of the nonuse aquifer provisions in reviving brownfields.

Another new provision being proposed by the EQB relates to the precertification determination that a specific geographic area meets the conditions of 25 Pa. Code § 303(c), thereby qualifying as a nonuse aquifer. As proposed, the party requesting a nonuse aquifer determination must submit a notice to a local newspaper of general circulation and provide the notice to the applicable municipality by letter. The municipality may

request a precertification determination from the Department that a given area meets the requirements for a nonuse aquifer designation.

The EQB believes that this process would expedite land reuse in urban areas where nonuse aquifer criteria clearly apply. However, a public involvement plan ("PIP") is required as part of the process. A PIP "shall" be developed by the municipality or political subdivision and must include a ninety-day comment period. Moreover, the PIP must be developed in conjunction with all municipalities serving the proposed nonuse aquifer area. Only after the ninety-day period is complete may the municipality or political subdivision submit a request to the Department for a nonuse aquifer precertification. The precertification, if granted, will remain in place for a period of three years.

BP believes that this precertification procedure is time-consuming, cumbersome and unlikely to be implemented by municipalities as currently drafted. As an initial matter, municipalities and political subdivisions should be permitted to request precertification determinations irrespective of whether a remediator is relying on a nonuse aquifer determination. As drafted, the responsible party would be required to make a "request," (see BP's comments at A. above) and wait at least ninety-days for any decision regarding the nonuse aquifer. (This time period does not take into account the time required for the municipalities involved to develop a PIP). In addition, the EQB provides no rationale for selecting ninety-days rather than a thirty-day comment period, which is the required period of time for public participation under the current Act 2 regulations. Finally, once the responsible party requests a nonuse aquifer determination, the process will move out of the responsible parties' control and into the municipalities' control. The responsible party will be at the mercy of the municipalities' competing demands with no assurance that the project will move forward.

In order to encourage municipalities to make precertification requests to expedite the Land Recycling Program objectives, BP recommends that the Department separate the precertification request procedure from the remediator's nonuse aquifer determination. In other words, a responsible party should be able to proceed with a nonuse aquifer determination directly with the Department and the municipality should be free to pursue precertification absent a remediator's request for a nonuse aquifer determination. If any person applying for a nonuse aquifer determination can demonstrate the requirements of Section 250.303(c), the nonuse aquifer determination should be granted. If municipalities find it in their interest to obtain precertifications, that process should proceed independently of individual requests for nonuse aquifer determinations. (8)

Response to Comments 9, 10, 11:

Upon review of this and other public comments, the DEP acknowledges that the proposed wording related to the nonuse aquifer provision changes was not clear and has made clarifications in the final rulemaking

in Sections 250.5, 250.6, and 250.303. The intent with respect to public notice and participation in Sections 250.5, 250.6 and 250.303 is the following:

- For nonuse aquifer proposals made by remediators, no public involvement plan is required, only public notice to the municipality and the local water supplier. The noticed parties would have 45 days to provide to the DEP any comments they feel are relevant to the Section 250.303 requirements for nonuse aquifer determinations. Relevant proposed subsections are Section 250.5(d) and (e).

In these situations, a remediator is present, and time is most likely a factor in remediating and developing the property. The DEP and CSSAB felt that 45 days would be the minimum time needed by a municipality for adequately providing meaningful input to the DEP. As most municipalities meet monthly, this provides municipal response time in those cases.

- In addition to the process described in subsections (d) and (e), the proposed language provides for another process—one for situations where no remediator is present and no particular Act 2 “site” has been identified. In this second process, only municipal authorities or political subdivisions would be qualified to submit to the DEP a proposal for determining that Section 250.303(c)(1), (2) and (3) requirements are satisfied within a specific geographic area. This submission is referred to in the proposed regulations as “precertification” and in the final rule as “areawide certification.” The Department has revised the final rulemaking to require the conditions under Section 250.303(c) in all cases. Relevant subsections are Sections 250.6(e), 250.303(b), (c) and 250.303(f)

For details on this change, see response in the section below.

- C. **Process for “precertification” of nonuse aquifer areas.**
Comments 12-18 relate to Sections 250.5(e), 250.6(e), 250.303(b), (c), and (f). The term “precertification” is used here to avoid confusion with the original comments and the proposed amendment. It should be noted however, that the term has been modified in the final rulemaking to “areawide certification.”

Comment 12:

Commentators believe the 90-day public comment period will unnecessarily delay the process and that further public involvement in the nonuse aquifer determination is not authorized by Act 2.

Section 250.6(e)(2) requires a person making a precertification determination request to implement a public involvement plan. One component of the public involvement plan is a 90-day comment period. How was the 90-day time frame determined? Would 45 or 60 days be

sufficient time for local governments to respond? One commentator pointed out the fact that the creation of a municipal ordinance is in itself a public process and therefore there is not sufficient justification for the need to establish a process under this rulemaking. (6, 9)

Comment 13:

The proposed rule changes (to Sections 250.5, 250.6, 250.303) set out new process requirements for obtaining a nonuse groundwater determination. These changes should be rejected in entirety for the reasons outlined below.

- Additional public notice is not authorized by Act 2

A reading of the statutory language at Section 303, paragraph (h) does not authorize a public participation process for statewide standards. There was a deliberate act of the legislature to require public participation only at site-specific cleanups. The statewide standards and nonuse criteria have been proposed under the administrative process for regulations and an additional public process is not necessary for each cleanup under statewide standards. The statute does provide for public notice through the filing and various publishings of a Notice of Intent to Remediate (NIR) and distributions to municipalities.

It is clear that the proposed changes cannot be allowed to stand under the provisions of Act 2.

- The remediation process is delayed 90+ days

The proposed changes create a new process step for statewide standard cleanups conducted under §303 that was not envisioned under Act 2 or under the original Chapter 250 regulations. Under the proposed §250.6(e)(2), the new process will require a delay of at least 90 days, but more likely 120 days or more before the nonuse designation can be received.

It was the standards and the process that won awards for the land recycling program. The §303 cleanup was envisioned as being able to go from start to finish in a relatively short period of time, without repeated reviews and approvals from PADEP officials. This change will have a negative impact on the process efficiency of the program. It is unnecessary to include this delay into the process.

- An acceptable alternate process is currently available

PADEP can employ current procedures to accomplish the same ends as is proposed in this rulemaking. Specifically, the following steps would be used.

An NIR, including the intent to use the nonuse aquifer statewide standards, would be submitted to PADEP. Public notice is

provided both through its publication in the PA Bulletin, and through the requirement to provide copies to all municipalities affected. In addition, there is a requirement for a newspaper notice. PADEP could change its recommended standard notice language guidance to be more explicit about the request for a nonuse aquifer determination.

The remediator should have the option of when in the remediation process to seek the nonuse determination from the Department. In order for PADEP to make a nonuse determination, a groundwater assessment must be completed. The remediator can do that early in the process, at an appropriate time during the process, or where confident of the groundwater data, as part of the attainment approval at the end of the process. Where time is not critical, remediators would have less risk in obtaining the approval prior to the actual remediation.

Because the NIR reflects the intended use of the nonuse provision, the Department would have ample time to assure that community water suppliers were not affected currently or with currently planned uses of the aquifer. The Department issues permits to community water suppliers and, therefore, is best suited to assure these providers are contacted during the review period and their input is understood and incorporated into the Department's determination.

The NIR and any other submission to the Department is a public record and obtainable by the public from the Department. In addition, the NIR provides the contact name for the remediation and the public can obtain information directly from the remediator.

The need to contact community water suppliers is a sound addition to the review process. The remediator should not be in the middle of this process and there is no justification for the added requirements of this proposal. It would be reasonable to include a requirement that the remediator provide a copy of the NIR to the community water suppliers if PADEP would maintain the geographical listing of such suppliers and make it publicly available. (6)

Comment 14:

The 3-year re-evaluation period under Section 250.303(f) precertification makes the process impractical. One commentator felt it should be extended to at least 5 years.

One commentator felt the evaluation period should be eliminated altogether. The proposed changes state that a determination made under Section 250.303(c), through the use of a local ordinance, would automatically expire after 3 years. Upon expiration, the applicant has to

request a renewal of the determination from the DEP. The commentators believe that the 3-year renewal period is unnecessary and counterproductive. The Act already provides for a "re-opener" if the conditions at the site change. In addition, the Act already requires deed notices for properties remediated under the nonuse aquifer designation. This deed notice serves as the ongoing mechanism that restricts current and future property owners from undertaking any activities that would be inconsistent with the nonuse aquifer designation. By mandating that the nonuse aquifer determination is reapplied every three years, the Department will be effectively limiting the redevelopment of a countless number of properties. If the proposed language is finalized, landowners will be reluctant to use the Act 2 process because of the conditions placed on the release, since it is automatically revoked after 3 years unless the renewal request is made by the applicant (who is often not the landowner), and granted by the DEP. The nonuse aquifer status is crucial for redeveloping properties in settings where there are no current or potential uses for the groundwater. The commentators believe that the regulations already protect against any potential changes in the groundwater usage at a site and that the current provisions are adequate for the protection of human health and the environment. (2,7)

Comment 15:

The 3-year "sunset" clause proposed for Section 250.303(f) should be rejected as inconsistent with the language and purpose of Act 2.

Current regulations state that a nonuse aquifer determination must meet the requirements specified in 25 Pa. Code § 250.303(c). Proposed Section 250.303(f) would allow the 303(c) requirements to be met through citation to an appropriate local ordinance. This change, which would be a welcome advance standing on its own, is substantially negated by the last two sentences of Proposed Section 250.303(f). Under these sentences, nonuse determinations that are made in reliance on local ordinances expire automatically after three years, and may be renewed only if the applicant successfully requests Department renewal.

The proposed sunset provision is flawed on several counts. Under the proposed provision, only "the applicant" could make a renewal request. It may well be the case, however, that after three years the applicant is no longer on the scene, and the current party in interest, the landowner, would have no apparent standing to seek Department renewal.

More importantly, however, the 3-year sunset provision runs counter to the purposes of Act 2 itself. By imposing a three-year sunset provision, the regulations will, in effect, be halting the redevelopment of countless properties. Many of the brownfield sites that are remediated under Act 2 are cleaned up under Statewide health standards where a nonuse aquifer determination is suitable and justified. The nonuse aquifer status is crucial for redeveloping properties in settings where the groundwater is not used, nor likely to be used in the future. A landowner will not be as likely to

undertake these efforts if the underlying nonuse determination will be automatically revoked after 3 years. Act 2 already provides for a “re-opener” if the site conditions, exposure routes or other key factors change, and these statutory provisions are sufficient to be protective of human health and the environment now and in the future. The proposed sunset provision is unneeded and counterproductive, and it should be rejected in its entirety. (3)

Comment 16:

Finally, under Section 250.303(f), the nonuse aquifer determination “may be updated at any time additional *relevant* information comes to the attention of the Department.” (emphasis added) For clarity, the final-form regulation should include examples of what type of information would be considered relevant to updating a nonuse aquifer determination. (9)

Response to Comments 12, 13, 14, 15, 16:

Part of the comments on Sections 250.6 and 250.303 are related to the misunderstanding that under the proposed rule, Section 250.6(e) and Section 250.303(f) apply to cases where individual remediators are requesting a nonuse aquifer determination. In fact, the DEP intended those requirements to only apply in cases where municipalities or redevelopment authorities propose such a determination, in the absence of any individual NIR. See the response to comments 9, 10, and 11 for further details.

In response to a public comments related to the “precertification” process involving municipal and redevelopment authority initiation of the nonuse aquifer request, the DEP has simplified the process in a way that addresses the comments, provides more local control, and provides better long--term public health protection. The details are given below:

- Proposed Section 250.6(e) has been deleted.
- Section 250.303(f) has been modified to allow a municipal authority or political subdivision to demonstrate that the requirements of Section 250.303(c)(1)&(2) are satisfied by documenting that the local municipalities have in place an ordinance (may be targeted to all or any designated part of the municipality) which prohibits the use of groundwater for drinking or agricultural purposes and requires the lateral connection to a public water supply for every property. The three-year sunset provision has been deleted

Comment 17:

Section 250.303(f) establishes a three-year expiration date for a nonuse aquifer determination made under this section. How was the three-year period determined? Would a longer period of time suffice? Additionally, what does the renewal process entail? Is another public involvement plan required? (9)

Response 17:

There was no specific reason the Department chose the specific value of three years other than to choose a period which would coincide with a reasonable period of land use changes. The three-year renewal period was only intended to apply to the precertification process and paragraph (f) was drafted to apply only in cases where the precertification was being sought.

However, as discussed in the response to the previous comments, the Department has revised the nonuse aquifer provisions to eliminate the three-year recertification requirement.

Comment 18:

Commentators felt that requirements relative to the public notice requirements, Section 250.6(e) of the precertifications, should be clarified.

Subsections (c)(1) and (e)(3) require the public to have access to documentation at "convenient locations." For clarity, examples of "convenient locations" should be included in those subsections in the final-form regulation. (9)

Subsections (c)(1) and (e)(3) require the documentation to be available to the public at *convenient times*. They should include examples of convenient times. (9)

Subsections (c)(1) and (e)(5) require "A location near the proposed nonuse aquifer designation site for any public hearings and meetings...." The word "near" is vague and needs to be clarified. (9)

Response 18:

The Department has withdrawn the proposal to require public participation in the precertification process. DEP felt it was unnecessary since the municipal ordinance process serves as the process for the public to comment.

Details on the recommended performance criteria on the municipal ordinances can be found in the Technical Guidance Manual, Section I.C.(9) (related to institutional controls).

II. Calculation of MSCs

A. Table 5 - Physical and Toxicological Properties
Comments 19-22 relate to Annex A, Table 5.

Comment 19:

Appendix A, Table 5 lists the toxicity criteria and physical properties used to develop the MSCs. I would recommend providing a reference or source for each value (i.e., IRIS, NCEA). For example, the values listed for TCE are not recommended by either IRIS or NCEA. (1)

Response 19:

The Department agrees that it would be useful to provide the sources for the toxicological data. These sources have been added subject to size/formatting constraints for printing.

Comment 20:

The inhalation reference dose (RfDi) is listed as mg/m³. Reference doses are typically stated as mg/kg/day. Mg/m³ indicates an inhalation reference concentration (RfC), rather than a dose. I would recommend changing this value to mg/kg/day in the table, and verify that the values listed are in mg/kg/day. (1)

Response 20:

The listed units for the inhalation reference dose are incorrect. The units should be mg/kg/day. The values themselves are the correct reference doses.

Comment 21:

Several changes to toxicological data have been made since the publication of the original regulations. Several commentators commended the EQB for doing so. The most recent values should be used before the proposed amendments are finalized. (1,4,5,8,9)

Response 21:

The Department agrees. The following changes were made in conjunction with the final regulations:

- Since the oral slope factor is no longer cited by any of the sources used in developing the toxicological values, the oral slope factor for beryllium was removed.
- In the proposed amendment, changes to the RfDo and RfDi were made for methyl methacrylate, but changes to the direct contact MSC for residential exposures were not. The residential direct contact value changed in the final regulation to 10,000 mg/kg. The proposed amendment did not correctly show that this value was being revised, so the MSC for methyl methacrylate was not included.
- For vinyl chloride, the RfDo was updated to 0.003 mg/kg/day, and the RfDi to 0.029 mg/kg/day.

Comment 22:

One commentator requested that the Department identify a consistent process for how it chooses the toxicological values used to calculate or recalculate the Statewide health MSCs. In addition, the commentator requested an explanation of the rationale for lowering the direct contact numeric values for naphthalene, 1,1,1-trichloroethane, and xylenes by as much as an order of magnitude. (8)

Response 22:

The Department recognizes its responsibility to use the most current and appropriate data in calculating the Statewide health standard MSCs. It also recognizes that there was no standardized methodology for deciding if newly available toxicological data are appropriate for this use. The Department requested that the CSSAB recommend a procedure for making such decisions that incorporates evaluation of the appropriateness and technical validity of new toxicological data. The CSSAB responded by providing the following:

When new toxicological data are available for any regulated substance, the first decision is whether the new source is from a "higher" ranked data source (according to the hierarchy in Section 250.605). If yes, then a determination is made as to whether the new value is based on route-to-route extrapolation assumptions, which are inappropriate. (e.g., port of entry effects). If appropriate, the new value is used. If not appropriate, or if the first decision point was answered "no", then a determination is made as to whether the original toxicity calculation was based on inappropriate route-to-route extrapolation assumptions; if not, then there would be no change in the toxicity value for that regulated substance. If this second determination finds that an inappropriate assumption was used, then professional judgment (by a person trained and experienced in the field of toxicology) is used to consider the change. Professional judgments would include consideration of the assumptions and the age of any retired study (e.g., retired NCEA provisional values). In cases where no data are available supporting the new toxicological value, no change would be proposed for use under Chapter 250.

This procedure, which is being incorporated into the Technical Guidance Manual, was used to evaluate both the current and newly available toxicological data for the revision to the regulations, and the proposed changes to existing data are the result of applying that procedure.

The Department recognizes that, as the result of using this procedure, some direct contact numeric values will increase, and some will decrease, depending upon the magnitude of the changes to these toxicological data. Whether the actual MSC for a regulated substance will change depends on both the direct contact and the soil-to-groundwater numeric values, as the applicable MSC is the lower of these two values.

In the case of the three regulated substances mentioned in the comment, the decrease in the direct contact numeric values is the result of applying the above methodology to the available toxicological data. While the decreases in the numeric values may be significant, they will have little practical effect on the applicable MSCs for these compounds. Since the applicable MSC is the lower of the direct contact and the soil-to-groundwater numeric values, there will be little change in the MSCs for these substances. The groundwater standards for these substances, upon which both the 100 times groundwater MSC value and the generic value

are based, are determined by an MCL or HAL rather than the toxicological data. For 1,1,1-trichloroethane and xylenes, there is no change in the soil-to-groundwater numeric values and, therefore, there is no effect on the applicable MSC for these substances because the direct contact value is higher than both of the options for soil-to-groundwater. In addition, the soil buffer option is not available for these substances. In the case of naphthalene, the applicable MSC will actually increase, because a change in the HAL increased both the 100X groundwater MSC numeric value and the generic value (the higher of these numbers, the generic value, increased from 5 to 25 mg/kg) and, therefore, the applicable MSC also increased.

B. MSCs for PCB Mixtures

Comments 23-25 relate to Tables 1, 3A, 3B, 5.

Comment 23:

The proposed new standards (Tables 1, 3A, 3B) for ground water and soil for Total Polychlorinated Biphenyls were not correctly calculated and/or presented in the revised Tables.

The commentators recognize the Department's obligation under the Act to use an MCL established by the EPA as an MSC for groundwater in aquifers used or currently planned to be used for drinking water or for agricultural purposes. However, the commentators believe that the Department should reconsider its proposal for establishing MSCs for Total Polychlorinated Biphenyls in soils in light of several potential inconsistencies that will arise with its use within the Act 2 program.

The MCL proposed by the EPA for Total PCB is applicable to community and non-community drinking water systems. As such, the commentators believe that the Department should limit the use of the proposed MCL to the establishment of a Total PCB MSC for groundwater only. The current Aroclor-specific MSCs for soil and soil-to-groundwater are protective of the groundwater, based upon the risk model used by the Department. Using the proposed groundwater MSC for the calculation of a risk based value for direct contact and for soil-to-groundwater MSC would be neglecting many of the chemical and physical properties that were used to calculate the current Aroclor-specific values. The formula used to calculate the generic soil-to-groundwater standard requires a K_{oc} value. The K_{oc} values used by the Department to calculate these standards are listed in Table 5 of Appendix A. There is no K_{oc} value proposed for Total PCB; however, it appears that the Department used a value of 0 to calculate the proposed generic soil-to-groundwater standard of 0.0056 mg/kg.

The commentators are very concerned with the potential conflicts that will arise when the proposed Total PCB standards are applied to specific remediation projects. For instance, situations are very likely to arise where a soil analysis will result in the identification of one or more Aroclors in

the soil. The values reported for these Aroclors may be well below the current standards for each particular Aroclor, yet above the proposed value for Total PCB. More importantly, if the current values for the individual Aroclors are considered to be protective of groundwater, then there will be a serious conflict when these values are compared to the proposed Total PCB values. In most instances the values proposed for Total PCB are well below the current values for each of the individual Aroclors. This contradiction may lead to the inconsistent application of clean-up standards among the various regional offices and to confusion as to which standard or standards should be applied to a particular remediation project. Finally, to assume that the sum of the individual Aroclors represents a Total PCB value relies on the erroneous assumption that the risks are cumulative and that the solubility and, therefore, the physical mobility of the individual Aroclors are the same. Current practical quantification limits for each of the Aroclors may also be incorrectly used to arrive at a Total PCB value, since this value is determined by merely adding the values of each individual Aroclor. Instances where Aroclor values are determined to be at or just below the PQL may be assigned "artificial" values, such as 1 mg/kg or 2 mg/kg, so that a Total PCB value can be calculated. These misapplications of the actual analytical data will result in costly and unnecessary remediation, without any additional protection of groundwater. (2,7)

Comment 24:

The proposed Medium Specific Concentration ("MSC", Table 3B) for PCBs is incorrect in its basis and level, and should be revised accordingly.

As proposed, the total PCBs, residential & non-residential 100x groundwater (GW) MSC and Generic Value standards would be 0.05 and 0.0056 mg/kg, respectively. The basis for these levels is unclear. The 100x GW MSC should calculate to 0.1 mg/kg, since the proposed GW MSC is 0.001 ppm. Furthermore, the generic value for the Aroclor specific standard ranges between 5 and 2000 times **higher** than the 100x GW MSC values. For this total PCB soil-to-groundwater standard, the generic value is proposed at 10 times lower than the proposed 100x GW MSC. Since the generic value is calculated using equilibrium partitioning method, the total PCB and Aroclor specific generic values should be similar as compared to the 100x GW MSCs, but instead they are ten times lower. It also appears the proposed state standards are inconsistent with and stricter than the federal counterparts (see, 40 C.F.R. § 761.61).

This may affect PCB site cleanups since industries have been only focusing on Aroclor specific standards under Act 2 cleanups if the DEP would attempt to address the potential ground water impacts from PCB releases. In current regulations, the Aroclor specific soil-to-groundwater standards that industries are typically concerned with range from 16 to 75 mg/kg, which is less than the typical direct contact cleanup standard. If these lower Total PCB soil-to-groundwater standards are accepted, they could

change how the DEP views PCB site cleanups. This change in view is because a statewide health cleanup must meet the lower of the direct contact or soil-to-groundwater cleanup standards. With this lower total PCB soil-to-groundwater standard, the DEP will require PCB (total Aroclor) remediations to meet a 0.05 mg/kg standard to achieve a statewide residential health cleanup standard. Otherwise, the site remediator will be required to seek a site-specific standard that could require deed notices on the property in order to obtain an Act 2 release of liability (since the residential health bases cleanup standard was not met), or require a significantly greater excavation to meet the proposed statewide health standards. This would greatly increase the costs for PCB remediations and could make it much more difficult to clean up PCB sites on properties not owned by the remediator, i.e. rights-of-way. (3)

Comment 25:

One commentator noted that the standards and calculations for PCBs (Table 3B) in the proposed regulation are inconsistent with and more stringent than the federal standards of the U.S. Environmental Protection Agency. The standards for monitoring PCBs need to be clarified. If they are more stringent than comparable federal standards, the need for the higher standards should be justified. (9)

Response to Comments 23, 24, 25:

The Department erred in the calculation of the soil-to-groundwater generic value for Total PCBs. The consultant who provided K_{oc} values to the Department, at the request of the CSSAB, did not provide a K_{oc} value for Total PCBs because it is inappropriate to do so for such a diverse group of compounds, and any value would, as the commentators noted, neglect the specific characteristics of the individual Aroclor formulations, which are well known. Also, in stating the MCL, Table 1 incorrectly rounded the value to 1 $\mu\text{g}/\text{L}$. The final regulation will state the correct value of 0.5 $\mu\text{g}/\text{L}$.

The Department agrees that it is necessary to use the EPA MCL as the MSC for groundwater, and that it is inappropriate to establish an MSC for Total PCBs in soil. The final amendment gives the remediator the choice of using either the MCL for total PCBs or the individual Aroclor-specific value as the MSC in groundwater. The soils tables (Tables 3A and 3B) do not include total PCBs, but retain the MSCs for the individual Aroclors. The individual Aroclor groundwater MSCs have been used as the endpoint for the soil-to-groundwater generic model, and the K_{oc} values for the individual Aroclors, as listed in Table 5A, have been used in the calculation.

C. Updating MSCs and Retaining the Site-specific Standard
Comment 26 relates to Tables 1, 3A, 3B, and 5.

Comment 26:

Two commentators commended the Department on using appropriate toxicological data for methyl methacrylate and ethyl methacrylate. One of those commentators also commended the Department on its retention of the option to use the site-specific standard to develop cleanup standards that are more appropriate for a particular site than the Statewide health MSCs because of specific site conditions. (4,5)

Response 26:

As stated previously, the Department intends to use the most current and appropriate toxicological data in calculating MSCs for regulated substances under the Statewide health standard.

From the inception of the Land Recycling Program, every remediator has had the choice of which standard will be attained in any remediation. The inclusion in Act 2 of three distinct standards (namely background, Statewide health, and site-specific) is what gives the program its flexibility and has enabled many sites to complete the Act 2 process successfully and receive the liability protection afforded by the act. The site-specific standard is a vital part of the program for the reason mentioned by the commentator...it provides for the establishment of risk-based cleanup levels based on exposure conditions that may differ significantly from those used to derive the generic Statewide health standard MSCs.

D. Need for a faster method for correcting errors in the standards tables in the regulations.

Comment 27 is general to the rulemaking.

Comment 27:

Two commentators commended the Department for making corrections to typographical and calculational errors in the original regulations. However, they also commented that it took three years to make these corrections and in that time the Department required that the remediator go through the site-specific process, including the use of deed notices, in order to use the correct values.

The commentators suggested the Department use a more expeditious method for correcting such errors in the future. (2,7)

Response 27:

The DEP thanks the commentators for raising this point and suggestion. The Department does not wish to circumvent the public comment and other necessary administrative procedures under rulemaking to address this problem. Instead, the Department intends to propose more frequent rulemaking amendments if necessary to correct any identified errors.

III. Definitions 250.1

Comment 28:

Three commentators believe that the Department's clarification of the definition for "Agricultural purposes" is needed and fully agrees with it. (2,3,7)

Response 28:

The Department thanks the commentators for their input.

IV. Evaluation of Ecological Receptors

Comments 29-30 relate to Section 250.311.

A. Clarification of which CPECs apply to the use of the ecological screen.

Comment 29:

The Department's clarification to Section 250.311 (c) and (d) that limits the applicability of Constituents of Potential Ecological Concern (CPEC) to the release at a particular site is warranted and will allow for more meaningful ecological evaluations. (2,3,7)

Response 29:

The Department thanks the commentators for their input.

B. Clarification of the term "release."

Comment 30:

In Sections 250.311(c) and (d), the proposed amendment clarifies that the evaluation of constituents of potential ecological concern on a site includes those "associated with the releases at a site" and not background or naturally occurring constituents. The commentators believe that the regulations should further define the constituents of potential ecological impact to mean only those constituents that originate from the release being addressed by the remediator as opposed to any historical release at the site. (8,9)

Response 30:

The Department intended the term "the release" to refer to the release that is being addressed by the current remediation. The wording of these two sections has been clarified to emphasize this point.

V. Demonstrating Attainment during Excavation

Comments 31-37 relate to Sections 250.707 and 250.204.

A. Should not be limited to petroleum releases

Comment 31:

The Department is proposing new language to Section 250.707 that will allow for simplified soil attainment determinations for small petroleum releases that can be easily cleaned up with a small excavation and where no prior site characterization is performed. Three commentators believe

that this revision will allow for a cost-effective approach to securing an Act 2 release for small petroleum cleanups. The commentators believe that this is an excellent idea and should be expanded to include all small spills that can reasonably be cleaned up, and see no reason to limit this cost-effective procedure to small releases of petroleum only. One commentator specifically supported subparagraphs 250.707(b)(1)(iii)(A) and (B) attainment demonstrations covered by the procedures in 250.707(b)(1)(iii)(B). Two of the commentators suggested revised wording for Section 250.707(b)(1)(iii)(B) that would both extend the use of this demonstration option to background standard cleanups and restrict its use to cleanups where the final report is submitted within 90 days of the spill or release. (2,3,7,8)

Response 31:

Section 250.707 was proposed to be limited to petroleum because the DEP and the CSSAB felt that it was critical to limit the concept to contaminants which could be easily detected by field observations and measurements and, therefore, could realistically be used in a biased sampling approach. Not all contaminants satisfy this condition because they don't readily exhibit properties which can be seen, smelled, etc. The DEP and CSSAB felt that for petroleum cases this was most likely true, and these present the bulk of the small spill cases under Act 2. The Department does not agree with the suggested wording changes that would extend this option to the background standard, nor does it agree that it should be restricted to remediations being completed within 90 days of the spill or release.

B. Use of Characterization Samples for Attainment

Comment 32:

The Department is proposing amendments to Section 250.703 to address small excavation cleanups of petroleum releases where no prior site characterization is performed. The proposed amendment provides that where the soil is to be removed from the site, attainment applies to "the base of the excavation outlined by that irregular surface." (Proposed 25 Pa. Code §250.703(b)). The preamble to the proposed rule explains that the proposal amends this section to make it clear that attainment tests for soils are applied to the volume of soil initially found to be exceeding the selected standard unless the contaminated soil is removed from the site. If the contaminated soil is removed from the site, attainment sampling is applied to the base of the excavation outlined by that volume of soil.

To the extent that a remediator is only seeking a release of liability for the area subject to the excavation, the proposed sampling would appear to be appropriate. However, in circumstances where a site has been investigated and only a small portion of the property is subject to excavation, the remediator should be able to rely upon site characterization data from areas adjoining the excavation to demonstrate attainment for the site. It has been BP's experience that the Department

will not allow the use of "site characterization" data to demonstrate attainment. BP believes that in those cases where soil has been evaluated and shown not to have been affected by the remediation, it should be permissible to use the results of the sampling to demonstrate attainment so long as the data are otherwise appropriate (e.g. the proper test method was used). (8)

Response 32:

The commentator appears to be identifying the situation where a larger area of the "site" was environmentally characterized and results of which indicated that only a small area needed to be excavated. Under the existing regulations, a remediator would still have to apply attainment sampling to the "small excavated area." At no time did the CSSAB (DEPARTMENT????) consider that site characterization sampling followed by remediation would not require attainment demonstration. These final amendments will, however, give the remediator the option of demonstrating attainment by taking a limited number of samples that demonstrate that the soil remaining after excavation is not affected above the Statewide health standard soil MSCs.

C. Is this provision only for underground storage tanks?

Comment 33:

Two commentators said that it is unclear whether clause 250.707(b)(1)(iii)(B) is intended to cover any site of a petroleum release or only UST sites which would otherwise be considered "extensively contaminated" under the DEP's current storage tank guidance. (8,9)

Response 33:

This section was intended for any small petroleum release, not just a release from an underground storage tank. To add clarity, however, the Department has made clarifications to the final rule (see Section 250.707(b)(1)(iii)).

D. What is the meaning of "full site characterization"?

Comment 34:

Two commentators asked for clarification of the term "full site characterization." The proposed amendment provides no definition or guidance regarding the extent of a site where "full characterization" has been done. This absence of guidance could lead to significant debate when applied in the field. It is the understanding of the commentators that the required components of a "full site characterization" are listed in existing subsections 250.204(b)-(e). If so, subsection 250.707(b)(1)(iii) should cross-reference the subsections that describe a "full site characterization." (8,9)

Response 34:

“Full site characterization” refers to all the site characterization requirements listed in Section 250.204 (relating to Final Report). Note, Section 250.204 (a) states “The final report shall include site characterization information in subsections (b)-(e).” Section 250.707(b) refers to this because the DEP has found that for practical reasons, remediators of small excavation type cleanups don’t typically make the effort to conduct an environmental site characterization prior to remediation; they instead dig and use field observations to guide the excavation (remediation). The wording will allow this in certain cases under specific conditions. Clarification of “full site characterization” refers to the requirements in Section 250.204 that have been added to Section 250.707(b)(1)(iii).

E. Are traditional attainment methods allowed if full site characterization is done?

Comment 35:

The regulation only addresses situations in which a “full site characterization” has not been done in association with an excavation remediation. What requirements apply when a “full site characterization” has been done? (9)

Response 35:

The intent is that a person has the option of doing full site characterization (as required by the existing rule) and using the statistical analysis options (e.g. 75%/10x) in Section 250.707. The current amendment only provides an additional option to persons not wishing to complete a site characterization. This section has been clarified in the final rule.

F. What does the statement mean that all samples must meet the Statewide health standard?

Comment 36:

Subsection 250.707(b)(1)(iii)(C) states: “All sample results shall meet the Statewide health standards.” The subsection should cross-reference or identify the appropriate “Statewide health standards.” (9)

Response 36:

The statement in clause (C) - “All sample results shall meet the Statewide health standard” is intended to mean that all the sample results values are at, or below, those listed in the Statewide health standard MSCs. This differs from the general 75%/10x rule, which allows some sample values to be above the MSCs, BUT does require more samples to be taken than that proposed in clause (C).

The new language in Section 250.707(b)(1)(iii), clauses (A)-(C) is intended to define a process whereby under certain conditions, fewer samples may be taken, and all those samples must be at or below the Statewide health

standard MSCs. No statistical analysis by the remediator beyond that is needed. It should be noted that prior to proposing this language, the DEP has analyzed the effect of limiting the sample numbers, and the effect that has on the statistical certainty of whether the true mean value of the site exceeds the standard. What the DEP (and CSSAB) has found is that when the number of samples is reduced, the certainty (statistical) goes down. When a smaller sample size is used than that proposed under the 75%/10x method, the uncertainty can be reduced by requiring that the concentrations of the samples taken be lower than that allowed under the 75%/10x method.

One-Page Summary

Pennsylvania Electric Association (PEA) Comments on the Proposed Amendments to 25 PA Code, Chapter 250, Pennsylvania Land Recycle Program

1. 250.1 Definitions

PEA concurs with the Department's clarification regarding "Agricultural purposes".

2. 250.5 Notice by applicant

PEA recommends that the 45-day comment period be amended to a 30-day comment period.

3. 250.303 Aquifer determination; current use and currently planned use of aquifer groundwater

PEA believes the 3-year renewal period for a non-use aquifer determination is redundant and should be eliminated.

4. 250.311 Evaluation of ecological receptors

PEA concurs with the Department limiting the applicability of Constituents of Potential Ecological Concern (CPEC).

5. 250.707 Statistical testing

PEA recommends eliminating the references to "petroleum" so that the statistical testing process may be applied to small spills of other constituents. PEA also recommends expanding the applicability to sites where immediate cleanup are undertaken to attain statewide or background standards within 90-days of the spill.

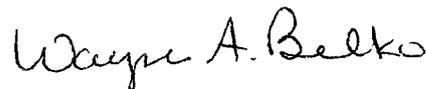
6. Comments Regarding Total PCB MSC's

PEA recommends that the Department limit the use of the MCLs to establish Total PCB MSC for groundwater only. PEA is concerned about the potential conflict between the application of specific PCB aroclor MSCs and the Total PCB MSC.

7. Corrections to MSC's Tables

PEA recommends that the Department develop provisions for correcting erroneous MSC determinations as depicted in the MSC's Tables

Sincerely,



Wayne A. Belko
Chairman
PEA Environmental Committee



Pennsylvania Department of Environmental Protection

Rachel Carson State Office Building
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September 21, 2001

The Secretary

Phone: 717-787-2814
E-Mail: DavidHess@state.pa.us

Mr. Robert E. Nyce, Executive Director
Independent Regulatory Review Commission
14th Floor, Harrisstown #2
333 Market Street
Harrisburg, PA 17120

RE: Final Rulemaking: Land Recycling Program Amendments (#7-356)

Dear Bob:

Pursuant to Section 5.1(a) of the Regulatory Review Act, enclosed is a copy of a final-form regulation for review by the Commission. This final rulemaking was approved by the Environmental Quality Board (EQB) on September 18, 2001.

These amendments update cleanup standards based on the most recent chemical and toxicological information and more clearly describe the standards that must be met by those undertaking the cleanup of a contaminated site. The rulemaking also contains other clarifying changes to address issues raised during implementation of the land recycling program since its inception in August 1997. In addition, the final amendments include more municipal involvement in nonuse aquifer determinations by enabling municipalities to certify that a specific area meets the requirements of the nonuse aquifer criteria established in Section 250.303. This certification process would benefit prospective remediators considering a voluntary cleanup under Act 2 in these areas. Additional public participation is also provided for in the nonuse aquifer determination process.

The proposed rulemaking was adopted by the EQB on June 20, 2000, and published on August 5, 2000, with a 60-day public comment period. There were nine commentators to the proposal. Most of the comments suggested alternative language, much of which is reflected in the final amendments. The most controversial provisions were those in Section 250.303 with respect to nonuse aquifer determinations. Opposition was based on the view that changes in the proposed rulemaking could seriously limit the viability of the nonuse aquifer standard as an incentive for brownfields development due to extensive and onerous requirements on the remediator. The final rulemaking addresses these concerns with the inclusion of the municipal involvement and public participation provisions noted above.

The Cleanup Standards Scientific Advisory Board (CSSAB) was consulted throughout the development of the proposed and final rulemakings. The CSSAB endorsed a draft of the final rulemaking at its March 26, 2001, meeting.

The Department will provide the Commission with any assistance required to facilitate a thorough review of this final-form regulation. Section 5.1(e) of the Act provides that the Commission shall, within ten days after the expiration of the committee review period, approve or disapprove the final-form regulation.

For additional information, please contact Sharon Trostle, Regulatory Coordinator, at 787-4526.

Sincerely,

A handwritten signature in black ink, appearing to read "David E. Hess", with a stylized flourish at the end.

David E. Hess
Secretary

Enclosures

**TRANSMITTAL SHEET FOR REGULATIONS SUBJECT TO THE
REGULATORY REVIEW ACT**

I.D. NUMBER: 7-356
SUBJECT: Land Recycling Program Amendments
AGENCY: DEPARTMENT OF ENVIRONMENTAL PROTECTION

TYPE OF REGULATION

- Proposed Regulation
- X 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

FILING OF REGULATION

DATE	SIGNATURE	DESIGNATION
9/21/01	<i>Kay Shree</i>	HOUSE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY
9/21/01	<i>Pat Carriethan</i>	SENATE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY
9/21/01	<i>Elena Pagan</i>	INDEPENDENT REGULATORY REVIEW COMMISSION
		ATTORNEY GENERAL
		LEGISLATIVE REFERENCE BUREAU

September 20, 2001

