

NOTICES OF EMERGENCY RULEMAKING

Under the Administrative Procedure Act, an agency may determine that adoption, amendment, or repeal of a rule is necessary for immediate preservation of the public health, safety, or welfare and the notice and public participation requirements are impracticable. Under this determination, the agency may adopt the rule as an emergency and submit it to the Attorney General for review. The Attorney General approves the rule and then files it with the Secretary of State. The rule takes effect upon filing with the Secretary of State and remains in effect for 180 days. An emergency rule may be renewed for 1 or 2 180-day periods if the requirements of A.R.S. § 41-1026 are met. If the emergency rule is not renewed or the rule is not permanently adopted by the end of the 180-day period, the emergency rule expires and the text of the rule returns to its former language, if any.

NOTICE OF EMERGENCY RULEMAKING

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 7. DEPARTMENT OF ENVIRONMENTAL QUALITY REMEDIAL ACTION

PREAMBLE

- | <u>Sections Affected</u> | <u>Rulemaking Action</u> |
|--------------------------|--------------------------|
| R18-7-109 | Amend |
| Article 2 | New Article |
| R18-7-201 | New Section |
| R18-7-202 | New Section |
| R18-7-203 | New Section |
| R18-7-204 | New Section |
| R18-7-205 | New Section |
| R18-7-206 | New Section |
| R18-7-207 | New Section |
| R18-7-208 | New Section |
| R18-7-209 | New Section |
| Appendix A | New Appendix |
| Appendix B | New Appendix |
| Appendix C | New Appendix |
| Appendix D | New Appendix |
- The specific authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):
Authorizing statutes: A.R.S. §§ 49-104(B)(4), 49-104(B)(16), 49-152, and Laws 1995, Ch. 232, § 5.
Implementing statutes: A.R.S. §§ 49-151, 49-152, and 49-282.
- The effective date of the rules:
March 29, 1996
- Is this rulemaking a renewal of a previous emergency rulemaking?
Notice of Public Information:
1 A.A.R. 1350, August 11, 1995
Notice of Rulemaking Docket Opening:
1 A.A.R. 1353, August 11, 1995
- The name and address of agency personnel with whom persons may communicate regarding the rule:
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6. An explanation of the rule, including the agency's reasons for initiating the rule:

EXECUTIVE SUMMARY OF THE CONCISE EXPLANATORY STATEMENT

INTRODUCTION

As mandated by A.R.S. §§ 49-151 and 49-152, this interim rule establishes Department-wide standards applicable to soil remediation activities. The interim rule is exempt from the requirements of the Administrative Procedure Act, but is subject to notice and comment. As a result, the Department held 3 oral proceedings throughout the state on September 12, 13, and 14, 1995. Attendance at the series was approximately 100 persons and oral comments were accepted at that time. In addition, the Department received 45 written comment letters from interested persons.

The statute does not mandate the preparation and distribution of a Concise Explanatory Statement (CES). However, the Department has prepared this document in an effort to provide a more complete understanding of the Department's analyses and decisions regarding comments on the rule. In the interest of time, the Department has prepared an executive summary of significant features and changes to the proposed rule rather than a formal preamble. The proposed rule, because it is an emergency rulemaking, was not published in the *Arizona Administrative Register*. However, it has been, and continues to be, available through the Department. It can be obtained by calling (602) 207-2222. Interested persons are encouraged to read the preamble to the proposed rule for additional background regarding the adopted rule.

EXPLANATION OF SIGNIFICANT FEATURES AND CHANGES TO THE PROPOSED RULE

1. The Interim Rule does not create a new regulatory program.

The Department wishes to clarify that the interim rule sets forth consistent remediation standards to be applied in addition to existing program requirements. Individual programs mandated by Title 49 still fully apply under these soil remediation rules.

For the interim rule, the Department is working to develop streamlined processes within each of the various remediation programs for those who are not required to remediate. For the final rule, the Department anticipates developing a "stand alone" voluntary program which will expedite remediation activities.

2. The concept of a "voluntary remediation" has been clarified.

The Department has come to understand that the term "volunteer" is misleading. It has little significance in the interim rule because persons who are presently governed by existing Departmental programs continue to be regulated under this rule. There are 3 categories of persons who undertake remediation activities, only the 1st of which can be said to do so voluntarily.

The 1st category includes persons conducting remediation outside the Department's jurisdiction. The Department recognizes that it has no regulatory authority over a person who is either remediating a site which has not been so contaminated as to violate state law or who is not legally responsible for correcting the contamination. Therefore, a person in this 1st category is the only 1 who could truly be said to be a "volunteer." As noted above, the interim rule does not create any new regulatory authority to require remediation and does not affect the actions of such a person.

However, if there is no legal obligation to remediate but a person requests a close-out document (formerly known as a "letter of determination"), the requirements of this Article must be met. This might be the case if a person who is not a responsible party wishes to conduct remediation in preparation for a change in property use or sale and requests a close-out document to facilitate that transaction. For such a person, this Article provides not only the remediation standards, but the close-out document process as well. If a person is outside the Department's regulatory jurisdiction and no close-out document is requested, remediation may be conducted without the Department's involvement or knowledge.

A 2nd category includes persons who have a legal duty to remediate and who are correcting contamination either prior to signing a consent order, or in accordance with the terms of a consent order. Because of the legal duty to remediate, it is misleading to label such a person as a "volunteer" even though he or she is not correcting contamination pursuant to an enforcement action issued by the Department or the U.S. Environmental Protection Agency ("EPA").

A 3rd category includes persons who are conducting remediation activities pursuant to an enforcement action issued by the Department or the EPA. The interim rule applies to these persons and to persons in the 2nd category who have a legal duty to remediate. In addition, it applies to "volunteers" described in the 1st category who request a close-out document.

3. A.R.S. § 49-152 mandates adoption of Health-Based Guidance Levels (HBGLs) developed by the Department of Health Services.

The Department received comments which questioned anomalous results for some contaminants, as well as policy arguments in support of suggested changes to HBGLs. In order to respond, the Department sought advice from the Office of the Attorney General as to whether the Department has authority to make changes to HBGLs in the adopted interim rule based upon public comment and, if so, to what extent.

The Attorney General advised that authority to make changes to HBGLs is limited to correction of manifest mathematical errors. In the Attorney General's view, the Department must adopt the Department of Health Services (ADHS) HBGLs as developed for the purposes of the interim rulemaking. In agreeing with this advice, the Department also recognizes that adjustment of HBGLs is a contentious issue worthy of more discussion than is possible in the short interim rule promulgation deadline set by the legislature. The Department anticipates more complete exploration of HBGL issues in the final rulemaking.

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The Department is aware that the current HBGLs may result in leaving some contaminants in the soil at levels higher than what would normally be acceptable under existing program requirements. For example, some comments noted that the non-residential level for xylene would result in soil saturated with xylene, and others noted some contaminants could result in concentration levels which would be considered a hazardous waste if excavated.

In response to these concerns, the adopted rule prohibits contaminants left in place after remediation which exhibit a characteristic of a Resource Conservation and Recovery Act ("RCRA") hazardous waste of ignitability, corrosivity, or reactivity. In addition, the Department wishes to point out the rule still prohibits use of HBGLs where either the remediation activity itself or contamination left in place would create an environmental nuisance. The Department anticipates that these changes will diminish some of the anomalous results of the HBGLs that received comment. In addition, inclusion of inhalation as a complete exposure route is being discussed for the final rule which will further diminish anomalous results.

4. The standard for residential protection remains 1×10^{-6} .

The Department has re-examined the issue of an appropriate level of risk for residential protection and re-affirms that an excess cancer risk of 1-in-1 million (1×10^{-6}) and a Hazard Index of no greater than 1 is the standard for residential use of property. The state statute itself is somewhat unclear on this point, as it refers to the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulation rather than a specific risk level and the referenced CERCLA regulation itself introduces an element of ambiguity.

A.R.S § 49-152 implies that a risk greater than 1-in-10,000 (1×10^{-4}) would be considered non-residential; however, the federal regulation cited clearly did not intend for that risk level to be the standard. The regulation was written in the context of feasibility for the selection of a remedy to meet a remediation goal. The risk levels were provided to set guidelines for remediations with a preferred risk level of 1×10^{-6} . Risk may be increased from 1×10^{-6} based on the remedy selected or the site-specific conditions, including use of the property.

The CERCLA citation clearly indicates that a risk level of 1×10^{-6} should be used for residential property unless it is not technically attainable or the remedy selected precludes the achievement of that level. In the case of the remedy, selection is based on cost-effectiveness, among other factors. However, cost-effectiveness is not addressed in the interim rule and should not be used to determine the residential level at this time.

In addition, the Department was mandated by statute to adopt the residential HBGLs which are based on a risk of 1×10^{-6} . Allowing site-specific remediations to be conducted to a different risk level is inconsistent with that requirement. The site-specific remediation level may allow a higher concentration of contaminants to remain, but the risk to the public should be consistent regardless of the method chosen to determine the level. Therefore, for the interim rule, the Department has defined residential protection as a concentration level which is associated with a carcinogenic risk level of 1×10^{-6} and a non-cancer index of no greater than 1 based on residential exposure assumptions without the use of institutional or engineering controls.

5. Use of anthropogenic sources to determine background levels is inappropriate.

Anthropogenic contaminants by definition are the result of human activity on land. Determining remediation standards based upon existing anthropogenic contaminant levels may have the effect of incorporating contaminants of concern into the standard itself. This is undesirable to the Department because remediation should eliminate or reduce contaminants of concern, not consider them as factors in determining protective standards.

In addition, it is difficult to determine "lawfully applied" background levels and remediating to these levels may result in a risk to human health and the environment. The Department emphasizes that lawfully applied contaminants are outside of its statutory authority and are not affected by this rule. However, where property use changes and a property owner wishes to receive a letter from the Department stating that the property meets the remediation standards, the interim rule applies.

The Department has also added 4 factors to the rule that may be used in establishing natural background. Those factors are: site-specific sampling of unaffected soils, site-specific historical information regarding land use, transport mechanisms, and chemical composition and bio-availability of the contaminant of interest.

6. The sensitive environment demonstration has been deleted.

In the proposed rule, the Department approached the issue of protection of a sensitive environment by 1st defining a sensitive environment and then setting forth a series of screening criteria for its protection. However, the Department now recognizes that needless expense and delay could result under the proposed screening criteria because a large percentage of sites which truly pose no threat to the environment would remain after the screening.

The Department did attempt to revise the definition to indicate more precisely what are sensitive environments. In addition, a method to rebut the presumption that a sensitive environment would be adversely affected was developed. However, even with the revisions, it still would have been difficult to determine whether that demonstration is made. Furthermore, a method to determine an alternative remediation level if a sensitive environment would be affected could not be established.

A considerable amount of time and ecological technical expertise is needed to overcome these difficulties. Within the short interim rule promulgation deadline given, the Department is unable to obtain the needed expertise. As a result, the Department has decided to delete the definition of a sensitive environment. In addition, the demonstration that the remaining contaminants will not adversely affect a sensitive environment has been deleted.

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The Department believes that adequate protection for the sensitive environments is provided under the Surface Water Quality Standards (SWQS). This protection exists independent of these rules. There would be few sensitive sites, if any, that will not fall under the purview of these requirements. To ensure that persons remediating sites are aware of the requirements, the appropriate rule provisions have been revised to state that the remaining contaminants cannot violate the SWQSs. In addition, a certification must be made that the remaining concentration does not violate the SWQSs.

The Department will continue to explore this issue to determine if further action is necessary for the final rule.

7. The Department no longer requires use of Drinking Water HBGLs as a screen where no Aquifer Water Quality Standard exists.

In the proposed rule, the Department required a demonstration that contaminants left in place at the completion of remediation would not cause or threaten to cause groundwater contamination. In the absence of an Aquifer Water Quality Standard (AWQS), the Department required a person to demonstrate that Drinking Water HBGLs were not exceeded. In response to public comment, the Department no longer requires the use of Drinking Water HBGLs in the absence of an AWQS. The impact of this change is that for contaminants without an AWQS, an alternative showing such as leachability may be made, or a risk assessment conducted.

The Department would also like to clarify that a person conducting a risk assessment and who requests a close-out document (formerly termed a "letter of determination") must satisfy the demonstration regarding contaminants left in place. Language in the proposed rule was not clear that the demonstration was required for both HBGL and risk assessment remediations. The adopted rule contains language in R18-7-206 which makes this requirement more apparent.

8. The Soil Remediation rule and the Petroleum Contaminated Soil (PCS) Best Management Practices (BMPs) rule do not conflict.

The Department does not believe that there is a conflict between the interim rule and the PCS rule. Pursuant to A.R.S. § 49-851(4), PCS is defined as "soils excavated for storage, treatment, or disposal containing TPH..." The PCS BMPs only apply once the soil is excavated. Even though the PCS definition refers to treatment, the treatment occurs after the soil is excavated. In contrast, the TPH HBGL was established as a standard for remediation of contaminated soils in situ.

Given the fact that the Department is required to adopt the HBGLs for the interim rule, both regulatory levels will be utilized. This creates a situation where higher levels of contamination are allowed to remain in place than soils which have been excavated. The Department is aware that the present rule may discourage excavation as a remedial method for TPH in some circumstances. The Department is also aware of concerns that the interim rule may create confusion. To alleviate the problems, the Department will amend the PCS rule to change the TPH regulatory level to coincide with the TPH HBGL.

In addition, an HBGL working group, as part of the Soil Remediation Task Force, is working on changes to the way HBGLs are calculated for the final rule. If other exposure routes, such as inhalation, are factored into the HBGL calculations, the contaminant level will likely be reduced and any discrepancy between the HBGL and the PCS level will be diminished.

9. Pre-approval of risk assessment methodology is the only pre-approval required for a site-specific remediation.

Several commenters noted inconsistencies between the proposed rule and the Interim Soil Remediation Policy. One area mentioned was that the policy required pre-approval of the risk assessment methodology, not of the work plan. In response, the Department has revised the rule for consistency with the policy. Remediation based on HBGLs does not require prior Departmental approval, unless such pre-approval is an existing program requirement.

10. The Department clarifies the exposure assumptions used in calculating site-specific remediation levels.

The Department would like to clarify the exposure assumptions used in the adopted rule. The proposed rule was confusing in this regard because residential use was defined using exposure assumptions. The adopted rule clarifies incorporation of the statutory definition of residential use, which is property upon which residents are reasonably expected to be in frequent, repeated contact with the soil. If current land use is residential or is zoned or planned to be re-zoned as residential, the property must be remediated to a level which is protective of residential use.

To eliminate confusion regarding what is protective of residential use, the Department has added a definition of "residential protection" to the rule. Residential protection means a lifetime cancer risk level of 1×10^{-6} and a Hazard Index of no greater than 1 based on a standard residential exposure assumption without the use of institutional or engineering controls. Furthermore, the Department has defined the assumptions upon which residential protection is based.

COMMENTS RECEIVED REGARDING THE FINAL RULEMAKING.

Several comments were received regarding issues which the Department believes are best addressed in the final rulemaking. Those comments and the reason for the Department's response are included throughout the CES. Other comments specific to the final rule are described below.

Several commenters suggested that the HBGL calculation for the final rule include the following parameters: inhalation, saturation, skin contact, soil saturation, odor threshold, explosivity, corrosivity, and ignitability. It was also suggested that the final HBGL for TPH should be re-evaluated to factor in the odor threshold criteria. Finally, it was suggested that an excess carcinogenic risk of 1×10^{-5} and a Hazard Index of no greater than 1 will be sufficiently protective of human health in the calculation of HBGLs in the final rule.

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7. A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:
Not applicable.
8. The summary of the economic, small business, and consumer impact:
Not applicable.
9. Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:
Not applicable.
10. Incorporations by reference and their location in the rules:
None.
11. An explanation of the situation justifying the rule's adoption as an emergency rule:
Laws 1995, Ch. 232, requires promulgation of this soil remediation rule on an emergency basis. In establishing the soil remediation program, the legislature considered contaminated soil to be such an imminent threat to the public health, safety, and environment that it required the Department to adopt standards for soil remediation by emergency rulemaking. These emergency rules establish remediation standards and other requirements necessary to ensure that soil remediations are performed properly and in accordance with A.R.S. §§ 49-151 and 49-152 and the applicable provisions of A.R.S. Title 49. These rules implement the soil remediation program and are necessary to monitor and regulate contaminated soil remediations for the protection of the public health, safety, and welfare and the environment's soil, air, drinking water, and groundwater.
- The Department cannot approve or disapprove remediations without this complete set of rules. The Department must implement a program that governs remediations which use the required health based guidance levels and remediations that use risk assessments to establish compliance with the program requirements. Rules implementing the health based guidance levels alone do not implement the soil remediation program as required by the legislature. The Department also cannot properly regulate remediations involving risk assessments without these rules. Rules implementing both types of remediation are necessary for the Department to implement this remediation program. Remediations would be impeded and may not occur without these rules. These rules fully comply with the legislative declaration of emergency mandating the Department to adopt emergency rules to implement this program.
12. The date of the Attorney General's approval of the emergency rule:
March 28, 1996
13. The full text of the rules follows:

TITLE 18. ENVIRONMENTAL QUALITY

**CHAPTER 7. DEPARTMENT OF ENVIRONMENTAL QUALITY
REMEDIAL ACTION**

**ARTICLE 1. WATER QUALITY ASSURANCE
REVOLVING FUND**

Section

R18-7-109. Remedial Action Requirements; Level and Extent of Cleanup

ARTICLE 2. INTERIM SOIL REMEDIATION STANDARDS

Section

R18-7-201. Definitions
R18-7-202. Applicability
R18-7-203. Remediation Standards
R18-7-204. Background Concentration Levels
R18-7-205. Health-based Guidance Levels (HBGLs)
R18-7-206. Site-Specific Remediation Levels
R18-7-207. Voluntary Environmental Mitigation Use Restriction (VEMUR)
R18-7-208. Initial Notice; Final Report; and Close-out Document
R18-7-209. Public Access to Information
Appendix A. Human Health-based Guidance Levels (HBGLs) For Ingestion of Contaminants In Soil
Appendix B. Sample Voluntary Environmental Mitigation Use Restriction
Appendix C. Sample Voluntary Environmental Mitigation Use Restriction Cancellation
Appendix D. Sample Seller's Disclosure Language

**ARTICLE 1. WATER QUALITY ASSURANCE
REVOLVING FUND**

R18-7-109. Remedial Action Requirements; Level and Extent of Cleanup

A. All remedial actions shall meet the following requirements:

1. Remedial actions shall be reasonable and necessary to prevent, minimize, or mitigate danger to public health or welfare or to the environment from the release or threatened release of a hazardous substance.
2. Remedial actions shall provide for the control, management, or cleanup of a release or threatened release of a hazardous substance so as to allow the maximum beneficial use of the waters of the state. For remedial actions that may affect surface water, the evaluation of beneficial use must include the protection of surface water as required pursuant to R18-11-201 through R18-11-214 and R18-11-303. For remedial actions that may affect aquifers, the evaluation of beneficial use must include protection of drinking water pursuant to A.R.S. § 49-223, unless the aquifer or that part of the aquifer affected by the remedial action has been reclassified by the Director for a non-drinking water protected to A.R.S. § 49-224(C).
3. Remedial actions shall be cost-effective over the period of actual or projected exposure to health or welfare or the environment from a release or threatened release of a hazardous substance. In evaluating cost-effectiveness, the Director shall take into account the total short- and long-

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term costs of the remedial action, including the costs of operation and maintenance.

4. Remedial actions shall be consistent with A.R.S. §§ 45-401 through 45-655, which include all applicable and adopted Active Management Area Plans, Irrigation Non-expansion Area Plans, and all other applicable water management requirements, plans, or permits.
 5. Remedial actions shall be consistent with R18-7-201 through R18-7-209.
- B. Subject to meeting remedial action requirements, and except for health risk assessments and health effects studies, the Director shall favor the selection of remedial actions that permanently and significantly reduce the volume, toxicity, or mobility of a hazardous substance when it is practicable, cost-effective, and necessary to protect public health or welfare or the environment.
- C. The Director shall require an expedited interim or permanent remedial action for cleanup when any of the following applies:
1. There is an actual or potential contract with a hazardous substance by a human or animal population.
 2. There are drums, barrels, tanks, or other bulk storage containers that pose a danger or threat of a danger to the public health or welfare or the environment.
 3. There are contaminated soils that pose a danger or threat of danger to public health or welfare or the environment.
 4. There is a danger or threat of danger from fire or explosion.
 5. There are weather conditions that cause the migration of the hazardous substance to accelerate and cause a threat to public health or welfare or the environment.
- D. Subject to meeting remedial action requirements are appropriate under the circumstances presented by the release or threatened release of the hazardous substance. In determining what is appropriate, the Director shall:
1. Require that remedial actions are appropriate under the circumstances presented by the release or threatened release of the hazardous substance. In determining what is appropriate, the Director shall consider the circumstances of the release or threatened release, the population at risk, the beneficial uses of waters of the state, the environmental media affected, and the most current scientific, medical, and engineering information available.
 2. Require that the remedial actions conform to the following statutes and rules, and any amendments thereto, when applicable:
 - a. Surface Water Quality Standards adopted by the Department as R18-11-204 and R18-11-205.
 - b. Groundwater Quality Standards adopted by the Department as R9-21-403 and drinking water aquifer water quality standards adopted by A.R.S. § 49-223(A).
 - c. Hazardous waste corrective action rules adopted by the Department as R18-8-264(A) for those facilities required to obtain a hazardous waste permit pursuant to R18-8-270.
 - d. Corrective action requirements authorized under A.R.S. § 49-1005 pertaining to releases from underground tanks that contain regulated substances as defined by A.R.S. § 49-1001(8).
 3. Require cleanup to a level sufficient to prevent or abate an imminent and substantial danger to public health or welfare or the environment where there are no standards established in law for a particular hazardous substance.

ARTICLE 2. INTERIM SOIL REMEDIATION STANDARDS

R18-7-201. Definitions

In addition to the definitions provided in A.R.S. §§ 49-151 and 49-152, the following definitions apply in this Article:

1. "Aquifer Protection Program" means the program described in Title 49, Chapter 2, Article 3 and 18 A.A.C. 9, Article 1.
2. "Background" means the concentration of a naturally occurring contaminant in like lithology and soils within close proximity to, but not affected by, a release.
3. "Carcinogen" or "carcinogenic" means a substance which has a cancer group designation of Class A, B1, or B2 but does not include a substance having cancer group designations C, D, E, or ND. The cancer group designation is found in Appendix A to the rule.
4. "Close-out Document" means a Departmental statement which indicates whether the property in question has met the standards set forth in this Article.
5. "Closing" means the point in a real property transaction when all contingencies are removed and the sale becomes final.
6. "Contaminant" means a substance which is known or suspected to have an adverse impact on human health or the environment when released, emitted, discharged, or spilled into the environment.
7. "Department" means the Department of Environmental Quality.
8. "Deterministic risk assessment methodology" means a point-specific risk assessment. In the equation used to calculate risk, each parameter of exposure and toxicity is a single point estimate for each receptor evaluated (i.e. lifetime resident, adult resident, adult resident, or young child resident). Upper-bound values are generally used in the risk calculation and the resulting risk estimate is likely to overstate the actual risk to any 1 individual.
9. "Groundwater" means the water in an aquifer as found in A.R.S. § 49-201(2).
10. "Hazardous Waste Disposal Program" means the program described in A.R.S. Title 49, Chapter 5, Article 2 and 18 A.A.C. 8, Article 2.
11. "Health-based Guidance Levels" or "HBGLs" means the pre-determined risk-based standards developed by the Department of Health Services pursuant to A.R.S. § 49-152(A)(1)(a) as found in Appendix A of the rule.
12. "Leachability" means the ability of a contaminant to move in the subsurface in such a manner that there is a reasonable probability that the contaminant will impact groundwater quality.
13. "Migrate" or "migration" means the movement of contaminants from the point of release, emission, discharge, or spillage through the soil profile.
14. "Non-residential Exposure Assumption" means an average ingestion rate of 50 milligrams per day of soil, an exposure frequency of 250 days per year, and an exposure duration of 25 years.
15. "Nuisance" has the meaning found in A.R.S. § 49-141.
16. "Person" means 1 who is subject to the provisions of R18-7-202(A).
17. "Probabilistic risk assessment methodology" means substituting probability distributions for the point estimate input variable in the equations used to calculate exposure dose and risk. The resulting distribution provides a full characterization of risk and corresponding risk percentiles for all exposure levels.
18. "Registry" means the Departmental database of information from which the public may view voluntarily submit-

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ted notices, reports, applications; remedial reports pursuant to a Departmental enforcement action; and other public information related to proposed, pending, or completed remediation projects.

19. "Residential Exposure Assumption" means an average ingestion rate of 120 milligrams per day of soil, an exposure frequency of 365 days per year, and an exposure duration of 30 years.
20. "Residential Protection" means an excess lifetime cancer risk level of 1×10^{-6} and a Hazard Index of no greater than 1 based on a standard residential exposure assumption without the use of institutional or engineering controls.
21. "Residential Use" has the meaning found in A.R.S. § 49-151(3).
22. "Remediate" or "remediation" has the meaning found in A.R.S. § 49-151(2).
23. "Risk assessment" is a scientific evaluation of the risk to human health from the exposure to a specific type and concentration of contaminant. A risk assessment contains 4 components: identification of potential chemicals of concern, an exposure assessment, a toxicity assessment, and a risk characterization.
24. "Seller's Disclosure" means, pursuant to A.R.S. § 33-434.01, a written notice from the owner of property to the purchaser of the property that the property has been subject to soil remediation pursuant to A.R.S. §§ 49-151 et. seq.
25. "Soil" means dirt or earthen material located between the surface of the land and groundwater.
26. "Solid Waste Management program" means the program described in A.R.S. Title 49, Chapter 4, Article 4 and the rules promulgated thereunder.
27. "Special Waste Management program" means the program described in A.R.S. Title 49, Chapter 4, Article 9 and 18 A.A.C. 8, Article 3.
28. "Voluntary environmental mitigation use restriction" or "VEMUR" means, pursuant to A.R.S. § 49-152(B), a written document, signed by the owner and the Department, and recorded on the chain of title for a particular parcel of real property which indicates that a remediation to less than residential standards has been completed and, unless subsequently canceled, that the property shall not be used for residential purposes in the future.
29. "Water Quality Assurance Revolving Fund" or "WQARF" means the program described in A.R.S. Title 49, Chapter 2, Article 5 and 18 A.A.C. 7, Article 1.
30. "Underground Storage Tank" or "UST" means the program described in A.R.S. Title 49, Chapter 6, Article 1 and 18 A.A.C. 12.

R18-7-202. Applicability

- A.** This Article applies to a person legally required to conduct soil remediation activities under any of the following regulatory programs administered by the Department:
1. The Water Quality Assurance Revolving Fund (WQARF).
 2. The Underground Storage Tank (UST) Program.
 3. The Hazardous Waste Disposal Program.
 4. The Solid Waste Management Program.
 5. The Special Waste Management Program.
 6. The Aquifer Protection Permit Program.
- B.** This Article also applies to a person not legally required to conduct remediation, but who chooses to do so and who requests a close-out document.

- C.** This Article applies in addition to any specific requirements of the programs described in subsection (A).
- D.** The scope of this Article is limited to soil remediation activities.
- E.** This Article applies to remediation activities which are initiated on or after the effective date of this Article.

R18-7-203. Remediation Standards

When concluded, a soil remediation activity conducted by a person subject to this Article shall remediate soils to the point that the concentration of each contaminant in the soils achieves compliance with 1 of the following:

1. The background concentrations of the contaminant as described in R18-7-204.
2. The HBGLs set forth in Appendix A and the remediation processes described in R18-7-205.
3. The remediation levels derived from a site-specific risk assessment and the remediation processes described in R18-7-206.

R18-7-204. Background Concentration Levels

A person may elect to remediate to the background concentration for a contaminant. If the background concentration is greater than the HBGL or greater than a site-specific remediation level determined pursuant to R18-7-206 and background will be used as the remediation level, a proper demonstration shall be made to establish a background concentration for the contaminant of concern, and to justify the selection of the remediation concentration. Laboratory analysis of samples shall be performed by a laboratory licensed by the Department of Health Services. The following factors may be used in establishing background:

1. Site-specific sampling of unaffected soils based on scientifically valid sampling procedures and statistical methods.
2. Site-specific historical information concerning land use.
3. Migration potential.
4. Chemical composition and bio-availability of the contaminant of interest.

R18-7-205. Health-based Guidance Levels

A. A person may elect to remediate to the HBGLs set forth in Appendix A, or shall do so where required in an enforcement action duly issued or taken by the Department. HBGLs may be utilized if all of the following conditions are met:

1. The contaminant of concern has an HBGL listed in Appendix A.
2. At the conclusion of remediation, the remaining concentration for the contaminant of concern will not cause or threaten contamination of the groundwater to exceed any Aquifer Water Quality Standard pursuant to R18-11-405 and R18-11-406 at a program-specific point of compliance.
3. At the conclusion of remediation, the remaining concentration for the contaminant of concern will not cause or threaten to cause a violation of the Water Quality Standards pursuant to 18 A.A.C. 11, Article 1.
4. At the conclusion of remediation, the remaining concentration for the contaminant of concern does not exhibit the hazardous waste characteristic of ignitability, corrosivity, or reactivity as defined in R18-8-261(A).
5. At the conclusion of remediation, the remediation activity itself or the remaining concentration for the contaminant of concern does not cause a nuisance.
6. Federal law does not require the use of a site-specific risk assessment.
7. Laboratory analysis of samples is performed by a laboratory licensed by the Department of Health Services under

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A.R.S. § 36-495 et. seq. and the rules promulgated thereunder.

- B.** Where the practical quantification limits (POL) are greater than the residential HBGLs, and residential protection is desired or required, a risk assessment shall be conducted to determine the alternative remediation level.
- C.** A federal regulatory or statutory contaminant pre-determined standard may be used:
1. If no HBGL exists for a contaminant.
 2. For polychlorinated biphenyls (PCBs) regulated pursuant to the Toxic Substances Control Act (40 CFR 761).
- D.** A person conducting an HBGL-based remediation shall remediate to the residential HBGL on any property which is described by 1 of the following:
1. Currently used for residential purposes.
 2. Currently zoned as residential or subject to a pending application to be re-zoned as residential.
 3. Currently designated as residential use on an approved master plan.
- E.** A person conducting an HBGL-based remediation project on non-residential property shall either:
1. Remediate to the residential HBGL.
 2. Remediate to the non-residential HBGL and comply with all of the following:
 - a. Record, in accordance with R18-7-207, a VEMUR with the County Recorder in the county in which the property is located. The property shall not be used for residential purposes until the VEMUR is cancelled in accordance with R18-7-207.
 - b. Send to the Department, within 30 days of recording, a copy of the recording described in subsection (E)(2)(a).
 - c. Provide, prior to closing on the property, written notice to the purchaser in accordance with A.R.S. § 33-434.01.
- F.** If the HBGL for a contaminant of concern is not protective of groundwater quality, a person may elect to remediate to an alternative standard which will ensure that the contaminant will not exceed any Aquifer Water Quality Standard pursuant to R18-11-405 and R18-11-406 at a program-specific point of compliance. A scientifically valid demonstration shall be made to evaluate the leachability potential and to establish an alternative remediation level. The scientifically valid demonstration shall include site-specific and contaminant-specific characteristics.

R18-7-206. Site-specific Remediation Levels

- A.** A person may elect, or shall do so where required in an enforcement action duly issued or taken by the Department, to remediate to the concentration levels determined from a site-specific risk assessment if all of the following conditions are met:
1. At the conclusion of remediation, the remaining concentration for the contaminant of concern will not cause or threaten contamination of the groundwater to exceed any Aquifer Water Quality Standard pursuant to R18-11-405 and R18-11-406 at a program-specific point of compliance.
 2. At the conclusion of remediation, the remaining concentration for the contaminant of concern will not cause or threaten to cause a violation of the Water Quality Standards under 18 A.A.C. 11, Article 1.
 3. At the conclusion of remediation, the remaining concentration for the contaminant of concern does not exhibit the hazardous waste characteristic of ignitability, corrosivity, or reactivity as defined in R18-8-261(A).

4. At the conclusion of remediation, the remediation activity itself or the remaining concentration for the contaminant of concern does not cause a nuisance.
 5. Laboratory analysis of samples is performed by a laboratory licensed by the Department of Health Services under A.R.S. §§ 36-495 et. seq. and the rules promulgated thereunder.
- B.** When conducting a site-specific risk assessment, a person shall use either a deterministic methodology, a probabilistic methodology, or an alternative methodology commonly accepted in the scientific community. If a probabilistic methodology is used, it shall be no less protective than the 95th percentile upper bound estimate.
- C.** A person conducting a remediation based on the concentration levels determined from a site-specific risk assessment shall remediate to residential protection on any property which is described by 1 of the following:
1. Currently used for residential purposes.
 2. Currently zoned as residential or subject to a pending application to be rezoned as residential.
 3. Currently designated as residential use on an approved master plan.
- D.** A person conducting a remediation project based on the concentration levels determined from a site-specific risk assessment on non-residential property shall either:
1. Remediate to residential protection.
 2. Remediate to a carcinogenic risk level more protective than 1×10^{-4} , but less protective than residential protection and comply with all of the following:
 - a. Record, in accordance with R18-7-207(A), a VEMUR with the County Recorder in the county in which the property is located. The property shall not be used for residential purposes until the VEMUR is cancelled in accordance with R18-7-207(B).
 - b. Send to the Department, within 30 days of recording, a copy of the recording described in subsection (D)(2)(a).
 - c. Provide, prior to closing on the property, written notice to the purchaser in accordance with A.R.S. § 33-434.01.
- E.** The Department may approve an alternative carcinogenic risk level greater than 1×10^{-4} and a non-cancer hazard index of greater than 1 if it is demonstrated that the site-specific conditions, potential pathways of exposure, and institutional and engineering controls are sufficient to protect human health and the environment. If such Departmental approval is given, property use shall be non-residential and subject to the requirements of subsection (D)(2).

- F.** If the remediation level determined from a site-specific risk assessment is not protective of groundwater quality, a person may elect to remediate to an alternative standard which will ensure that groundwater quality will not exceed any Aquifer Water Quality Standard pursuant to R18-11-405 and R18-11-406 at a program-specific point of compliance. A scientifically valid demonstration shall be made to evaluate the leachability potential and to establish an alternative remediation level. The scientifically valid demonstration shall include site-specific and contaminant specific characteristics.

R18-7-207. Voluntary Environmental Mitigation Use Restriction (VEMUR)

- A.** A person who is required to record a VEMUR in accordance with A.R.S. § 49-152 shall record, with the County Recorder's office where the property is located, a copy of the document set forth in Appendix B. The VEMUR shall be recorded within 30 days after completing remediation and shall be for-

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matted in accordance with A.R.S. § 11-480 and any other specific requirements of the recorder of the jurisdiction. Remediation is considered complete when the analytical results of the samples taken to confirm the remediation level have been received by the person conducting the remediation. An authorized Departmental representative shall sign the VEMUR before it is recorded.

- B.** A person who wishes to cancel a recorded VEMUR as described in A.R.S. § 49-152(F) shall record, with the County Recorder's office where the property is located, a copy of the document set forth in Appendix C. An authorized Departmental representative shall sign the VEMUR cancellation before it recorded.
- C.** Within 30 days of the date of recording, a person who records a document described in subsection (A) or (B) shall provide a copy of the recording to the Department.

R18-7-208. Initial Notice; Final Report; and Close-Out Document

- A.** The requirements of this Section apply in addition to any specific requirements of the programs described in R18-7-202(A). If there is no requirement to remediate, a person who desires to receive a close-out document shall submit an initial notice and a final report.
- B.** A person conducting a remediation project based on pre-determined remediation standards or background concentrations shall submit in writing to the Department an initial notice of the intent to remediate which includes the following information:
1. The nature of the remediation project, including all of the following:
 - a. Site location, including the legal description of the property;
 - b. Site characteristics;
 - c. Current and post-remediation property use description as either residential or non-residential.
 2. The rationale for selection of remediation levels.
 3. The technologies to be used to remediate the site.
- C.** A person conducting a remediation project based on the concentration levels determined from a site-specific risk assessment shall submit in writing to the Department an initial notice of the intent to remediate and a request for risk assessment methodology approval. Departmental approval is required prior to beginning remediation. The initial notice and request for approval of the risk assessment methodology shall include all of the following information:
1. The site location, including the legal description of the property;
 2. The site characteristics;
 3. Current and post-remediation property use description as either residential or non-residential;
 4. A description of the risk assessment methodology to be used;
 5. The exposure pathway and individual exposure profile assumptions.
- D.** The Department shall take 1 of the following actions on a request for approval for risk assessment methodology:
1. Approve, deny, or request additional information necessary to make the determination within 45 days of receipt of the request;
 2. Approve, deny, or request additional information necessary to make the determination within a timeframe specified in an existing Departmental regulatory program.
 3. Approve or deny the request within 45 days of receipt of any additional information requested by the Department.
- E.** Within 90 days following completion of remediation activities at a site, or within a timeframe specified in an existing regula-

tory program administered by the Department, a person described in subsection (B) or (C) shall submit to the Department a final report of the post-remediation site conditions. A final report shall be a pre-requisite for the Department's consideration of a close-out document. The report shall include all of the following information:

1. A description of the actual activities, techniques, and technologies used to remediate the site, including the maintenance of engineering controls.
 2. Consideration of all demonstrations, factors, and conditions described in R18-7-204, R18-7-205, and R18-7-206(A)(1) and all documentation supporting the report's conclusions.
 3. Soil sampling results which are representative of the entire site.
 4. Proof of compliance with local zoning requirements available from the county or city zoning boards.
 5. A statement signed by the owner or a person authorized to act on behalf the owner certifying the following:

I certify under penalty of law that this document and all attachments are to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.
- F.** A final report submitted for non-residential remediation activities shall include the following information in addition to subsection (E):
1. A certification signed by the owner stating awareness of the requirements of A.R.S. §§ 33-434.01 and 49-152.
 2. A copy of the VEMUR, as set forth in Appendix B, signed by the Department and recorded with the County Recorder's office.
- G.** Within 60 days after receiving a final report, the Department shall issue a close-out document, deny, or request additional information necessary to issue a close-out document.
- H.** The Department may require additional investigation including any necessary additional remediation, and may revoke, amend, or reaffirm any decision made under this Section if the information is incomplete or inaccurate, or if any condition was unknown to the Department when the Department entered into a decision under this Section.

R18-7-209. Public Access to Information

- A.** Pursuant to A.R.S. § 49-152(D), the Department shall establish and maintain an information registry for sites for which an initial notice of remediation has been filed. In addition, the registry shall contain a listing of those sites being remediated under programs administered by the Department or remediated pursuant to a Departmental enforcement action. Each entry in the registry shall contain all of the following:
1. The name and address of the property owner.
 2. The dates the remediation was initiated and completed.
 3. A legal description and street address of the property.
 4. An indication of whether residential protection has been achieved and whether the provisions of A.R.S. §§ 49-152(B) and 33-434.01 apply.
 5. Each contaminant that has been remediated.
 6. Such other information as is reasonably necessary to implement the statutory mandate.
- B.** Material in the Registry shall be available for public inspection during the Department's normal business hours. A person who wishes to obtain copies of Registry materials may do so after paying an appropriate copying fee as established by the Department. In addition, the Department shall periodically provide a list of sites from the Registry to each local jurisdiction in which a site is located.

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APPENDIX A
HUMAN HEALTH BASED GUIDANCE LEVELS (HBGLs) FOR INGESTION OF CONTAMINENTS IN SOIL
June 1995 Update

<u>CHEMICAL</u>	<u>CAS NUMBER</u>	<u>CANCER GROUP</u>	<u>SOIL INGESTION</u>	
			<u>RESIDENTIAL ORAL HBGL (mg/kg)</u>	<u>NON-RESID ORAL HBGL (mg/kg)</u>
A				
1. Acenaphthene	83-32-9	ND	7000.0	24500.0
2. »Acenaphthylene (PAH)	208-96-8	D	7000.0	24500.0
3. »Acephate	30560-19-1	C	160.0	560.0
4. Acetochlor	34256-82-1	NA	2300.0	8050.0
5. »Acetone	67-64-1	D	12000.0	42000.0
6. Acetonitrile	75-05-8	ND	700.0	2450.0
7. Acetophenone	98-86-2	D	12000.0	42000.0
8. Acifluorfen	62476-59-9	ND	1500.0	5250.0
9. »Acrolein	107-02-8	C	2300.0	8050.0
10. »Acrylamide	79-06-1	B2	0.3	1.3
11. Acrylic acid	79-10-7	NA	58000.0	203000.0
12. »Acrylonitrile	107-13-1	B1	2.5	10.5
13. »Alachlor	15972-60-8	B2	17.0	71.0
14. Alar	1596-84-5	NA	18000.0	63000.0
15. »Aldicarb	116-06-3	D	120.0	420.0
16. »Aldicarb sulfone	1646-88-4	D	120.0	420.0
17. »Aldicarb sulfoxide	1646-87-3	D	150.0	525.0
18. »Aldrin	309-00-2	B2	0.08	0.34
19. Allyl alcohol	107-18-6	NA	580.0	2030.0
20. Allyl chloride	107-05-1	C	5800.0	20300.0
21. Aluminum phosphide	20859-73-8	NA	47.0	165.0
22. Amdro	67485-29-4	ND	35.0	123.0
23. »Ametryn	834-12-8	D	1100.0	3850.0
24. Aminopyridine	504-24-5	D	2.3	8.0
25. Amitraz	33089-61-1	ND	290.0	1015.0
26. Ammonia (NH3)	7664-41-7	D	120000.0	420000.0
27. »Ammonium sulfamate	7773-06-0	D	23000.0	80500.0
28. Aniline	62-53-3	B2	240.0	1008.0
29. »Anthracene (PAH)	120-12-7	D	35000.0	122500.0
30. »Antimony (Sb)	7440-36-0	D	47.0	165.0
31. Apollo	74115-24-5	C	150.0	525.0
32. Aramite	140-57-8	B2	54.0	227.0
33. »Arsenic, inorganic (As)	7440-38-2	A	0.91	3.82
34. Assure	76578-14-8	D	1100.0	3850.0
35. »Asulam	3337-71-1	D	5800.0	20300.0
36. »Atrazine	1912-24-9	C	6.1	21.4
37. Avermectin b1	65195-55-3	ND	47.0	165.0
38. »Azinphos-methyl	86-50-0	E	290.0	1015.0
39. Azobenzene	103-33-3	B2	12.0	50.0
B				
40. »Barium (Ba)	7440-39-3	D	8200.0 ##	28700.0 ##
41. Barium cyanide	542-62-1	ND	12000.0	42000.0
42. Baythroid	68359-37-5	ND	2900.0	10150.0
43. Benefin	1861-40-1	NA	35000.0	122500.0
44. »Benomyl	17804-35-2	D	5800.0	20300.0
45. »Bentazon	25057-89-0	D	290.0	1015.0
46. Benzaldehyde	100-52-7	NA	12000.0	42000.0
47. »Benz[a]anthracene (PAH)	56-55-3	B2	1.1	4.6
48. »Benzene (BNZ)	71-43-2	A	47.0	197.0
49. »Benzidine	92-87-5	A	0.006	0.025
50. »Benzo[a]pyrene (PAH) (BaP)	50-32-8	B2	0.19	0.80
51. »Benzo[b]fluoranthene (PAH)	205-99-2	B2	1.1	4.6
52. »Benzo[k]fluoranthene (PAH)	207-08-9	B2	1.1	4.6
53. Benzoic acid	65-85-0	D	470000.0	1645000.0
54. Benzotrichloride	98-07-7	B2	0.1	0.4

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55.	»Benzyl alcohol	100-51-6	ND	35000.0	122500.0
56.	Benzyl chloride	100-44-7	B2	8.0	34.0
57.	»Beryllium (Be)	7440-41-7	B2	0.32	1.34
58.	Bidrin	141-66-2	NA	12.0	42.0
59.	Biphenthrin	2657-04-3	NA	1800.0	6300.0
60.	1,1-Biphenyl	92-52-4	D	5800.0	20300.0
61.	»bis(2-chloroethyl) ether (BCEE)	111-44-4	B2	1.2	5.0
62.	»Bis(2-chloroisopropyl) ether	39638-32-9	ND	19.0	67.0
63.	bis(chloromethyl) ether (BCME)	542-88-1	A	0.006	0.025
64.	Bisphenol A	80-05-7	NA	5800.0	20300.0
65.	»Boron and borates only (B)	7440-42-8	D	11000.0	38500.0
66.	»Bromacil	314-40-9	C	1500.0	5250.0
67.	»Bromodichloromethane (THM) (BDCM)	75-27-4	B2	22.0	92.0
68.	»Bromoform (THM) (BRFM)	75-25-2	B2	170.0	714.0
69.	»Bromomethane (BMM)	74-83-9	D	160.0	560.0
70.	»Bromoxynil	1689-84-5	D	2300.0	8050.0
71.	Bromoxynil octanoate	1689-99-2	NA	2300.0	8050.0
72.	N-butanol	71-36-3	D	12000.0	42000.0
73.	»Butyl benzyl phthalate	85-68-7	C	2300.0	8050.0
74.	»Butylate	2008-41-5	D	5800.0	20300.0
75.	Butylphthalyl butylglycolate	85-70-1	NA	120000.0	420000.0
C					
76.	Cacodylic acid	75-60-5	D	350.0	1225.0
77.	»Cadmium (Cd)	7440-43-9	B1	58.0	244.0
78.	Calcium cyanide	592-01-8	ND	4700.0	16450.0
79.	Caprolactam	105-60-2	NA	58000.0	203000.0
80.	Captafol	2425-06-1	ND	160.0	560.0
81.	»Captan	133-06-2	D	390.0	1365.0
82.	»Carbaryl	63-25-2	D	12000.0	42000.0
83.	»Carbofuran	1563-66-2	E	580.0	2030.0
84.	»Carbon disulfide	75-15-0	D	12000.0	42000.0
85.	»Carbon tetrachloride (CCL4)	56-23-5	B2	10.0	42.0
86.	Carbosulfan	55285-14-8	ND	1200.0	4200.0
87.	»Carboxin	5234-68-4	D	12000.0	42000.0
88.	Chloral	75-87-6	NA	230.0	805.0
89.	»Chloramben	133-90-4	D	1800.0	6300.0
90.	»Chlordane	57-74-9	B2	1.0	4.0
91.	»Chlordimeform	6164-98-3	B2	1.2	5.0
92.	Chlorimuron-ethyl	90982-32-4	NA	2300.0	8050.0
93.	Chlorine cyanide	506-77-4	ND	5800.0	20300.0
94.	p-Chloroaniline	106-47-8	NA	470.0	1645.0
95.	»Chlorobenzene (monochlorobenzene) (MCB)	108-90-7	D	2300.0	8050.0
96.	Chlorobenzilate	510-15-6	B2	5.0	21.0
97.	1-Chlorobutane	109-69-3	D	47000.0	164500.0
98.	»Chloroform (THM) (CLFM)	67-66-3	B2	220.0	924.0
99.	»Chloromethane (CM)	74-87-3	C	100.0	350.0
100.	beta-Chloronaphthalene	91-58-7	NA	9400.0	32900.0
101.	»2-Chlorophenol	95-57-8	D	580.0	2030.0
102.	»Chlorothalonil	1897-45-6	B2	120.0	504.0
103.	»o-Chlorotoluene	95-49-8	D	2300.0	8050.0
104.	Chlorpropham	101-21-3	NA	23000.0	80500.0
105.	»Chlorpyrifos	2921-88-2	D	350.0	1225.0
106.	Chlorpyrifos-methyl	5598-13-0	NA	1200.0	4200.0
107.	»Chlorsulfuron	64902-72-3	D	5800.0	20300.0
108.	Chromium(III)	16065-83-1	NA	120000.0	420000.0
109.	Chromium(VI)	18540-29-9	A	580.0	2436.0
110.	Chromium(VI) (CrVI)	7440-47-3	A	580.0	2436.0
111.	»Chromium(Total) (Cr)	NA	D	1700.0 ##	5950.0 ##
112.	»Chrysene (PAH)	218-01-9	B2	110.0	462.0
113.	»Copper (Cu)	7440-50-8	D	4300.0 ##	15050.0 ##
114.	Copper cyanide	544-92-3	ND	580.0	2030.0
115.	»Cresols (total)	NA	D	5800.0	20300.0
116.	Crotonaldehyde	123-73-9	C	0.72	2.52
117.	Cumene	98-82-8	NA	4700.0	16450.0
118.	»Cyanazine	21725-46-2	D	1.6	5.6
119.	»Cyanide (Cn)	57-12-5	D	2300.0	8050.0

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120. Cyanogen	460-19-5	ND	4700.0	16450.0
121. Cyanogen bromide	506-68-3	ND	11000.0	38500.0
122. Cyclohexanone	108-94-1	NA	580000.0	2030000.0
123. Cyclohexylamine	108-91-8	NA	23000.0	80500.0
124. Cyhalothrin (Karate)	68085-85-8	ND	580.0	2030.0
125. Cypermethrin	52315-07-8	ND	1200.0	4200.0
126. »Cyromazine	66215-27-8	D	880.0	3080.0
D				
127. »2,4-D (2,4-dichlorophenoxyace	94-75-7	D	1200.0	4200.0
128. »Dalapon	75-99-0	D	3500.0	12250.0
129. Danitol	39515-41-8	ND	2900.0	10150.0
130. »DCPA (dimethyl tetrachloroter	1861-32-1	D	1200.0	4200.0
131. »DDD (p,p'-dichlorodiphenyldic (DDD)	72-54-8	B2	5.7	23.9
132. »DDE (p,p'-dichlorodiphenyldic (DDE)	72-55-9	B2	4.0	17.0
133. »DDT (p,p'-dichlorodiphenyltri (DDT)	50-29-3	B2	4.0	17.0
134. »DDT/DDD/DDE (total) (DDT)	NA	B2	4.0	17.0
135. Decabromodiphenyl ether	1163-19-5	C	1200.0	4200.0
136. Demeton	8065-48-3	NA	4.7	16.5
137. 2,4-Diaminotoluene	95-80-7	NA	0.43	1.51
138. »Diazinon	333-41-5	E	110.0	385.0
139. »Dibenz[a,h]anthracene (PAH)	53-70-3	B2	0.11	0.46
140. 1,4-Dibromobenzene	106-37-6	NA	1200.0	4200.0
141. »Dibromochloromethane (THM) (DBCM)	124-48-1	C	16.0	56.0
142. »1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	B2	0.97	4.07
143. »Dibutyl phthalate	84-74-2	D	12000.0	42000.0
144. »Dicamba	918-00-9	D	3500.0	12250.0
145. »Dichlobenil	1194-65-6	D	58.0	203.0
146. »1,2-Dichlorobenzene (DCB2)	95-50-1	D	11000.0	38500.0
147. »1,3-Dichlorobenzene (DCB3)	541-73-1	D	10000.0	350.0
148. »1,4-Dichlorobenzene (DCB4)	106-46-7	C	57.0	200.0
149. »3,3'-dichlorobenzidine	91-94-1	B2	3.0	13.0
150. »Dichlorodifluoromethane (DCDFM)	75-71-8	D	23000.0	80500.0
151. 1,1-Dichloroethane (DCA)	75-34-3	C	1200.0	4200.0
152. »1,2-Dichloroethane (DCA2)	107-06-2	B2	15.0	63.0
153. »1,1-Dichloroethylene (DCE)	75-35-4	C	2.3	8.0
154. 1,2-Dichloroethylene (DCE2)	540-59-0	D	2300.0	8050.0
155. 1,2-Dichloroethylene (TOTAL)	NA	D	1200.0	4200.0
156. »cis-1,2-Dichloroethylene	156-59-2	D	1200.0	4200.0
157. »trans-1,2-Dichloroethylene	156-60-5	D	2300.0	8050.0
158. »Dichloromethane (DCM)	75-09-2	B2	180.0	756.0
159. 4-(2,4-Dichlorophenoxy)butyric acid	94-82-6	NA	940.0	3290.0
160. »2,4-Dichlorophenol	120-83-2	D	350.0	1225.0
161. »1,2-Dichloropropane (DCP2)	78-87-5	B2	20.0	84.0
162. 2,3-Dichloropropanol	616-23-9	ND	350.0	1225.0
163. »1,3-Dichloropropene	542-75-6	B2	7.6	31.9
164. Dichlorvos	62-73-7	B2	4.7	19.7
165. »Dicloran	99-30-9	E	2900.0	10150.0
166. »Dicofol	115-32-2	C	3.1 **	13.0 **
167. »Dieldrin	60-57-1	B2	0.09	0.38
168. »Diethyl phthalate	84-66-2	D	94000.0	329000.0
169. »Di(2-ethylhexyl) adipate	103-23-1	C	1100.0	3850.0
170. »Di(2-ethylhexyl) Phthalate (DEHP)	117-81-7	B2	97.0	407.0
171. »Difenzoquat	43222-48-6	D	9400.0	32900.0
172. Diflubenzuron	35367-38-5	ND	2300.0	8050.0
173. »Diisopropyl Methylphosphonate (DIMP)	1445-75-6	D	9400.0	32900.0
174. Dimethipin	55290-64-7	C	230.0	805.0
175. »Dimethoate	60-51-5	D	23.0	81.0
176. Dimethyl phthalate	131-11-3	D	1200000.0	4200000.0
177. Dimethyl sulfate	77-78-1	B2	0.04	0.17
178. Dimethyl terephthalate	120-61-6	NA	12000.0	42000.0
179. N-N-Dimethylaniline	121-69-7	NA	230.0	805.0
180. 1,2-Dimethylbenzene (Xylene-o)	95-47-6	ND	230000.0	805000.0
181. 1,3-Dimethylbenzene (Xylene-m)	108-38-3	ND	230000.0	805000.0
182. 1,4-Dimethylbenzene (Xylene-p)	106-42-3	ND	230000.0	805000.0
183. 3,3-Dimethylbenzidine	119-93-7	NA	0.15	0.53
184. N,n-dimethylformamide	68-12-2	ND	12000.0	42000.0

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185.	1,1-Dimethylhydrazine	57-14-7	NA	0.52	1.82
186.	2,4-Dimethylphenol	105-67-9	NA	2300.0	8050.0
187.	2,6-Dimethylphenol	576-26-1	ND	70.0	245.0
188.	3,4-Dimethylphenol	95-65-8	NA	120.0	420.0
189.	o-dinitrobenzene	528-29-0	D	47.0	165.0
190.	m-dinitrobenzene	99-65-0	D	12.0	42.0
191.	4,6-Dinitro-o-cyclohexyl phenol	131-89-5	NA	230.0	805.0
192.	»2,4-dinitrophenol	51-28-5	ND	230.0	805.0
193.	»2,4-dinitrotoluene	121-14-2	B2	2.0	8.0
194.	2,6-dinitrotoluene	606-20-2	ND	120.0	420.0
195.	»Dinoseb	88-85-7	D	120.0	420.0
196.	Diocetylphthalate	117-84-0	ND	2300.0	8050.0
197.	»1,4-dioxane	123-91-1	B2	120.0	504.0
198.	»Diphenamid	957-51-7	D	3500.0	12250.0
199.	Diphenylamine	122-39-4	NA	2900.0	10150.0
200.	»1,2-diphenylhydrazine	122-66-7	B2	1.7	7.1
201.	»Diquat dibromide	85-00-7	D	260.0	910.0
202.	Direct black 38	1937-37-7	NA	0.16	0.56
203.	Direct blue 6	2602-46-2	NA	0.17	0.60
204.	Direct brown 95	16071-86-6	NA	0.15	0.53
205.	»Disulfoton	298-04-4	E	4.7	16.5
206.	Dithiane	505-29-3	D	1200.0	4200.0
207.	»Diuron	330-54-1	D	230.0	805.0
208.	Dodine	2439-10-3	ND	470.0	1645.0
209.	»Dpx-m6316 (thifensulfuron met)	79277-27-3	ND	1500.0	5250.0
E					
210.	»Endosulfan	115-29-7	D	700.0	2450.0
211.	»Endosulfan i	959-988	D	5.8	20.3
212.	»Endothall	145-73-3	D	2300.0	8050.0
213.	»Endrin	72-20-8	D	35.0	123.0
214.	»Epichlorohydrin	106-89-8	B2	140.0	588.0
215.	»Ethephon	16672-87-0	D	580.0	2030.0
216.	»Epte (s-ethyl dipropylthiocar (EPTC))	759-94-4	D	2900.0	10150.0
217.	Ethion	563-12-2	ND	58.0	203.0
218.	2-Ethoxyethanol	110-80-5	NA	47000.0	164500.0
219.	Ethyl acetate	141-78-6	NA	110000.0	385000.0
220.	Ethyl acrylate	140-88-5	NA	28.0	98.0
221.	Ethyl ether	60-29-7	ND	23000.0	80500.0
222.	Ethyl methacrylate	97-63-2	NA	11000.0	38500.0
223.	Ethyl p-nitrophenyl phenylphosphorothioat	2104-64-5	NA	1.2	4.2
224.	»Ethylbenzene (ETB)	100-41-4	D	12000.0	42000.0
225.	Ethylene diamine	107-15-3	D	2300.0	8050.0
226.	»Ethylene dibromide (EDB)	106-93-4	B2	0.02	0.08
227.	»Ethylene glycol	107-21-1	D	230000.0	805000.0
228.	»Ethylene thiourea (ETU)	96-45-7	B2	12.0	50.0
229.	Ethylphthalyl ethylglycolate	84-72-0	NA	350000.0	1225000.0
230.	»N-ethyltoluene sulfonamide	26914-52-3	ND	290.0	1015.0
231.	Express	101200-48-0	NA	940.0	3290.0
F					
232.	»Fenamiphos	22224-92-6	D	29.0	102.0
233.	»Fenarimol	60168-88-9	E	7600.0	26600.0
234.	»Fenvalerate	51630-58-1	ND	2900.0	10150.0
235.	»Fluometuron	2164-17-2	D	1500.0	5250.0
236.	»Fluoranthene (PAH)	206-44-0	D	4700.0	16450.0
237.	»Fluorene (PAH)	86-73-7	D	4700.0	16450.0
238.	»Fluoride (F)	7782-41-4	D	7000.0	24500.0
239.	»Fluridone	59756-60-4	D	9400.0	32900.0
240.	Flurprimidol	56425-91-3	ND	2300.0	8050.0
241.	Flutolanil	66332-96-5	ND	7000.0	24500.0
242.	»Fluvalinate	69409-94-5	D	1200.0	4200.0
243.	Folpet	133-07-3	B2	390.0	1638.0
244.	Fomesafen	72178-02-0	C	7.2	25.2
245.	»Fonofos	944-22-9	D	230.0	805.0
246.	Formaldehyde	50-00-0	B1	23000.0	96600.0
247.	»Formetanate hydrochloride	23422-53-9	E	180.0	630.0
248.	Formic acid	64-18-6	ND	230000.0	805000.0

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249.	»Fosetyl-al	39148-24-8	C	35000.0	122500.0
250.	Furan	110-00-9	NA	120.0	420.0
251.	Furfural	98-01-1	NA	350.0	1225.0
252.	Furmecvclox	60568-05-0	B2	45.0	189.0
G					
253.	Glufosinate-ammonium	77182-82-2	NA	47.0	165.0
254.	Glycidaldehyde	765-34-4	B2	47.0	197.0
255.	»Glyphosate	1071-83-6	D	12000.0	42000.0
H					
256.	Haloxypop-methyl	69806-40-2	ND	5.8	20.3
257.	»Heptachlor	76-44-8	B2	0.3	1.3
258.	»Heptachlor epoxide	1024-57-3	B2	0.15	0.63
259.	Hexabromobenzene	87-82-1	NA	230.0	805.0
260.	»Hexachlorobenzene	118-74-1	B2	0.85	3.57
261.	»Hexachlorobutadiene	87-68-3	C	17.0	60.0
262.	»alpha-Hexachlorocyclohexane (alpha-HCH)	319-84-6	B2	0.22	0.92
263.	»beta-Hexachlorocyclohexane (beta-HCH)	319-85-7	C	0.76 **	3.19 **
264.	Technical-hexachlorocyclohexa	608-73-1	B2	0.76	3.19
265.	»Hexachlorocyclopentadiene (HCCPD)	77-47-4	D	820.0	2870.0
266.	Hexachlorodibenzo-p-dioxin, mixture	19408-74-3	B2	0.0002	0.0008
267.	»Hexachloroethane	67-72-1	C	97.0	340.0
268.	Hexachlorophene	70-30-4	NA	35.0	123.0
269.	»n-hexane	110-54-3	D	7000.0	24500.0
270.	»Hexazinone	51235-04-2	D	3900.0	13650.0
271.	Hiobencarb	28249-77-6	ND	1200.0	4200.0
272.	»HMX (octahydro-1,3,5,7-tetranitro-1,3,5,7-Tetrazocine)	2691-41-0	D	5800.0	20300.0
273.	Hydrazine	302-01-2	B2	0.45	1.89
274.	Hydrogen cyanide	74-90-8	ND	2300.0	8050.0
275.	Hydrogen sulfide	7783-06-4	NA	350.0	1225.0
276.	Hydroquinone	123-31-9	NA	4700.0	16450.0
I					
277.	»Imazalil	35554-44-0	D	1500.0	5250.0
278.	»Imazaquin	81335-37-7	D	29000.0	101500.0
279.	»Indenopyrene (PAH)	193-39-5	B2	1.1	4.6
280.	Iprodione	36734-19-7	ND	4700.0	16450.0
281.	Isobutyl alcohol	78-83-1	NA	35000.0	122500.0
282.	»Isophorone	78-59-1	C	1400.0	4900.0
283.	Isopropalin	33820-53-0	ND	1800.0	6300.0
284.	Isopropyl methyl phosphonic acid	1832-54-8	D	12000.0	42000.0
285.	Isoxaben	82558-50-7	C	5800.0	20300.0
L					
286.	Lactofen	77501-63-4	NA	230.0	805.0
287.	»Lead and compounds (inorganic) (Pb)	7439-92-1	B2	400.0 ##	1400.0 ##
288.	»Lindane (gamma-hexachlorocycl (gamma-HCH)	58-89-9	C	1.0	4.0
289.	»Linuron	330-55-2	C	23.0	81.0
290.	Londax	83055-99-6	NA	23000.0	80500.0
M					
291.	»Malathion	121-75-5	D	2300.0	8050.0
292.	Maleic anhydride	108-31-6	NA	12000.0	42000.0
293.	»Maleic hydrazide	123-33-1	D	58000.0	203000.0
294.	»Mancozeb	8018-01-7	ND	3500.0	12250.0
295.	»Maneb	12427-38-2	D	580.0	2030.0
296.	»Manganese (Mn)	7439-96-5	D	580.0	2030.0
297.	»MCPA (2-methyl-4-chlorophenox (MCPA)	94-74-6	D	58.0	203.0
298.	»Mepiquat chloride	24307-26-4	D	3500.0	12250.0
299.	»Mercury (inorganic) (Hg)	7439-97-6	D	35.0	123.0
300.	Merphos	150-50-5	NA	3.5	12.3
301.	Merphos oxide	78-48-8	NA	3.5	12.3
302.	»Metalaxyl	57837-19-1	D	7000.0	24500.0
303.	Methacrylonitrile	126-98-7	NA	12.0	42.0
304.	»Methamidophos	10265-92-6	D	5.8	20.3
305.	Methanol	67-56-1	ND	58000.0	203000.0
306.	Methidathion	950-37-8	C	120.0	420.0
307.	»Methiocarb	2032-65-7	E	150.0	525.0
308.	»Methomyl	16752-77-5	D	2900.0	10150.0

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309.	»Methoxychlor	72-43-5	D	580.0	2030.0
310.	2-Methoxyethanol	109-86-4	NA	120.0	420.0
311.	Methyl acetate	79-20-9	NA	12000.0	42000.0
312.	2-(2-Methyl-4-chlorophenoxy)propionic acid	93-65-2	NA	120.0	420.0
313.	4-(2-Methyl-4-chlorophenoxy)butyric acid	94-81-5	NA	1200.0	4200.0
314.	»Methyl ethyl ketone (MEK)	78-93-3	D	7000.0	24500.0
315.	Methyl isobutyl ketone	108-10-1	NA	9400.0	32900.0
316.	Methyl mercury	22967-92-6	C	12.0	42.0
317.	Methyl methacrylate	80-62-6	NA	9400.0	32900.0
318.	»Methyl parathion	298-00-0	D	29.0	102.0
319.	»Methyl tert butyl ether (MTBE)	1634-04-4	D	580.0	2030.0
320.	4,4'-Methylene dianiline	101-77-9	NA	5.4	18.9
321.	4,4'-Methylene bis(N,N'-dimethyl)aniline	101-61-1	B2	30.0	126.0
322.	2-Methylacetonitrile	75-86-5	NA	8200.0	28700.0
323.	2-Methylphenol (o-Cresol)	95-48-7	C	580.0	2030.0
324.	3-Methylphenol (m-Cresol)	108-39-4	C	580.0	2030.0
325.	4-methylphenol	106-44-5	C	580.0	2030.0
326.	»Metolachlor	51218-45-2	C	1800.0	6300.0
327.	»Metribuzin	21087-64-9	D	2900.0	10150.0
328.	»Metsulfuron-methyl	74223-64-6	D	2900.0	10150.0
329.	Mirex	2385-85-5	ND	0.76	2.66
330.	Molinate	2212-67-1	ND	230.0	805.0
331.	»Molybdenum	7439-98-7	D	580.0	2030.0
332.	Monochloramine	10599-90-3	D	1200.0	4200.0
333.	»Monocrotophos	6923-22-4	E	5.3	18.6
334.	Monomethylhydrazine	60-34-4	NA	1.2	4.2
335.	»Monuron	150-68-5	ND	82.0	287.0
336.	»Msma (monosodium methanearson	2163-80-6	A	840.0 ##	3528.0 ##
337.	»Myclobutanil	88671-89-0	ND	2900.0	10150.0
N					
338.	»Naled	300-76-5	D	230.0	805.0
339.	»Naphthalene (PAH)	91-20-3	D	4700.0	16450.0
340.	»Napropamide	15299-99-7	ND	1200.0	4200.0
341.	»Nickel, soluble salts (Ni)	7440-02-0	D	2300.0	8050.0
342.	»Nitrate (NO3)	14797-55-8	D	19000.0	66500.0
343.	»Nitrate/Nitrite (total)	NA	D	19000.0	66500.0
344.	Nitric oxide	10102-43-9	NA	1200.0	4200.0
345.	»Nitrite	14797-65-0	D	1200.0	4200.0
346.	2-Nitroaniline	88-74-4	NA	7.0	25.0
347.	»Nitrobenzene	98-95-3	D	58.0	203.0
348.	Nitrogen dioxide	10102-44-0	NA	12000.0	42000.0
349.	»Nitroguanidine	556-88-7	D	1200.0	4200.0
350.	N-Nitroso-di-n-butylamine	924-16-3	B2	0.25	1.05
351.	»n-Nitroso-di-n-propylamine	621-64-7	B2	0.19	0.80
352.	n-Nitroso-diethylamine	55-18-5	B2	0.009	0.038
353.	»n-Nitroso-dimethylamine	62-75-9	B2	0.03	0.13
354.	»n-Nitroso-diphenylamine	86-30-6	B2	280.0	1176.0
355.	N-Nitroso-N-ethylurea	759-73-9	B2	0.01	0.04
356.	N-Nitroso-N-methylethylamine	10595-95-6	B2	0.06	0.25
357.	N-Nitrosodiethanolamine	1116-54-7	B2	0.49	2.06
358.	»n-Nitrosopyrrolidine	930-55-2	B2	0.65	2.73
359.	»Norflurazon	27314-13-2	D	4700.0	16450.0
360.	NuStar	85509-19-9	NA	82.0	287.0
361.	Octabromodiphenyl ether	32536-52-0	D	350.0	1225.0
362.	Octamethylpyrophosphoramidate	152-16-9	NA	230.0	805.0
363.	»Oryzalin	19044-88-3	C	580.0	2030.0
364.	Oxadiazon	19666-30-9	NA	580.0	2030.0
365.	»Oxamyl	23135-22-0	E	2900.0	10150.0
366.	»Oxydemeton-methyl	301-12-2	D	58.0	203.0
367.	Oxyfluorfen	42874-03-3	ND	350.0	1225.0
P					
368.	Paclobutrazol	76738-62-0	NA	1500.0	5250.0
369.	»Paraquat	1910-42-5	C	53.0	186.0
370.	»Parathion	56-38-2	C	70.0	245.0
371.	»Pendimethalin	40487-42-1	D	4700.0	16450.0
372.	Pentabromodiphenyl ether	32534-81-9	D	230.0	805.0

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373. »Pentachlorobenzene	608-93-5	D	94.0	329.0
374. Pentachloronitrobenzene	82-68-8	NA	5.2	18.2
375. »Pentachlorophenol	87-86-5	B2	11.0	46.0
376. »Permethrin	52645-53-1	D	5800.0	20300.0
377. Phenmedipham	13684-63-4	NA	29000.0	101500.0
378. »Phenol	108-95-2	D	70000.0	245000.0
379. m-Phenylenediamine	108-45-2	NA	700.0	2450.0
380. Phenylmercuric acetate	62-38-4	ND	9.4	32.9
381. »Phorate	298-02-2	E	23.0	81.0
382. »Phosmet	732-11-6	D	2300.0	8050.0
383. »Phosphamidon	13171-21-6	D	20.0	70.0
384. Phosphine	7803-51-2	D	35.0	123.0
385. Phthalic anhydride	85-44-9	NA	230000.0	805000.0
386. »Picloram	1918-02-1	D	8200.0	28700.0
387. Pirimiphos-methyl	29232-93-7	ND	1200.0	4200.0
388. »Polychlorinated biphenyls (PCBs)	1336-36-3	B2	0.18	0.76
389. Polychlorinated biphenyl - ar	12674-11-2	ND	8.2	28.7
390. Potassium cyanide	151-50-8	NA	5800.0	20300.0
391. Potassium silver cyanide	506-61-6	ND	23000.0	80500.0
392. Prochloraz	67747-09-5	C	9.1	31.9
393. »Profenofos	41198-08-7	D	5.8	20.3
394. »Profluralin	26399-36-0	ND	700.0	2450.0
395. »Prometon	1610-18-0	D	1800.0	6300.0
396. »Prometryn	7287-19-6	D	470.0	1645.0
397. »Pronamide	23950-58-5	C	880.0	3080.0
398. »Propachlor	1918-16-7	D	1500.0	5250.0
399. Propanil	709-98-8	ND	580.0	2030.0
400. »Propargite	2312-35-8	ND	2300.0	8050.0
401. Propargyl alcohol	107-19-7	NA	230.0	805.0
402. »Propazine	139-40-2	C	230.0	805.0
403. »Propham	122-42-9	D	2300.0	8050.0
404. »Propiconazole	60207-90-1	D	1500.0	5250.0
405. »Propoxur	114-26-1	C	47.0	165.0
406. Propylene glycol	57-55-6	ND	2300000.0	8050000.0
407. Propylene glycol monoethyl ether	52125-53-8	ND	82000.0	287000.0
408. Propylene glycol monomethyl ether	107-98-2	NA	82000.0	287000.0
409. Propylene oxide	75-56-9	B2	5.7	23.9
410. Pursuit	81335-77-5	NA	29000.0	101500.0
411. »Pyrene (PAH)	129-00-0	D	3500.0	12250.0
412. Pyridine	110-86-1	NA	120.0	420.0
Q				
413. Quinalphos	13593-03-8	NA	58.0	203.0
414. Quinoline	91-22-5	NA	0.11	0.39
R				
415. »RDX (hexahydro-1,3,5-trinitro (RDX))	121-82-4	C	12.0	42.0
416. Resmethrin	10453-86-8	NA	3500.0	12250.0
417. Ronnel	299-84-3	NA	5800.0	20300.0
418. Rotenone	83-79-4	NA	470.0	1645.0
S				
419. Savey	78587-05-0	NA	2900.0	10150.0
420. Selenious acid	7783-00-8	D	580.0	2030.0
421. »Selenium and compounds (Se)	7782-49-2	D	580.0 ##	2030.0 ##
422. Selenourea	630-10-4	ND	580.0	2030.0
423. »Sethoxydim	74051-80-2	D	11000.0	38500.0
424. »Silver (Ag)	7440-22-4	D	580.0	2030.0
425. Silver cyanide	506-64-9	ND	12000.0	42000.0
426. »Simazine	122-34-9	C	11.0	39.0
427. Sodium azide	26628-22-8	ND	470.0	1645.0
428. Sodium cyanide	143-33-9	NA	4700.0	16450.0
429. Sodium diethyldithiocarbamate	148-18-5	NA	5.0	18.0
430. Sodium fluoroacetate	62-74-8	ND	2.3	8.0
431. »Strontium	7440-24-6	D	70000.0	245000.0
432. Strvchnine	57-24-9	ND	35.0	123.0
433. »Styrene	100-42-5	C	2300.0	8050.0
434. »Sulfate (SO4)	14808-79-8	D	6700000.0 ##	23450000.0 ##
435. »Sulprofos	35400-43-2	E	290.0	1015.0

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436.	»2,3,7,8-TCDD (TCDD)	1746-01-6	B2	0.000009	0.000038
437.	»Tebuthiuron	34014-18-1	D	8200.0	28700.0
438.	»Terbacil	5902-51-2	E	1500.0	5250.0
439.	»Terbufos	13071-79-9	D	2.9	10.2
440.	»Terbutryn	886-50-0	ND	120.0	420.0
441.	»1,2,4,5-Tetrachlorobenzene	95-94-3	D	35.0	123.0
442.	»1,1,1,2-Tetrachloroethane	630-20-6	C	52.0	182.0
443.	»1,1,1,2-Tetrachloroethane (TET)	79-34-5	C	6.8 **	28.6 **
444.	»Tetrachloroethylene (PCE)	127-18-4	B2	27.0	113.0
445.	2,3,4,6-tetrachlorophenol	58-90-2	ND	3500.0	12250.0
446.	Tetrachlorovinphos	961-11-5	NA	57.0	200.0
447.	»Tetraethyl lead	78-00-2	D	0.01	0.04
448.	Tetraethyldithiopyrophosphate	3689-24-5	ND	58.0	203.0
449.	Thallic oxide	1314-32-5	D	8.2	28.7
450.	»Thallium (Tl)	7440-28-0	ND	8.2	28.7
451.	Thallium acetate	563-68-8	D	11.0	39.0
452.	Thallium carbonate	6533-73-9	D	9.4	32.9
453.	Thallium chloride	7791-12-0	D	9.4	32.9
454.	Thallium nitrate	10102-45-1	D	11.0	39.0
455.	Thallium selenite	12039-52-0	D	11.0	39.0
456.	Thallium sulfate	7446-18-6	D	9.4	32.9
457.	Thiofanox	39196-18-4	NA	35.0	123.0
458.	»Thiophanate-methyl	23564-05-8	D	9400.0	32900.0
459.	Thiophenol	108-98-5	NA	1.2	4.2
460.	»Thiram	137-26-8	D	580.0	2030.0
461.	Tin (Sn)	NA	ND	70000.0	245000.0
462.	»Toluene (TOL)	108-88-3	D	23000.0	80500.0
463.	Total petroleum hydrocarbons (TPH)	NA	ND	7000.0 su	24500.0 su
464.	»Toxaphene	8001-35-2	B2	1.2	5.0
465.	Tralomethrin	66841-25-6	ND	880.0	3080.0
466.	»Triadimefon	43121-43-3	D	3500.0	12250.0
467.	Triallate	2303-17-5	ND	1500.0	5250.0
468.	Triasulfuron	82097-50-5	NA	1200.0	4200.0
469.	1,2,4-Tribromobenzene	615-54-3	ND	580.0	2030.0
470.	Tributyltin oxide	56-35-9	ND	3.5	12.3
471.	»Trichlorfon	52-68-6	C	150.0	525.0
472.	»1,2,4-Trichlorobenzene	120-82-1	D	1200.0	4200.0
473.	»1,1,1-Trichloroethane (TCA)	71-55-6	D	11000.0	38500.0
474.	»1,1,2-Trichloroethane (TCA2)	79-00-5	C	24.0	84.0
475.	»Trichloroethylene (TCE)	79-01-6	B2	120.0	504.0
476.	»Trichlorofluoromethane (TCFM)	75-69-4	D	35000.0	122500.0
477.	»2,4,5-Trichlorophenol	95-95-4	D	12000.0	42000.0
478.	»2,4,6-Trichlorophenol	88-06-2	B2	120.0	504.0
479.	»2,4,5-T (2,4,5-trichloropheno	93-76-5	D	1200.0	4200.0
480.	»2,4,5-TP (2 (2,4,5-TrichloroPhenoxy)	93-72-1	D	940.0	3290.0
Propionic acid					
481.	1,1,2-Trichloropropane	598-77-6	ND	580.0	2030.0
482.	»1,2,3-Trichloropropane	96-18-4	D	0.19	0.67
483.	»Trichlorotrifluoroethane (F113)	76-13-1	D	3500000.0	12250000.0
484.	»Triclopyr	55335-06-3	E	290.0	1015.0
485.	Tridiphane	58138-08-2	ND	350.0	1225.0
486.	»Trifluralin	1582-09-8	C	180.0	630.0
487.	»Triforine	26644-46-2	D	2900.0	10150.0
488.	1,3,5-Trinitrobenzene	99-35-4	NA	5.8	20.3
489.	»2,4,6-Trinitrotoluene (TNT)	118-96-7	C	45.0	158.0
U					
490.	»Uranium (U)	7440-61-1	A	350.0 xx	1225.0 xx
V					
491.	»Vanadium (V)	7440-62-2	D	820.0	2870.0
492.	Vanadium pentoxide	1314-62-1	NA	1100.0	3850.0
493.	»Vernolate	1929-77-7	ND	120.0	420.0
494.	»Vinclozolin	50471-44-8	D	2900.0	10150.0
495.	Vinyl acetate	108-05-4	NA	120000.0	420000.0
496.	»Vinyl chloride (VC)	75-01-4	A	0.72	3.02

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<u>W</u>			
497. Warfarin	81-81-2	NA	35.0 123.0
498. White phosphorus	7723-14-0	D	2.3 8.0
<u>X</u>			
499. »Xylenes (total) (XYL)	1330-20-7	D	230000.0 805000.0
<u>Z</u>			
500. »Zinc and compounds (Zn)	7440-66-6	D	35000.0 122500.0
501. Zinc cyanide	557-21-1	ND	5800.0 20300.0
502. Zinc phosphide	1314-84-7	NA	35.0 123.0
503. »Zineb	12122-67-7	D	5800.0 20300.0

» Chemicals requested by DEQ	** no RFD, HBGL based on Slope
TT Treatment Technology	xx no SLOPE FACTOR, based on RFD
NA Not Available	## HBGL not based on RFD or SLOPE FACTOR
ND Not Determined	(If Lead, based on EPA biokinetic
su Based on Surrogate Rfd)	

When recorded, mail to:

APPENDIX B

NOTICE OF VOLUNTARY ENVIRONMENTAL MITIGATION
USE RESTRICTION BY OWNER(S)

Pursuant to A.R.S. § 49-152(B), the owner(s) _____ of the following described property: _____ (Please Print)

(insert legal description of entire parcel)

has (have) remediated a portion of the above-described property, which remediated portion is described as follows:

(insert legal description of remediated portion, the source of the release, and the remaining contaminants)

The date when the remediation was completed is: _____

The undersigned owner voluntarily agrees to limit and restrict the use of the remediated portion of the property to non-residential uses, as defined in A.R.S. §49-151(A).

Approved:

(ADEQ official)

STATE OF ARIZONA
County of _____

This instrument was acknowledged before me this _____ day of _____, _____ by _____

Notary Public

My commission expires: _____

Signature of owner(s)

Signature of owner(s)

STATE OF ARIZONA
County of _____

This instrument was acknowledged before me this _____ day of _____, _____ by _____

Notary Public

My commission expires: _____

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When recorded, mail to:

APPENDIX C

CANCELLATION OF VOLUNTARY ENVIRONMENTAL MITIGATION USE RESTRICTION BY OWNER(S)

CANCELLATION OF VOLUNTARY ENVIRONMENTAL MITIGATION
USE RESTRICTION BY OWNER(S)

Pursuant to A.R.S. § 49-152(B), the owner(s) _____
of the following described property: _____ (Please Print)

(insert legal description of entire parcel)

recorded a Notice of Voluntary Mitigation Use Restriction By Owner(s) in the Office of the County Recorder of _____
County, Arizona, on the _____ day of _____ in Document/Docket _____ at Page _____
affecting the following portion of the above-described property:

(insert legal description of remediated portion)

The undersigned owner(s) has (have) remediated the above-described portion of the property pursuant to the levels prescribed in A.R.S. §49-152(C). Accordingly the above-described property may now be used for any lawful purpose. The date when the remediation was completed is:

Signature of owner(s)

Signature of owner(s)

Pursuant to A.R.S. § 49-152(C), the undersigned hereby cancel(s) the above-described notice and declare(s) said notice to be of no further force and effect as of this _____ day of _____

(ADEQ official)

STATE OF ARIZONA
County of _____

STATE OF ARIZONA
County of _____

This instrument was acknowledged before me this _____
day of _____

This instrument was acknowledged before me this _____
day of _____

by

by

Notary Public
My commission expires: _____

Notary Public
My commission expires: _____

APPENDIX D. SELLER'S DISCLOSURE

The seller's disclosure required by A.R.S. § 33-434.01 shall be sufficient if it is in substantially the following form of part V of the Arizona Department of Real Estate's "Seller's Property Disclosure Statement":

"Has any portion of the property been subject to soil remediation AND not cleaned up to residential use standards adopted by the Arizona Department of Environmental Quality?"

(Answers: Yes, No, Unknown)

NOTICE OF EMERGENCY RULEMAKING

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 8. DEPARTMENT OF ENVIRONMENTAL QUALITY WASTE MANAGEMENT

PREAMBLE

1. **Sections Affected**
Article 1
R18-8-101
- Rulemaking Action**
New Article
New Section
2. **The specific authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):**
Authorizing statutes: A.R.S. §§ 49-104(B)(4), 49-104(B)(16), 49-152, and Laws 1995, Ch. 232, § 5.
Implementing statutes: A.R.S. §§ 49-151, 49-152, and 49-282.
3. **The effective date of the rules:**
March 29, 1996
4. **Is this rulemaking a renewal of a previous emergency rulemaking?**
Notice of Public Information:
1 A.A.R. 1350, August 11, 1995
Notice of Rulemaking Docket Opening:
1 A.A.R. 1354, August 11, 1995
5. **The name and address of agency personnel with whom persons may communicate regarding the rule:**
Name: Kate Cross, Rule Development Specialist
OR
Martha L. Seaman, Section Manager
Address: Department of Environmental Quality
3033 North Central Avenue
Phoenix, Arizona 85012
Telephone: (602) 207-2222
Fax: (602) 207-2251
6. **An explanation of the rule, including the agency's reasons for initiating the rule:**
The adopted soil remediation rule sets forth, pursuant to A.R.S. §§ 49-151 and 49-152, Department-wide standards to be used in remediating sites where contaminated soil is located. The rule provides a systematic method for establishing a soil remediation level that protects human health and the environment. For further information, please see explanatory material for this rulemaking found under 18 A.A.C. 7 in this issue of the *Register*.
7. **A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:**
Not applicable.
8. **The summary of the economic, small business, and consumer impact:**
Not applicable.
9. **Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:**
Not applicable.
10. **Incorporations by reference and their location in the rules:**
None.
11. **An explanation of the situation justifying the rule's adoption as an emergency rule:**
Laws 1995, Ch. 232, requires promulgation of this soil's remediation rule on an emergency basis.
12. **The date of the Attorney General's approval of the emergency rule:**
March 22, 1996

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13. The full text of the rules follows:

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 8. DEPARTMENT OF ENVIRONMENTAL QUALITY
WASTE MANAGEMENT

ARTICLE 1. REMEDIAL ACTION REQUIREMENTS

Section

R18-8-101. Remedial Action Requirements; Level and Extent of Cleanup

ARTICLE 1. REMEDIAL ACTION REQUIREMENTS

R18-8-101. Remedial Action Requirements; Level and Extent of Cleanup

- A. This Article is applicable to Chapter 8 of this Title.
- B. In any instance where soil remediation is done under this Chapter, it shall be conducted in accordance with R18-7-201 through R18-7-209.