



GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES
DEPARTMENT OF PLANNING AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
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PUBLIC NOTICE

- I. NOTICE OF THE DEPARTMENT OF PLANNING AND NATURAL RESOURCES INTENT TO PROMULGATE RULES AND REGULATIONS FOR THE UNITED STATES VIRGIN ISLANDS PURSUANT TO THE BROWNFIELD REVITALIZATION AND ENVIRONMENTAL RESTORATION ACT OF 2008 FOR THE ESTABLISHMENT OF VOLUNTARY REMEDIATION PROGRAM.
- II. DATE OF NOTICE: **MONDAY, NOVEMBER 16, 2020**
- III. DESCRIPTION OF NOTICE

The Brownfield Revitalization and Environmental Restoration Act of 2008 was enacted to encourage the elimination of public health and environmental hazards on commercial and industrial property and to pave the way for redevelopment of these properties. The Voluntary Remediation Program Rules and Regulations are for the purpose of establishing remediation standards protective of human health and the environment which shall be used whenever site remediation is voluntarily conducted under the Virgin Islands Voluntary Remediation Program (VIVRP). The Rules and Regulations will also provide procedures pertaining to the eligibility, enrollment, reporting, public notice, and termination criteria for the program.

- IV. NOTICE OF PROPOSED PUBLIC HEARING

Hearing on the Brownfield Revitalization and Environmental Restoration Act of 2008 to establish Rules and Regulations for a Voluntary Remediation program shall be held at 6 p.m. for both districts on **THURSDAY, DECEMBER 17, 2020**.

In an effort to help to reduce the global spread of the coronavirus (COVID-19), this meeting will be held virtually via the Microsoft Teams collaboration platform.

**Meeting URL: <http://lnki.nl/grq2I>
There is no Meeting ID or Password.**

Or call in via phone (audio only)
Phone Number: 786-605-4468
Phone Conference ID: 735 984 600 #

All interested persons will be afforded an opportunity to be heard on proposed Rules and Regulations for the Brownfield Revitalization and Environmental Restoration Act of 2008.

V. AVAILABILITY OF THE PROPOSED REGULATIONS

The Draft Voluntary Remediation Program Rules and Regulations are available for viewing electronically at <https://dpr.vi.gov/home/public-notices/>

VI. REQUEST FOR PUBLIC COMMENT

To submit comments on the draft rules and regulations, please contact:

Dr. Clancia Pelle
DPNR-DEP
45 Mars Hill
Frederiksted, VI 00841
Email: clancia.pelle@dpr.vi.gov

Comments must be submitted to DPNR at the above-mentioned address either in writing or by email: clancia.pelle@dpr.vi.gov, on or before **5 p.m., January 18, 2021**.

VII. DPNR'S RESPONSE TO COMMENTS

DPNR will consider any comments made by the public. Within 15 days of the close of the public hearing period, the Department shall file the proposed rules with the appropriate government agency in accordance with 3 V.I.C. § 913.

**Proposal to
Promulgate Virgin Islands Brownfields Revitalization and
Environmental Restoration Act
Rules and Regulations
Title 12, Chapter 14, Subchapters 553, 555**



GOVERNMENT OF THE US VIRGIN ISLANDS
DEPARTMENT OF PLANNING AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION

PROPOSED RULES AND REGULATIONS

**VIRGIN ISLANDS VOLUNTARY REMEDIATION
PROGRAM**

12 V.I.R. & R §§ 553, 555

TABLE OF CONTENTS

Section	Section Name	Page
553-1	Definitions	2
553-2	Purpose, authority and compliance with other regulations	7
553-3	Program Eligibility	8
553-4	Application Contents	10
553-5	Registration Fees	11
553-6	Public Notice	12
553-7	Work to be performed	13
553-8	Review of Submittals	18
553-9	Remediation Levels	19
553-10	Termination	23
553-11	Demonstration of Public Notice	24
553-12	Certificate of Satisfactory Completion of Remediation	24
553-13	Reopeners	27
555-1	Immunity for Voluntary Disclosure	28
555-2	Commissioner Determination of Limited Liability	29
555-3	Comfort Letters	30

Section 553-1. **Definitions.**

All phrases defined in Title 12, Chapter 14 of the Virgin Islands Code shall have the same meaning when used in this chapter unless specifically stated otherwise in this chapter. The following words and terms when used in this chapter shall, unless the context clearly indicates otherwise, have the following meanings:

- (a) Act means the Brownfield Revitalization and Environmental Restoration Act of 2008, as codified in Title 12, Chapter 14 of the Virgin Islands Code.
- (b) Authorized Agent means any person who is authorized in writing to fulfill the requirements of the VIVRP on behalf of a property owner.
- (c) Background means those levels of oil and hazardous material that would exist in the absence of the disposal site of concern which are either:
 - 1. ubiquitous and consistently present in the environment at and in the vicinity of the contaminated-site; and attributable to geologic or ecological conditions, or atmospheric deposition of industrial process or engine emissions;
 - 2. attributable to coal ash or wood ash associated with fill material;
 - 3. releases to groundwater from a public water supply system; or petroleum residues that are incidental to the normal operation of motor vehicles.
- (d) Bedrock means the continuous solid rock that underlies gravel, soil or other surficial material, including any fractured zones within said rock.
- (e) Brownfield or Brownfield Site means real property, the expansion, redevelopment or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant.
- (f) Carcinogen means a chemical classification for the purpose of risk assessment as an agent that is known or suspected to cause cancer in humans, including but not limited to a known or likely human carcinogen or a probable or possible human carcinogen under an EPA weight-of-evidence classification system.
- (g) Certificate means a written certification of satisfactory completion of remediation issued by the Commissioner pursuant to Title 12, § 553(f) of the Virgin Islands Code.
- (h) Cleanup target level (CTL) means the concentration for each contaminant identified by an applicable analytical test method, in the medium of concern, at which a site remediation project is deemed complete.

- (i) Commissioner means the Commissioner of the Department of Planning and Natural Resources or his or her designee.
- (j) Completion means fulfillment of the commitment agreed to by the participant as part of this program.
- (k) Contaminant means any man-made or man-induced alteration of the chemical, physical or biological integrity of soils, sediments, air and surface water or groundwater including, but not limited to, such alterations caused by any hazardous substance (as defined in the Comprehensive Environmental Response, Compensation and Liability Act, 42 USC § 9601(14)), hazardous waste (as defined in 19 V.I.C. §1552(k)), solid waste (as defined in 19 V.I.C. §1551(hh)), petroleum (as defined in 12 V.I.C. 563(y)) or natural gas.
- (l) Contaminated or contamination means the presence of free product or any contaminant in surface water, groundwater, soil, sediment or upon the land, in concentrations that exceed the applicable CTLs or the Virgin Islands Water Quality Standards or in concentrations that may result in contaminated sediment.
- (m) Contaminated Sediment means sediment that is contaminated as determined by the concentrations of the contaminants, actual circumstances of exposure, biological diversity studies, toxicity testing, or other evidence of harmful effects, as applicable.
- (n) Contaminated Site means any contiguous land, sediment, surface water or groundwater area that contains contaminants that may be harmful to human health or the environment.
- (o) Cost of remediation means all costs incurred by the participant pursuant to activities necessary for completion of voluntary remediation at the site, based on an estimate of the net present value (NPV) of the combined costs of the site investigation, report development, remedial system installation, operation and maintenance, and all other costs associated with participating in the program and addressing the contaminants of concern at the site.
- (p) CTL means cleanup target levels.
- (q) Department means the Department of Planning and Natural Resources of the Government of the Virgin Islands or its successor agency.
- (r) Engineering controls means physical modification to a site or facility to reduce or eliminate potential for exposure to contaminants. These include, but are not limited to, stormwater conveyance systems, pump and treat systems, slurry walls, liner systems, caps, monitoring systems, and leachate collection systems.

- (s) Enterprise zone means an area specially designated as an enterprise zone under requirements determined by the Economic Development Authority.
- (t) Final administrative decision means an order or decision of the Department accepting or denying participation in the VIVRP which is not subject to further Department review under these regulations and which is subject to judicial review in an appropriate court, as authorized by law.
- (u) Free product means the presence of a non-aqueous phase liquid in the environment in excess of 0.01 foot thickness, measured at its thickest point.
- (v) Groundwater means water beneath the surface of the ground within a zone of saturation, whether or not flowing through known or definite channels.
- (w) Hazard index (HI) means the sum of more than one hazard quotient for multiple contaminants or multiple exposure pathways or both. The HI is calculated separately for chronic, subchronic, and shorter duration exposures.
- (x) Hazard quotient means the ratio of a single contaminant exposure level over a specified time period to a reference dose for that contaminant derived from a similar period.
- (y) Incremental upper-bound lifetime cancer risk level means a conservative estimate of the incremental probability of an individual developing cancer over a lifetime. Upper-bound lifetime cancer risk level is likely to overestimate "true risk."
- (z) Institutional controls mean legal or contractual restrictions on property use that remain effective after remediation is completed, and are used to reduce or eliminate the potential for exposure to contaminants. The term may include, but is not limited to, deed and water use restrictions.
- (aa) Land use controls means legal or physical restrictions on the use of, or access to, a site to reduce or eliminate potential for exposure to contaminants, or prevent activities that could interfere with the effectiveness of remediation. Land use controls, include but are not limited to engineering and institutional controls.
- (bb) Natural attenuation means a variable approach to site remediation that allow natural processes to contain the spread of contamination and reduce the concentrations of contamination in contaminated groundwater and soils. Natural attenuation processes may include: sorption, biodegradation, chemical reactions with subsurface materials, diffusion, dispersion and volatilization.
- (cc) Newspaper of general circulation means a newspaper published on at least a weekly basis and in English, but does not include a newspaper intended primarily for members of a particular professional or organizational group, a newspaper

whose primary function is to carry legal notices or a newspaper that is given away primarily to distribute advertising.

- (dd) Non-carcinogen means a chemical classification for the purposes of risk assessment as an agent for which there is either inadequate toxicological data or is not likely to be a carcinogen based on an EPA weight-of-evidence classification system.
- (ee) Operator means the person currently responsible for the overall operations at a site, or any person responsible for operations at a site at the time of, or following, the release.
- (ff) Open dump means the same as defined in 19 V.I.C. §1552(p).
- (gg) Owner means any person currently owning or holding legal or equitable title or possessory interest in a property, including the Government of the Virgin Islands, or an autonomous agency thereof, including title or control of a property conveyed due to bankruptcy, foreclosure, tax delinquency, abandonment, or similar means.
- (hh) Participant means a person who has received confirmation of eligibility and has remitted payment of the registration fee.
- (ii) Person means an individual, corporation, partnership, association, a governmental body or any other legal entity.
- (jj) Program means the Virgin Islands Voluntary Remediation Program.
- (kk) Property or real property means a parcel of land described by the boundaries, map or acreage in the deed.
- (ll) Reference dose means an estimate of a daily exposure level for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of deleterious effects during a lifetime.
- (mm) Registration fee means the fee paid to enroll in the VIVRP based on 1.0% of the total cost of remediation at a site, not to exceed the statutory maximum of \$5,000.00.
- (nn) Release means any spilling, misapplying, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing of any contaminant into the environment, but excludes
 - (a) emissions from the exhaust of an engine;
 - (b) release of source, byproduct, or special nuclear material from a nuclear incident, as those terms are defined in 42 U.S.C. § 2014, if such release is subject to

- requirements with respect to financial protection established by the Nuclear Regulatory Commission under 42 U.S.C. § 2210;
- (c) the normal application of fertilizer; and
- (d) the application of pesticides in a manner consistent with their labeling.
- (oo) Remediation means actions taken to cleanup, mitigate, correct, abate, minimize, eliminate, control and contain or prevent a release of a contaminant into the environment in order to protect human health and the environment, including actions to investigate, study or assess any actual or suspected release. Remediation may include, when appropriate and approved by the Department, land use controls.
- (pp) Remediation level means the concentration of a contaminant with applicable land use controls, that is protective of human health and the environment.
- (qq) Report means the Voluntary Remediation Report required by Section §553-7 of these regulations.
- (rr) Restricted use means any use other than residential.
- (ss) Risk means the probability of injury, disease, or death from exposure to a chemical agent or a mixture of chemicals. In quantitative terms, risk is expressed in values ranging from zero (representing the certainty that harm will not occur) to one (representing the certainty that harm will occur). The following are examples of how risk is expressed within IRIS: E-4 or 10^{-4} = a risk of 1/10,000; E-5 or 10^{-5} = 1/100,000; E-6 or 10^{-6} = 1/1,000,000. Similarly, 1.3 E-3 or 1.3×10^{-3} = a risk of 1.3/1,000=1/770; 8 E-3 or 8×10^{-3} = a risk of 1/125 and 1.2 E-5 or 1.2×10^{-5} = a risk of 1/83,000.
- (tt) Risk assessment means the process used to determine the risk posed by contaminants released into the environment. Elements include identification of the contaminants present in the environmental media, assessment of exposure and exposure pathways, assessment of the toxicity of the contaminants present at the site, characterization of human health risks, and characterization of the impacts or risks to the environment.
- (uu) Risk reduction means the lowering or elimination of the level of risk posed to human health or the environment through interim remedial action, remedial action or institutional and, if appropriate, engineering controls.
- (vv) Sediment means the unconsolidated solid matrix occurring immediately beneath any surface water body. The surface water body may present all or part of the time and may support a wetland environment or vegetation.

- (ww) SIA or special industrial area means 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.
- (xx) Site means any property or portion thereof, as agreed to and defined by the participant and the Department, which contains or may contain contaminants being addressed under the VIVRP.
- (yy) Soil means unconsolidated geologic material overlying bedrock, but not including sediment.
- (zz) Termination means the formal discontinuation of participation in the VIVRP without obtaining a certification of satisfactory completion.
- (aaa) Unrestricted use means the designation of acceptable future use for a site at which the remediation levels, based on either background or standard residential exposure factors, have been attained throughout the site in all media.
- (bbb) VIVRP means the Virgin Islands Voluntary Remediation Program or the Virgin Islands Brownfield Program.
- (ccc) Waters or waters of the Virgin Islands means waters as defined in 12 V.I.C. § 182(f).
- (ddd) Working Days means the five days of the week beginning on Monday and ending on Friday, excluding holidays that occur on a weekday.

Section 553-2. **Authority, Purpose and Compliance with other Regulations.**

- (a) Under the authority of the Brownfield Revitalization and Environmental Restoration Act of 2008, as codified in Title 12, Chapter 14 of the Virgin Islands Code, these rules and regulations are promulgated for establishing remediation standards which shall be used whenever site remediation is voluntarily conducted under the Virgin Islands Voluntary Remediation Program (VIVRP). These remediation standards have been developed to manage the risks to human health and the environment and are to be applied in a manner consistent with the current and reasonably expected future use of the property.
- (b) These rules and regulations shall be administered by the Department and shall govern the operations of the VIVRP as well as establish procedures for the program pertaining to the eligibility, enrollment, reporting, public notice, termination and criteria for the issuance of certificates of satisfactory completion.
- (c) Participation in the VIVRP does not relieve a participant from the obligation to comply with all applicable federal and territorial laws, rules and regulations related to investigation, remediation, permitting, design, performance or closure requirements for contaminated sites under those laws or regulations.

Section 553-3. **Program eligibility.**

(a) Any person that owns, operates, has a security interest in or enters into a contract for the purchase or use of an eligible site who desires to voluntarily remediate that site may apply to determine the eligibility of the site. Any person who is an authorized agent of such person may apply for eligibility upon providing proof of such authority. Each candidate site shall first meet the eligibility criteria as provided in this section prior to acceptance into the VIVRP.

(b) All sites that meet the definition of a Brownfield as defined in Section 553-1(e) are eligible for participation in the VIVRP provided:

(1) remediation of the site has not been clearly mandated by the United States Environmental Protection Agency, the Department or a court pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (42 USC § 9601 et seq.), the Resource Conservation and Recovery Act (42 USC § 6901 et seq.), the Virgin Islands Solid and Hazardous Waste Management Act (19 V.I.C. §1551 et seq.), the Virgin Islands Water Pollution Control Act (12 V.I.C. §181 et seq.), the Air Pollution Control Act (12 V.I.C. §201 et seq.), the Oil Spill Prevention and Pollution Control Act (12 V.I.C. §701 et seq.), or other applicable statutory or common law; or

(2) jurisdiction of the statutes listed in subsection (1) has been waived.

(c) A site on which an eligible party has completed remediation of a release prior to the promulgation of these rules and regulations is potentially eligible for the VIVRP if the actions to remediate the property have been documented in a way which is at least equivalent to the requirements for prospective remediation as outlined in these rules and regulations, and provided the site meets applicable remediation levels.

(d) Petroleum or oil releases not mandated for remediation under Title 12, Section 701 et seq. (the Oil Spill Prevention and Pollution Control Act) and Title 12, Section 651 et seq. (the Virgin Islands Underground Storage Tank Act) of the Virgin Islands Code may be eligible for participation in the program.

(e) Where an applicant raises a genuine issue based on documented evidence as to the applicability of regulatory programs in subsection (f) of this section, the site may be eligible for the VIVRP. Such evidence may include a demonstration that:

(1) It is not clear whether the release involved a waste material or a virgin material;

(2) It is not clear that the release occurred after the relevant regulations became effective; or

(3) It is not clear that the release occurred at a regulated unit.

(f) For the purposes of this section, remediation has been clearly mandated if any of the following conditions exist, unless jurisdiction for such mandate has been waived:

(1) Remediation of the release is the subject of a permit issued by the U.S. Environmental Protection Agency or the Department, a pending or existing closure plan, a pending or existing administrative order, a pending or existing court order, a pending or existing consent order, or the site is on the National Priorities List;

(2) The site at which the release occurred is subject to the Virgin Islands Solid and Hazardous Waste Management Act (19 V.I.C. §1551 et seq.), is a permitted facility, is applying for or should have applied for a permit, is under interim status or should have applied for interim status, or was previously under interim status, and is thereby subject to the requirements of the Virgin Islands Solid and Hazardous Waste Management Act;

(3) The site at which the release occurred constitutes an open dump or unpermitted solid waste management facility under Section 1552 of the Virgin Islands Solid and Hazardous Waste Management Act;

(4) The Commissioner determines that the release poses an imminent and substantial threat to human health or the environment; or

(5) Remediation of the release is otherwise the subject of a response action required by territorial or federal law or regulation.

(g) The Commissioner may determine that a site under subdivision (f)(3) of this section may participate in the program provided that such participation complies with the substantive requirements of the applicable regulations.

(h) A brownfield site that has been determined eligible to participate in the VIVRP that subsequently becomes subject to formal judicial or administrative enforcement action or corrective action shall have its eligibility revoked unless a waiver of jurisdiction is obtained.

(i) In determining whether jurisdiction under territorial environmental laws should be waived for the purpose of participation of a site in the VIVRP, the Commissioner shall consider the following factors:

(1) Whether the proposed brownfield site is currently idle or underutilized as a result of the contamination, and participation in the VIVRP will immediately, after cleanup or sooner, result in increased economic productivity at the site; and

(2) Whether the person is complying in good faith with the terms of an existing consent order or department-approved corrective action plan, or responding in good faith to an enforcement action; and

(3) Whether potential brownfield sites owned by the Virgin Islands government contain contamination for which a governmental entity is potentially responsible.

Section 553-4. **Application contents.**

(a) The application for participation in the VIVRP shall, at a minimum, contain the following:

- (1) A written notice of intent to participate in the program;
- (2) A statement of the applicant's eligibility to participate in the program (e.g., proof of ownership, security interest, etc.);
- (3) For authorized agents, a power of attorney or letter of authorization from an eligible party;
- (4) A legal description of the site;
- (5) The general operational history of the site;
- (6) A general description of information known to or ascertainable by the applicant pertaining to (i) the nature and extent of any contamination and (ii) past or present releases, both at the site and immediately contiguous to the site;
- (7) A discussion of the potential jurisdiction of other existing environmental regulatory programs, or documentation of a waiver thereof; and
- (8) A notarized certification by the applicant that to the best of his knowledge all the information as set forth in this subsection is true and accurate.

(b) Within 15 working days of the Department's receipt of an application, the Department shall review the application to verify that the application is complete. If the application is incomplete the applicant shall be notified of the deficiencies. If the applicant provides supplemental information, the review process repeats to determine if the application is complete. Once the application is deemed complete, the Department shall review the application to determine if the brownfield site meets the eligibility criteria set forth in Section 553-3 of these rules and regulations. The Department shall complete the eligibility review within 30 days of the date the application is deemed complete.

(c) If the Commissioner makes a tentative decision to reject the application, he shall notify the applicant in writing that the application has been tentatively rejected and shall provide an explanation of the reasons for the proposed rejection. Within 30 days of the applicant's receipt of the notice of rejection, the applicant may (i) submit additional information to correct the inadequacies of the rejected application or (ii) accept the rejection. The Department's tentative decision to reject an application will become a final administrative decision as defined in Section 553-1(t) upon receipt of an applicant's written

acceptance of the Department’s decision to reject an application, or in the event an applicant fails to respond within the 30 days specified in this subsection. If within 30 days an applicant submits additional information to correct the inadequacies of an application, the review process repeats in accordance with subsection (b) of this section.

Section 553-5. **Registration Fees.**

(a) In accordance with Title 12, § 553 of the Virgin Islands Code, the applicant shall submit a registration fee to defray the cost of the program. The fee shall be due upon receipt of a determination of eligibility.

(b) The registration fee shall be 1.0% of the estimated cost of the remediation at the brownfield site, not to exceed the statutory maximum of \$5,000.00. Payment shall be made payable to the Department of Planning and Natural Resources, and made at or mailed on St. Thomas to Cyril E. King Airport Terminal Building, Second Floor, St. Thomas, V.I. 00802, and, on St. Croix, to 45 Mars Hill, Frederiksted, St. Croix, Virgin Islands 00840.

(c) The Department shall determine the appropriate registration fee based upon an estimate of the anticipated total cost of remediation as provided by the participant. Remediation costs shall include, but not be limited to site investigation activities; report development; remedial system installation, operation and maintenance; and all other costs associated with participating in the program and addressing the contaminants of concern at the subject site. Departmental concurrence with an estimate of the cost of remediation does not constitute approval of the remedial approach discussed in the cost estimate.

(d) The participant may elect to remit the statutory maximum registration fee to the Department as an alternative to providing an estimate of the total cost of remediation at the time of eligibility verification.

(1) If the participant does not elect to submit the statutory maximum registration fee, the participant shall provide the Department with the actual total cost of the remediation prior to issuance of a certificate. The Department shall calculate any balance adjustments to be made to the initial registration fee. Any negative balance owed to the Department shall be paid by the participant prior to the issuance of a certificate. Any costs to be refunded shall be remitted by the Department with issuance of the certificate.

(2) If the participant elected to remit the statutory maximum registration fee, the Department shall refund any balance owed to the participant after receiving the actual total cost of remediation. If no remedial cost summary is provided to the Department within 60 days of the participant's receipt of the certificate, the participant will have waived the right to a refund.

Section 553-6. **Public Notice.**

(a) Prior to commencement of the site characterization, the participant shall at its own expense, provide public notice in a newspaper of general circulation in the district in which the property to be remediated is located. Notice shall also be provided to adjacent property owners within 500 feet radius of the property and shall include a description of the participant and its intent to conduct a site characterization for the purposes of developing remedial levels and for remediating the site under the VIVRP. The notice shall identify the site and include information detailing the suspected contamination on the site.

(b) Following site characterization and prior to remediation, public notice of intent to remediate under the background, CTL's or site-specific standards and under a special industrial area cleanup shall be initiated by the participant. Written notice to all adjacent property owners and publication of the notice in a newspaper of general circulation in the district in which the property to be remediated is located shall constitute notice under this subsection. The participant shall incur the cost for providing all notices. A comment period of at least 30 days must follow issuance of the notices pursuant to this section. The participant shall send all persons making comments a letter acknowledging receipt of comments.

The contents of each public notice shall include:

- (1) The name and address of the participant and the location of the proposed voluntary remediation;
- (2) A brief description of the remediation, the general nature of the release, and any proposed land use controls;
- (3) The address and telephone number of a specific person familiar with the remediation from whom information regarding the voluntary remediation may be obtained; and
- (4) A brief description of how to submit comments.

(c) For remediation proposing the use of a site-specific standard or, for remediation involving an SIA, in addition to the requirements in subsection (b) of this section, the Department of Property and Procurement of the Government of the Virgin Islands and the Office of the Governor shall also be provided written notice and a 30-day period in which the government may request to be involved in the development of the remediation and redevelopment plans for the site. The date of the notices to the government agencies shall initiate the 30-day government response period for purposes of this subsection.

(d) The participant shall be responsible for developing and implementing a public involvement plan for submission with the Voluntary Remediation Report if the following circumstances exist:

- (1) The remediation involves a site-specific standard or an SIA cleanup; and
 - (2) The government, through its official representatives, has requested, in writing, to be involved in the development of the remediation and redevelopment plans within the 30-day government response period identified in the notice.
- (e) 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.
- (f) The risk assessment component of the Voluntary Remediation Report (VRR) prepared under a site-specific remediation or SIA may not be submitted to the Department until after the initial 30-day public and government response periods have expired. For all other remediation, all components of the VRR may be submitted prior to the expiration of the notice period, except the demonstration of public notice.
- (g) Public notice shall be initiated by the participant following remediation at the participant's own costs. Notice shall include a description of the participant and the remediation conducted at the site. The notice shall identify all institutional and engineering controls utilized in the remediation.

Section 553-7. **Work to be performed.**

(a) Following the receipt of verification of eligibility and the initial public notice in accordance with Section 553-6(a), the participant shall submit to the Department the VRR. This report serves as the archive for all documentation pertaining to remedial activities at the site. Each component of the report shall be submitted by the participant to the Department separately in accordance with the schedule provided by the Department. As various components are received, they shall be reviewed and approved before being inserted into the report by the Brownfield Coordinator. The report shall consist of a site characterization, a risk assessment including an assessment of risk to surrounding properties (as appropriate), a remedial action work plan, a demonstration of completion, and documentation of public notice.

(1) **Site Characterization.** The site characterization shall contain a delineation of the nature and extent of releases of contamination to all media, including the vertical and horizontal extent of the contaminants. Data generated during the site characterization must be in such a form and substance as to aid in the selection of a remediation that is protective of human health and the environment. The Site

Characterization Report shall contain the following information on the contaminated site:

- (A) A list of specific objectives of the site characterization identifying all data collected to completely characterize the site, the release, the impacts of the release and the selection of a remedy;
- (B) All information previously reported as part of any notification requirement prescribed with respect to the site by law, rule, administrative order or permit, if applicable;
- (C) Documentation of any past incidents or releases, including fires, spills, explosions, etc.;
- (D) A list of past owners and operators of the site including their past uses of the property, a sequencing of property transfers and time periods of occupancy to the extent that this information is available;
- (E) All previously existing environmental information which characterizes the site;
- (F) A description of the current uses and zoning requirements of the site, including a brief statement on each active operation performed therewith, a description of the processes employed, a list of all waste generated, a list of all hazardous materials handled, and a statement summarizing any residential activity on the site;
- (G) A locus map showing the location of the site;
- (H) A site plan, drawn to scale, showing the locations of all buildings, activities and structures on the site including, but not limited to:
 - i. A North arrow;
 - ii. Wells;
 - iii. Underground injection control systems, septic tanks, underground storage tanks, piping and other underground structures;
 - iv. All waste management and disposal areas, active and/or historical; and
 - v. Property lines.
- (I) A general characterization of the property surrounding the area affected by the release including, but not limited to:
 - i. The location and distance to any surface water bodies within five hundred (500) feet radius of the site;

- ii. The location and distance to any environmentally sensitive areas within five hundred (500) feet radius of the site;
 - iii. The actual sources of potable water for all properties immediately abutting the site;
 - iv. The location and distance to all public water supplies which have been active within the previous two years and within one-mile of the site.
 - v. A determination as to whether the release impacts any off-site area utilized for residential or industrial/commercial property or both; and
 - vi. A determination of the underlying groundwater classification, if any.
- (J) Classifications, if available, or description of surface water and ground water at or surrounding the site which could be potentially impacted by the release of hazardous materials;
- (K) A description of the contamination resulting from the release including, but not limited to:
- i. Free liquids on the surface;
 - ii. Concentrations of hazardous substances which can be shown to present an actual or potential threat to human health, including, but not limited to, any concentrations of hazardous substances in excess of any of the remedial levels.
 - iii. A determination/opinion as to whether the release of hazardous material has the potential to adversely impact an environmentally sensitive area;
 - iv. Contamination of man-made structures;
 - v. Odors or stained soil;
 - vi. Stressed vegetation;
 - vii. The presence of excavated or stockpiled material and an estimate of its total volume;
 - viii. Environmental sampling locations, sampling procedures and copies of the results of any analytical testing undertaken at the site; and
 - ix. A list of hazardous substances at the site.
- (L) The concentration gradients for hazardous substances throughout the site for each media impacted by the release of hazardous substances;
- (M) The methodology and results of any investigation conducted to determine background concentrations for hazardous substances identified at the site;
- (N) A listing of and evaluation of the site-specific hydrogeological properties that could influence the migration of hazardous substances throughout and

away from the contaminated site, including, but not limited to, where appropriate:

- i. The depth to groundwater;
 - ii. The presence and effects of both the natural and man-made barriers to and conduits for contaminant migration;
 - iii. A characterization of the bedrock; and
 - iv. The groundwater contours, flow rates, and gradients throughout the contaminated-site.
-
- (O) A characterization of the topography and surface water and run-off flow patterns, including the flooding potential of the contaminated-site;
 - (P) The potential for the substances from the contaminated-site to volatilize and any and all potential impacts of the volatilization to structures within the contaminated site;
 - (Q) The potential for entrainment of hazardous substances from the contaminated-site by wind or erosion actions;
 - (R) Detailed protocols for all fate and transport models used in the site characterization;
 - (S) A complete list of all samples taken, the location of all samples, parameters tested for and analytical methods used during the site characterization;
 - (T) Construction plans and development procedures for all monitoring wells.
 - (U) Procedures for handling, storage and disposal of waste derived from and during the investigation.
 - (V) A quality assurance and quality control evaluation summary report for sample handling and analytical procedures, including, but not necessarily limited to chain-of-custody procedures and sample preservation techniques;
 - (W) Any other site-specific factor that the Department has a reason to believe is necessary to make an accurate decision as to the appropriate remedial action to be taken at the site;
 - (X) A certification by the person or an authorized representative of the person preparing the report certifying to the completeness and the accuracy of the information contained in the report to the best of the person's knowledge; and
 - (Y) A statement signed by the participant certifying that the report is a complete and accurate representation of the site and the release and contains all

known facts surrounding the release to the best of the participant's knowledge.

The Department may, as appropriate, require the sampling methodology (including constituents to be tested, the testing protocol and the sample locations) all be approved in advance in order to ensure that the data will be accepted. This data shall be the basis for the site risk assessment.

(2) Risk Assessment. The risk assessment shall contain an evaluation of the risks to human health and the environment posed by the release, a proposed set of remediation levels consistent with Section 553-9 of these rules and regulations that are protective of human health and the environment, and a recommended remediation to achieve the proposed objectives; or a demonstration that no action is necessary. The risk assessment must cover people who may ultimately use the property once development is complete and workers involved in on-site construction activities.

The risk assessment shall contain a minimum of two remedial alternatives other than the no action/natural attenuation alternative unless this requirement is waived by the Commissioner. It should be clear from the risk assessment which of these alternatives is most preferable. Cost effectiveness and permanency of the alternatives may be used to support the selection of the preferred alternative.

All alternatives must be supported by relevant data contained in the Site Characterization Report and consistent with the current and reasonably foreseeable land usage and documentation of the following:

- (A) Compliance with Section 553-9 of these rules and regulations;
- (B) Technical feasibility of the preferred remedial alternative;
- (C) Compliance with local and federal laws and regulations or other public concerns; and
- (D) The ability of the participant to perform the preferred remedial alternative.

(3) Remedial Action Work Plan. The remedial action work plan shall propose the activities, schedule, any permits required to initiate and complete the remediation and specific design plans for implementing remediation that will achieve the remediation levels specified in the risk assessment. The work plan must also include the design standards and technical specifications necessary for the design of the proposed remedial action. Control or elimination of continuing on-site source or sources of releases to the environment shall be discussed. Land use controls should be discussed as appropriate. The site plan submitted as part of the site characterization must be updated to include any further information

available to the participant and a proposal of all remedial units and monitoring points. The points of compliance must also be marked on the site plan. The points of compliance shall be the location for each impacted medium where hazardous substances will be measured throughout the site.

(4) Demonstration of completion.

(A) The demonstration of completion should, when applicable, include a detailed summary of the performance of the remediation implemented at the site, the total cost of the remediation, and confirmational sampling results demonstrating that the established site-specific remedial objectives have been achieved, or that other criteria for completion of remediation have been satisfied. If the participant elected to remit the statutory maximum registration fee and is not seeking a refund of any portion of the registration fee, the total cost of remediation need not be provided.

(B) As part of the demonstration of completion, the participant shall certify compliance with applicable regulations pertaining to activities performed at the site pursuant to this chapter.

(5) Documentation of Public Notice. The participant shall provide documentation that public notice and notice to the government have been provided in accordance with Section 553-6. Such documentation shall comply with Section 553-11 of these regulations.

(b) It is the participant's responsibility to ensure that the investigation and remediation activities (e.g., waste management and disposal, erosion and sedimentation controls, air emission controls, and activities that impact wetlands and other sensitive ecological habitats) comply with all applicable regulations and any appropriate regulations that are not required by territorial or federal law but are necessary to ensure that the activities do not result in a further release of contaminants to the environment and are protective of human health and the environment.

(c) All work shall be performed in accordance with Test Methods for Evaluating Solid Waste, USEPA SW-846, revised April 1998, or other methods approved by the Department. The U.S. Environmental Protection Agency has issued its own guidance in *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments*. This guidance shall be used to the extent it is applicable to the remediation.

(d) The Commissioner may require contractors or other persons who are performing the majority of site remediation tasks or supervising the performance of such tasks enter a certification program as establish by the Department, if applicable, and meet all certification and licensing requirements imposed by law.

Section 553-8. Department review of submittals.

(a) Upon receipt of submittals, the Department shall within fifteen (15) days establish timeframes for review of technical reports and plans and communicate such to the participant. The Department shall make every effort to adhere to established agency goals for reasonable timeframes for review of such documents. The Department may request additional information, including sampling data of the site or areas adjacent to the site to verify the extent of the release, in order to render a decision and move the participant towards expeditious issuance of the certificate. The Department shall immediately notify the participant once it determines that additional information is needed.

(b) The Commissioner may expedite, as appropriate, issuance of any permits required to initiate and complete a voluntary remediation. The Commissioner shall, within 60 days of a complete submittal make a determination whether to expedite issuance of such permits in accordance with applicable regulations.

(c) After receiving a complete report, the Commissioner shall make a determination regarding the issuance of the certificate to the participant. The determination shall be discretionary and shall constitute a final administrative decision as defined in Section 553-1(t).

Section 553-9. **Remediation levels.**

(a) The participant, with the concurrence of the Department, shall consider impacts to human health and the environment in establishing remediation levels.

(b) Remediation levels shall be based upon a risk assessment of the site and surrounding areas that may be impacted, reflecting the current and future use scenarios.

(1) A site shall be deemed to have met the requirements for unrestricted use if the remediation levels, based on either background or standard residential exposure factors, have been attained throughout the site and in all media. Attainment of these levels will allow the site to be given an unrestricted use classification. No remediation techniques or land use controls that require ongoing management may be employed to achieve this classification.

(2) For sites that do not achieve the unrestricted use classification, land use controls shall be applied. The restrictions imposed upon a site may be media-specific, may vary according to site-specific conditions, and may be applied to limit present and future use. All controls necessary to attain the restricted use classification shall be described in the certificate as provided in Section 553-12(b). Land use controls approved by the Department for use at the site are considered remediation.

(c) Remediation levels shall be developed after appropriate site characterization data have been gathered as provided in Section 553-7(a). Remediation levels may be derived from the three-tiered approach provided in this subsection. Any tier or combination of tiers

may be applied to establish remediation levels for contaminants present at a given site, with consideration of land use controls specified in subsection (b) of this section.

(1) Under Tier I the participant shall collect appropriate samples from background and from the area of contamination for all media of concern.

(A) Background levels shall be determined from a portion of the property or a nearby property that has not been impacted by the contaminants of concern. Samples shall be collected from areas that have the same characteristics as the soil at the site, and meet the definition of background.

(B) The participant shall compare concentrations from the area of contamination against background concentrations. If the concentrations from the area of contamination exceed established background levels, the participant may consider Tier II or Tier III methodologies, as applicable. If concentrations are at or below background levels, no further assessment is necessary.

(C) In order to evaluate or justify available data for the purposes of defining background concentrations, a participant shall use a statistical method which is appropriate for the distribution of each hazardous substance and such method shall utilize a minimum of twenty samples. If the distribution of the hazardous substance is inappropriate for statistical methods based on a normal distribution, then the data may be transformed. If the distributions of the individual hazardous substances differ, more than one statistical method may be required at a contaminated-site.

(D) For purposes of estimating background concentrations, values below the method detection limit shall be assigned a value equal to one-half of the method detection limit. Measurement above the method detection limit but below the practical quantitation limit shall be assigned a value equal to the method detection limit. The Department may approve the use of alternate statistical procedures for handling data below the method detection limit or practical quantitation limit.

(2) Tier II generic remediation levels are media-specific values, derived using unrestricted use default assumptions. Use of Tier II shall be limited to the following:

(A) Tier II generic groundwater remediation levels shall be based on (i) federal Maximum Contaminant Levels (MCLs) or action levels for lead and copper as established by the Safe Drinking Water Act (42 USC § 300 (f)) and the National Primary Drinking Water Regulations (40 CFR Part 141) or, in the absence of a MCL, (ii) tap water values provided in a federally approved risk-based concentration table current at the time of

the assessment. For contaminants that do not have values available under clauses (i) or (ii) above, a remediation level shall be calculated using criteria set forth under Tier III remediation levels.

(B) Soil cleanup target levels shall insure that migration of contaminants shall not cause the soil cleanup target levels established for groundwater and surface water to be exceeded. Soil cleanup target levels shall be determined as the lower of either the ingestion or cross-media transfer values, according to the following:

(i) For direct exposure, values provided in the Soil Cleanup Target Levels listed in the attached Table and included in these rules and regulations.

(I) For carcinogens, the soil ingestion concentration for each contaminant, reflecting an individual upper-bound lifetime cancer risk of 1×10^{-6} .

(II) For noncarcinogens, 1/10 (i.e., Hazard Quotient = 0.1) of the soil ingestion concentration, to account for multiple systemic toxicants at the site. For sites where there are fewer than 10 contaminants exceeding 1/10 of the soil ingestion concentration, the soil ingestion concentration may be divided by the number of contaminants such that the resulting hazard index does not exceed one.

(ii) For leachability, values derived from the Soil Cleanup Target Levels listed in the attached Table (USEPA Soil Screening Guidance (OSWER, July 1996, Document 9355.4-23, EPA/540/R-96/018) and the Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites for transfer to air values)) as follows:

(I) The Soil Cleanup Target Level for transfer to groundwater, with adjustment to a hazard quotient of 0.1 for non-carcinogens, if the value is not based on a MCL; or

(II) The Soil Cleanup Target Level for transfer to air, with adjustment to a hazard quotient of 0.1 for noncarcinogens, using default residential exposure assumptions.

(iii) For noncarcinogens, for sites where there are fewer than 10 contaminants exceeding 1/10 of the Soil Cleanup Target Level, the Soil Cleanup Target Level may be divided by the number of contaminants such that the resulting hazard index does not exceed one.

(iv) Values derived under Section 553-9(c)(2)(B)(i) and (ii) may be adjusted to allow for updates in approved toxicity factors as necessary.

(C) At sites where ecological receptors (e.g. fish, birds, plants) are of concern and there are complete exposure pathways, the participant shall perform a screening level ecological evaluation to show that remediation levels developed under Tier II are also protective of ecological receptors of concern. The Ecological Risk Assessment must be performed in accordance with EPA/630/R-92/001, February 1992 Framework for Ecological Risk Assessment, or functional equivalent. If the remediation levels are not protective of ecological receptors of concern, the participant shall provide an Ecological Risk Assessment Report which proposes remedial objectives demonstrated to mitigate any risks to the impacted media.

(D) For unrestricted future use, where a contaminant of concern exists for which surface water quality standards (WQS) have been adopted by the Department for a specific use, the participant shall demonstrate that concentrations in other media will not result in concentrations that exceed the WQS in adjacent surface water bodies.

(3) Tier III remediation levels are based upon a site-specific risk assessment considering site-specific assumptions about current and potential exposure scenarios for the population or populations of concern, including ecological receptors, and characteristics of the affected media.

(A) In developing Tier III remediation levels, and unless the participant proposes other guidance that is acceptable to the Department, the participant shall use, for all media and exposure routes, the methodology specified in Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A) and (Part B), Development of Preliminary Remediation Goals) Interim, USEPA, December 1991 (Publication 9285.7-01B) with modifications as appropriate to allow for site-specific conditions. The participant may use other methodologies only if pre-approved by the Department.

(B) For a site with carcinogenic contaminants, the remediation goal for individual carcinogenic contaminants shall be an incremental upper-bound lifetime cancer risk of 1×10^{-6} . The remediation levels for the site shall not result in an incremental upper-bound lifetime cancer risk exceeding 1×10^{-4} considering multiple contaminants and multiple exposure pathways, unless the use of a MCL for groundwater that has been promulgated under 42 USC § 300g-1 of the Safe Drinking Water Act and the National Primary Drinking Water Regulations (40 CFR Part 141) results in a cumulative risk greater than 1×10^{-4} .

(C) For noncarcinogens, the hazard index shall not exceed a combined value of 1.0.

(D) In setting remediation levels, the Department may consider risk assessment methodologies approved by another regulatory agency and current at the time of the site characterization.

(E) In reviewing the remediation levels proposed under Tier III, the Commissioner may evaluate the following factors:

- i. The potential for any remaining hazardous substances to pose a significant threat to human health or the environment;
- ii. Correct application of the approved methodology;
- iii. The management of risk relative to any remaining contamination;
- iv. Background levels for the applicable hazardous substances; and
- v. Circumstances related to the practicality of remediation.

(F) Groundwater cleanup levels shall be based on the most beneficial use of the groundwater. The most beneficial use of the groundwater is for a potable water source, unless demonstrated otherwise by the participant and approved by the Department.

(G) For sites where a screening level ecological evaluation has shown that there is a potential for ecological risks, the participant shall perform an ecological risk assessment to show that remediation levels developed under Tier III are also protective of ecological receptors of concern. If the Tier III remediation levels developed for human health are not protective of ecological receptors of concern, the remediation levels shall be adjusted accordingly.

(4) For purposes of sub-sections (C)(2) and (3) above, the Department may allow concentrations of contaminants to temporarily exceed the applicable cleanup target levels while remediation, including through natural attenuation processes in conjunction with appropriate monitoring, is proceeding, if human health, public safety and the environment are protected.

Section 553-10. **Termination.**

- (a) Participation in the program shall be terminated:

- (1) When the Commissioner concurs with all work submitted, in accordance with Section 553-8 of these rules and regulations, and the participant demonstrates it has satisfactorily attained the remediation levels proposed and has met the public notification requirements of Section 553-6.

- (2) When evaluation of new information obtained during participation in the program results in a determination by the Commissioner that the site is ineligible or that a participant has taken an action to render the site ineligible for participation in the program. If such a determination is made, the Commissioner shall notify the participant that participation has been terminated and provide an explanation of the reasons for the determination. Within 30 days, the participant may submit additional information, or accept the Commissioner's determination.

- (3) Upon 30 days written notice of termination by the participant.

- (4) When a site has become inactive for a period of more than 12 months.

- (b) The Department shall be entitled to receive and use, upon request, copies of any and all information developed by or on behalf of the participant as a result of work performed pursuant to participation in the program, after application has been made to the program whether the program is satisfactorily completed or terminated.

- (c) No portion of the registration fee will be refunded if participation is terminated by the participant as described in this section.

Section 553-11. **Demonstration of Public Notice .**

- (a) In addition to providing proof of publication of public notices required in Section 553-6, the participant shall provide the Department with a signed statement that he has sent a written notice to all adjacent property owners within 500 feet radius of the site, a copy of the notice, and a list of all names and addresses to whom the notice was sent.

- (b) The participant shall provide the Department with copies of all written comments received during the public comment period, copies of acknowledgement letters, a discussion of how those comments were considered, a copy of any response to comments, and a discussion of their impact on the proposed or completed remediation. The participant must also provide copies of any notices sent to government agencies and any responses.

Section 553-12. **Certification of satisfactory completion of remediation.**

- (a) The Commissioner shall issue a certification of satisfactory completion of remediation when:

- (1) The participant has demonstrated that migration of contamination has been stabilized;
 - (2) The participant has demonstrated that the site has met remediation levels and will continue to meet remediation levels in the future for both on-site and off-site receptors; and
 - (3) The Department concurs with all work submitted, as set forth in Section 553-8.
- (b) The Department shall provide a form for completion by the participants which shall request the following information:
- (1) The name of the owner of the site;
 - (2) The legal description of the site. (Deeds for all impacted parcels shall be included as an attachment);
 - (3) A description of any land use controls. (An environmental covenant memorializing the land use controls must be attached to the certificate and recorded in accordance with these regulations.);
 - (4) An explanation of each land use control, if applicable;
 - (5) The signature of the property owner, certifying to the truth and accuracy of the information contained in the form; and
 - (6) A listing of all other persons with a property interest in the site and any other encumbrances that are affected by the land use controls. (An encumbrance may include, but not be limited to a mortgage, lease, site access, site use, right-of-way easement or utility easement.)
- (c) The issuance of the certificate shall constitute immunity to an enforcement action under the Virgin Islands Solid and Hazardous Waste Management Act (Title 19, §1551 et seq. of the Virgin Islands Code), the Virgin Islands Water Pollution Control Act (Title 12 §181 et seq. of the Virgin Islands Code), the Virgin Islands Air Pollution Control Act (Title 12, § 201 et seq. of the Virgin Islands Code), the Virgin Islands Underground Storage Tank Act (Title 12, §652 et seq. of the Virgin Islands Code) or other applicable Virgin Islands law.
- (d) If a land use control is specified in the certificate, the participant shall prepare and execute an environmental covenant pursuant to the Uniform Covenants Act of 2006, Title 28, Chapter 18, Section 381 establishing the Commissioner as the holder of such environmental covenant. The environmental covenant must be signed by any person with a property interest or an encumbrance that is affected by the land use control. The environmental covenant shall be promptly recorded by the participant in the Office of the

Recorder of Deeds in the district where the site is located. The participant may also record the certificate itself. If the certificate does not include any land use controls, recordation of the certificate is at the option of the participant. The immunity accorded by the certification shall apply to the participant and shall run with the land identified as the site.

- (e) An environmental covenant prepared in accordance with this section must:
 - (1) State that the instrument is an environmental covenant executed pursuant to title 28 Virgin Islands Code, chapter 18;
 - (2) Contain a legally sufficient description of the real property subject to the covenant;
 - (3) Describe the activity and land use controls on the real property;
 - (4) Identify the holder as the Commissioner and his successors and assigns;
 - (5) Be signed by the Commissioner, and unless waived by the Department, every owner of the fee simple of the real property subject to the covenant;
 - (6) Identify the name and location of the administrative record kept by the brownfield coordinator for the project.
 - (7) Provide requirements for notice following transfer of a specified interest in, or concerning proposed changes in use of, applications for building permits for, or proposals for any site work affecting the contamination on, the property subject to the covenant;
 - (8) Provide requirements for periodic reporting describing compliance with the covenant;
 - (9) Contain rights of access to the property granted in connection with implementation or enforcement of the covenant;
 - (10) Contain a brief narrative description of the contamination and remedy, including the contaminants of concern, the pathways of exposure, limits on exposure, and the location and extent of the contamination;
 - (11) Contain a listing of any person with a property interest or encumbrance affected by the land use restriction. (The Department may require a 50 year title search be provided by the participant.);
 - (12) Provide that, immediately upon recording, copies of the environmental covenant be made available to adjacent landowners within 500 feet radius that are affected by the land use controls, governmental agencies such as the Department of Health, the Department of Planning and Natural Resources Division of Building Permits, and any other agency deemed appropriate by the Brownfield Coordinator;
 - (13) Include any restriction or limitation on amendment or termination of the covenant in addition to those prescribed by the Uniform Environmental Covenants Act of 2006; and

(14) Provide for rights of the holder in addition to its right to enforce the covenant, i.e. right to enforce reopener provisions of the certificate.

(f) In addition to other conditions of its approval, the Department may condition approval of an environmental covenant on the signing of the covenant by those persons whose interests in the real property the Department deems may be affected by the covenant.

(g) The immunity granted by issuance of the certificate shall be limited to site conditions at the time of issuance as those conditions are described in the Voluntary Remediation Report. The immunity is further conditioned upon satisfactory performance by the participant of all obligations required by the Department under the VIVRP and upon the veracity, accuracy, and completeness of the information submitted to the Department by the participant relating to the site. Specific limitations of the certificate shall be enumerated in the certificate. The immunity granted by the certificate shall be dependent upon the identification of the nature and extent of contamination as presented in the report.

(h) The certificate shall specify the conditions for which immunity is being accorded, including, but not limited to:

- (1) A summary of the information that was considered;
- (2) Any restrictions on future use;
- (3) Any local land use controls on surrounding properties that were taken into account; and
- (4) Any required land use controls including:
 - (A) Engineering controls and their maintenance; and
 - (B) Institutional controls.

(i) The certificate may be revoked by the Commissioner at any time in the event that conditions at the site, unknown at the time of issuance of the certificate, pose a risk to human health or the environment or in the event that the certificate was based on information that was false, inaccurate, or misleading. Any and all claims may be pursued by the Department for liability for failure to meet a requirement of the program, criminal liability, or liability arising from future activities at the site that may cause contamination by pollutants.

(j) The certificate is not and shall not be interpreted to be a permit or a modification of an existing permit or administrative order issued pursuant to Virgin Islands law, nor shall it in any way relieve the participant of its obligation to comply with any other federal or territorial law, regulation or administrative order. Any new permit or administrative order, or modification of an existing permit or administrative order, must be accomplished in accordance with applicable federal and territorial laws and regulations.

Section 553-13. **Reopeners.**

(a) Upon completion of site remediation in compliance with Section 553-9, no additional remediation shall be required unless it is demonstrated:

(1) That fraud was committed in demonstrating site conditions or completion of site remediation;

(2) That new information confirms the existence of an area of previously unknown contamination which exceeds the site-specific remediation levels established in accordance with Section 553-9(c)(3), or which otherwise poses the threat of real and substantial harm to public health, safety, or the environment in violation of the terms of the Act or these regulations.

(3) That the remediation efforts failed to achieve the site remediation criteria established under Section 553-9.

(4) That the level of risk is increased beyond the acceptable risk established under Section 553-9 due to substantial changes in exposure conditions, such as a change in land use from nonresidential to residential use. Any person who changes the land use of the site thus causing the level of risk to increase beyond the acceptable risk level may be required by the Department to undertake additional remediation measures to assure that human health, public safety, and the environment are protected to levels consistent with Section 553-9; or

(5) That a new release occurs at the site subsequent to receipt of a certificate of satisfactory completion.

Section 555-1. **Immunity for Voluntary Disclosure.**

(a) Any person making a voluntary disclosure to the Department regarding a violation of a territorial environmental statute, regulation, permit or administrative order at a site or providing related information regarding potential or known contamination at that site shall be accorded immunity from civil or administrative liability under such statute, regulation, permit or administrative order.

(b) A disclosure is voluntary if:

(1) The disclosure is not otherwise required by law, regulation, permit or administrative order, and

(2) The person making the disclosure adopts a plan to market for redevelopment or otherwise ensures timely remediation of the site, which shall include, but is not limited to:

(A) A Phase I or similar study to help prospective purchasers understand the existing environmental conditions on the site; and

(B) Inclusion of the site on the Virgin Islands Brownfield Listing; and

(C) If necessary, a demonstration that the person making the disclosure has taken reasonable steps to stop any continuing release, prevent any threatened future release and prevent or limit human, environmental or natural resource exposure to any previously released hazardous substance.

(c) The Department shall not grant and may revoke immunity under this section if it finds that the person making the disclosure has acted in bad faith.

Section 555-2. **Commissioner Determination of Limited Liability.**

(a) The following persons may qualify pursuant to 12 V.I.C. § 555(b) to receive a determination of limited liability from the Department.

1. lenders;
2. innocent purchasers or landowners,
3. de minimis contributors; and
4. other persons who have grounds to claim limited responsibility for containment or cleanup under the Solid and Hazardous Waste Management Act, the Water Pollution Control Act, the Air Pollution Control Act, the Underground Storage Tank Act or any other applicable law.

(b) Persons requesting a Commissioner Determination of Liability shall first determine if they qualify for limited liability pursuant to the requirements set forth in 12 V.I.C. §555. Such persons shall apply for a determination using forms provided by the Department that shall request, at a minimum, information about the site and any perceived or actual contamination. When the Commissioner receives such completed application, he shall promptly thereafter provide the applicant with a written determination of liability or a refusal letter.

(c) In granting limited liability for innocent purchasers and landowners, the Commissioner shall consider the criteria set forth in §555(b) and (c) of the Act, along with Environmental Protection Agency guidance documents for interpreting liability relief provisions under the Small Business Liability Relief and Brownfield Revitalization Act enacted in 2002.

(d) In granting limited liability for lenders, the Commissioner shall consider, among other things, the following:

1. Policy on Interpreting CERCLA provisions addressing Lenders and Involuntary Acquisitions by Government Entities (6/30/97) and any updates or amendment thereto.
 2. Asset Conservation, Lender Liability and Deposit Insurance Protection Act of 1996.
 3. Underground Storage Tanks Lender Liability Rule.
- (e) Regarding de minimis contributor and other persons who have grounds to claim limited responsibility for containment or cleanup the Commissioner should consider factors similar to that found in §555(b), (c) and (d) of the Act.
- (f) The determination of liability letter protects the buyer from being held legally accountable for the contamination but does require the applicant to exercise due care to protect human health and the environment in the future.

Section 555-3. **Comfort Letters.**

- (a) The Commissioner may issue comfort letters in lieu of a determination of liability to lenders, buyers and owners in order to facilitate the purchase and sale of a brownfield property. A comfort letter may only be issued in situations where it will facilitate the cleanup and redevelopment of brownfields and where there is the realistic probability of liability under a territorial environmental statute. A letter may state:
1. The Department had no previous interest in pursuing an enforcement action on the site; or
 2. The Department has no current interest in pursuing enforcement on the site; or
 3. The Department currently is interested in pursuing enforcement on the site; or
 4. The site complies with the program's requirements, is clean enough for the intended use, and that no future enforcement action is expected unless conditions or uses of the site change; or
 5. The Department has initiated enforcement action on the site.
- (b) A comfort letter is only issued within the discretion of the Commissioner. It does not provide any legally enforceable rights or relief from liability.

ATTACHMENT

Soil Cleanup Target Levels

Contaminants	CAS#s	Direct Exposure		Leachability Based on Groundwater Criteria (mg/kg)	Leachability Based on Freshwater Surface Water Criteria (mg/kg)	Leachability Based on Marine Surface Water Criteria (mg/kg)	Leachability Based on Groundwater of Low Yield/Poor Quality (mg/kg)	Target Organs/Systems or Effects
		Residential (mg/kg)	Commercial/ Industrial (mg/kg)					
Acenaphthene	83-32-9	2400	20000	2.1	0.3	0.3	21	-Liver
Acenaphthylene	208-96-8	1800	20000	27	NA	NA	270	-Liver
Acephate	30560-19-1	120	720	0.02	0.8	0.8	0.2	-Carcinogen –Neurological
Acetaldehyde	75-07-0	15	20	NA	NA	NA	NA	-Nasal
Acetone	6764-1	11000	68000	25	6.8	6.8	250	-Kidney –Liver –Neurological
Acetophenone	98-86-2	3900	32000	3.9	44	44	39	-None Specified
Acifluferfen, sodium [or Blazer]	62476-59-9	28	140	0.1	25	25	1	-Kidney
Acrolein	107-02-8	0.05	0.3	0.01	0.002	0.002	0.1	-Nasal
Acrylamide	79-06-1	0.1	0.4	0.00003	0.001	0.001	0.0003	-Carcinogen – Neurological
Acrylic acid	79-10-7	48	250	14	NA	NA	140	-Developmental
Acrylonitrile	107-13-1	0.3	0.6	0.0003	0.001	0.001	0.003	-Carcinogen –Nasal – Reproductive
Alachlor	15972-60-8	11	44	0.02	0.005	0.005	0.2	-Blood- Carcinogen
Aldicarb [or Temik]	116-06-3	68	920	0.03	0.004	0.004	0.3	-Neurological
Aldrin	309-00-2	0.06	0.3	0.2	0.01	0.01	2	-Carcinogen – Liver
Ally [or Metsulfuron, methyl]	74223-64-6	19000	300000	12	NA	NA	120	-Body Weight
Allyl alcohol	107-18-6	140	970	0.1	0.02	0.02	1	-Kidney – Liver
Allyl chloride	107-05-1	0.5	2.7	0.2	NA	NA	2	-Neurological
Aluminum	7429-90-5	80000	*	***	***	***	***	-Body Weight
Aluminum phosphide	20859-73-8	35	880	***	***	***	***	-Body Weight
Ametryn	834-12-8	670	11000	0.8	0.08	0.08	8	-Liver
Ammonia	7664-41-7	35000	880000	***	***	NA	***	-Respiratory
Aniline	62-53-3	27	150	0.03	0.02	0.02	0.3	-Blood – Carcinogen – Spleen
Anthracene	120-12-7	21000	300000	2500	0.4	0.4	25000	-None Specified
Antimony	7440-36-0	27	370	5.4	3900	3900	54	-Blood
Aroclor mixture [see PCBs]								
Arsenic	NOCAS	2.1	12	***	***	***	***	-Carcinogen – Cardiovascular – Skin
Atrazine	1912-24-9	4.3	19	0.06	0.04	0.04	0.6	-Carcinogen – Cardiovascular
Axiphos, methl [see Guthion]								
Azobenzene	103-33-3	7.9	31	0.03	0.4	0.4	0.3	-Carcinogen
Barium (soluble salts)	7440-39-3	120**	130000	1600	NA	NA	16000	-Cardiovascular
Baygon [or Propoxur]	114-26-1	280	4100	0.2	0.002	0.002	2	-Blood – Neurological
Bayleton	43121-43-3	2400	46000	4.8	11	11	18	-Blood
Benomyl	17804-35-2	4000	77000	3.1	0.03	0.03	31	-Developmental

Contaminants	CAS#s	Direct Exposure		Leachability Based on Groundwater Criteria (mg/kg)	Leachability Based on Freshwater Surface Water Criteria (mg/kg)	Leachability Based on Marine Surface Water Criteria (mg/kg)	Leachability Based on Groundwater of Low Yield/Poor Quality (mg/kg)	Target Organs/Systems or Effects
		Residential (mg/kg)	Commercial/Industrial (mg/kg)					
Bentazon	25057-89-0	2100	32000	1.2	NA	NA	12	-Blood
Benzaldehyde	100-52-7	3300	24000	4.8	0.4	0.4	48	-Gastrointestinal – Kidney
Benzene	71-43-2	1.2	1.7	0.007	0.5	0.5	0.07	-Blood –Carcinogen
Benzenethiol	108-98-5	0.2	1.3	0.001	NA	NA	0.01	-Liver
Benzidine	92-87-5	0.004	0.02	0.00002	0.00002	0.00002	0.0002	-Carcinogen – Liver – Neurological
Banzo(a)anthracene	56-55-3	#	#	0.8	NA	NA	8	-Carcinogen
Benzo(a)pyrene	50-32-8	0.1	0.7	8	NA	NA	80	-Carcinogen
(Benzo(b)fluoranthene	205-99-2	#	#	2.4	NA	NA	24	-Carcinogen
Benzo(g,h,i)perylene	191-24-2	2500	52000	32000	NA	NA	32000	-Neurological
Banzo(k)fluoranthene	207-08-9	#	#	24	NA	NA	240	-Carcinogen
Benzoic acid	65-85-0	180000	*	110	36	36	1100	-None Specified
Benzotrithloride	98-07-7	0.04	0.09	0.0001	0.00008	0.00008	0.001	-Carcinogen
Benzyl alcohol	100-51-6	26000	670000	9.5	2.3	2.3	95	-Gastrointestinal
Benzyl chloride	100-44-7	1	1.6	0.002	0.02	0.02	0.02	-Carcinogen
Beryllium	7440-41-7	120	1400	63	2.1	2.1	630	-Carcinogen – Gastrointestinal - Respiratory
Betanal [see Phenmedipham]								
BHC, alpha- [see Hexachlorocyclohexane, alpha-]								
BHC, beta- [see Hexachlorocyclohexane, beta-]								
BHC, delta- [see Hexachlorocyclohexane, delta-]								
BHC, gama- [see Hexachlorocyclohexane, gamma-]								
Bidrin [or Dicrotophos]	141-66-2	7.4	120	0.005	0.1	0.1	0.05	-Developmental
Biphenyl, 1, 1- [or Diphenyl]	92-52-4	3000	34000	0.2	5.8	5.8	2	-Kidney
Bis(2-chloro-1 – metylethyl)ether [see Bis(2-chloroisopropyl)ether]								
Bis(2-chloroethoxy)methane	111-91-1	250	5700	63	NA	NA	630	-Liver
Bis(2-chloroethyl)ether	111-44-4	0.3	0.5	0.0001	0.002	0.002	0.001	-Carcinogen
Bis(2-chloroisopropyl)ether [or Bis(2-chloro-1 – metylethyl)ether]	39638-32-9	6	12	0.009	0.4	0.4	0.09	-Blood – Carcinogen
Bis(2-ethylhexyl)adipate	103-23-1	620	1900	780	64	64	7800	-Body Weight – Carcinogen
Bis(2-ethylhexyl)phthalate [or DEHP]	117-81-7	72	390	3600	1300	1300	36000	-Carcinogen – Liver
Bisphenol A	80-05-7	4000	79000	11	1.7	1.7	110	-Body Weight
Blazer [see Acifluorfen, sodium]								
Boron	7440-42-8	17000	430000	***	NA	NA	***	-Reproductive – Respiratory
Bravo [see Chlorothalonil]								

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		Residential (mg/kg)	Commercial/Industrial (mg/kg)					
Bromacil	314-40-9	7500	120000	0.5	0.6	0.6	5	-Body Weight
Bromate	15541-45-4	1	2.8	0.0002	NA	460	0.002	-Carcinogen – Kidney
Bromochloromethane	74-97-5	95	530	0.6	NA	NA	6	-None Specified
Bromodichloromethane	75-27-4	1.5	2.2	0.004	0.1	0.1	0.04	-Carcinogen – Kidney
Bromoform	75-25-2	48	93	0.03	2.7	2.7	0.3	-Carcinogen – Liver
Bromomethane [or Methyl bromide]	74-83-9	3.1	16	0.05	0.2	0.2	0.5	-Gastrointestinal – Respiratory
Bromoxynil	1689-84-5	1600	29000	3	NA	NA	30	-None Specified
Butanol, n-	71-36-3	2900	21000	3	110	110	30	-Neurological
Butanol, tert- [see Butyl alcohol, tert-]								
Butanone, 2- [see Methyl ethyl ketone]								
Butyl alcohol, tert- [or Butanol, tert-]	75-65-0	3200	19000	5.7	NA	NA	57	-Kidney – Neurological
Butyl benzyl phthalate	85-68-7	17000	380000	310	56	56	3100	-Liver
Butylate	2008-41-5	3200	40000	5.2	0.2	0.2	52	-Liver
Butylphthalyl butylglycolate	85-70-1	84000	*	4200	NA	NA	42000	-None Specified
Cadmium	7440-43-9	82	1700	7.5	NA	14	75	-Carcinogen – Kidney
Calcium cyanide	592-01-8	3500	88000	***	NA	NA	***	-Neurological – Thyroid
Captafol	2425-06-1	110	570	0.5	0.1	0.1	5	-Carcinogen – Kidney
Captan	133-06-2	230	750	0.1	0.03	0.03	1	-Body Weight – Carcinogen
Carbaryl [or Sevin]	63-25-2	7700	130000	8.7	0.0007	0.0007	87	-Kidney – Liver
Carbazole	86-74-8	49	240	0.2	6.5	6.5	2	-Carcinogen
Carbofuran	1563-66-2	130	910	0.2	0.0006	0.0006	2	-Neurological – Reproductive
Carbon disulfide	75-15-0	270	1500	506	0.8	0.8	56	-Developmental – Neurological
Carbon tetrachloride	56-23-5	0.5	0.7	0.04	0.06	0.06	0.4	-Carcinogen – Liver
Carbophenothion [or Trithion]	786-19-6	11	250	13	1.5	1.5	130	-Neurological
Carboxin	5234-68-4	7400	120000	5	0.4	0.4	50	-Body Weight
CFC 113 [see Trichloro-1,2,2-trifluoroethane, 1,1,2-]								-Adrenals
Chloral hydrate	302-17-0	5700	62000	0.3	NA	NA	3	-Gastrointestinal – Neurological
Chloramben	133-90-4	960	12000	0.5	NA	NA	5	-Liver
Chlordane (total)	(j)	2.8	14	9.6	0.003	0.003	96	-Carcinogen – Liver
Chlorine cyanide [or Cyanogen chloride]	506-77-4	3100	37000	71	0.3	0.3	710	-Neurological – Thyroid
Chloro-1, 1-difluoroethane, 1-	75-68-3	16000	84000	NA	NA	NA	NA	-None Specified
Chloro-1, 3-butadiene [or Chloroprene]	126-99-8	3.5	19	1.5	NA	NA	15	-Hair Loss – Nasal
Chloro-3 –methylphenol, 4- [see Chloro-m-cresol, p-]								

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		Residential (mg/kg)	Commercial/Industrial (mg/kg)					
Chloroacetic acid	79-11-8	130	1700	0.07	13	13	0.7	-Cardiovascular
Chloroaniline, p-	106-47-8	270	3700	0.2	0.02	0.02	2	-Spleen
Chlorobenzene	108-90-7	120	650	1.3	0.2	0.2	13	-Liver
Chlorobenzilate	510-15-6	3.6	18	0.1	0.01	0.01	1	-Body Weight –Carcinogen
Chlorobenzoic acid, p-	75-11-3	16000	290000	28	NA	NA	280	-None Specified
Chlorobenzotrifluoride, 4-	98-56-6	130	710	5.2	NA	NA	52	-Kidney
Chlorobutane, 1-	109-69-3	780	4200	26	NA	NA	260	-Blood – Neurological
Chlorodifluoromethane	75-45-6	16000	82000	NA	NA	NA	NA	-Adrenals –Kidney –Pituitary
Chloroethane [see Ethyl chloride]								
Chloroform	67-66-3	0.4	0.6	0.4	2.8	2.8	4	-Carcinogen -Liver
Chloro-m-cresol, p- [or Chloro-3-methylphenol, 4-]	59-50-7	600	8000	0.4	0.6	0.6	4	-Body Weight
Chloromethane [see Methyl chloride]								
Chloronaphthalene, beta-	91-58-7	5000	61000	260	740	740	2600	-Liver –Respiratory
Chloronitrobenzene, o-	88-73-3	22	51	0.02	NA	NA	0.2	-Carcinogen
Chloronitrobenzene, p-	100-00-	31	73	0.03	1.6	1.6	0.3	-Carcinogen
Chlorophenol, 2-	95-57-8	130	860	0.7	2.5	2.5	7	-Reproductive
Chlorophenol, 3-	108-43-0	370	5900	0.002	3.1	3.1	0.02	-Reproductive
Chlorophenol, 4-	106-48-9	330	4400	0.0007	1.2	1.2	0.007	-Reproductive
Chloroprene [see Chloro-1,3-butadiene]								
Chloropropane, 2-	75-29-6	47	250	NA	NA	NA	NA	-Liver
Chlorothalonil [or Bravo]	1897-45-6	88	420	0.2	0.06	0.06	2	-Carcinogen –Kidney
Chlorotoluene, o-	95-49-8	200	1200	2.8	7.7	7.7	28	-Body Weight
Chlorotoluene, p-	106-43-4	170	990	2.5	NA	NA	25	-None Specified
Chlorpropham	101-21-3	16000	310000	51	7	7	510	-Bone Marrow –Kidney –Liver –Spleen
Chlorpyrifos	2921-88-2	250	5000	15	0.001	0.001	150	-Neurological
Chromium (hexavalent) (b)	18540-29-9	210	470	NA	4.2	19	NA	-Carcinogen –Respiratory
Chromium (total) (b,g)	NOCAS	210	470	38	4.2	19	380	-Carcinogen
Chromium (trivalent) (b)	16065-83-1	110000	*	NA	NA	*	NA	-Non Specified
Chrysene	218-01-9	#	#	77	NA	NA	770	-Carcinogen
Cobalt	7440-48-4	1700	42000	***	NA	NA	***	-Cardiovascular –Immunological –Neurological -Reproductive
Copper	7440-50-8	150**	89000	***	NA	***	***	-Gastrointestinal
Coumaphos	56-72-4	21	450	0.3	0.0007	0.0007	3	-Neurological

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		Residential (mg/kg)	Commercial/Industrial (mg/kg)					
Cresol, m-[see Methylphenol, 3-]								
Cresol, o- [see Methylphenol, 2-]								
Cresol, p- [see Methylphenol, 4-]								
Crotonaldehyde	123-73-9	0.6	3.3	0.00008	NA	NA	0.0008	-Carcinogen
Cumene [or Isopropyl benzene]	98-82-8	220	1200	0.2	56	56	2	-Adrenals –Kidney
Cyanide, free (b)	57-12-5	34**	11000	0.8	0.02	0.004	8	-Neurological –Thyroid
Cyanogen	460-19-5	560	3400	57	NA	NA	570	Neurological –Thyroid
Cyanogen chloride [see Chlorine cyanide]								
Cycloate	1134-23-2	340	4700	0.7	2.5	2.5	7	-Neurological
Cyclohexanone	108-94-1	150000	*	150	110	110	1500	
Cyclohexylamine	108-91-8	18000	440000	7.9	22	22	79	-Reproductive
Cyhalothrin [or Karate]	68085-85-8	420	9600	290	150	150	2900	-Developmental
Cymene, p-	99-87-6	960	5600	NA	NA	NA	NA	-Gastrointestinal –Skin
Cypermethrin	52315-07-8	840	19000	30	0.002	0.002	300	-Gastrointestinal
DBCP, 1,2- [see Dibromo-3-chloropropane, 1,2-]								
DDD, 4,4'- [see Dichlorodiphenyldichloroethane, p,p']								
DDE, 4,4'- [see Dichlorodiphenyldichloroethylene, p,p']								
DDT, 4,4'- [see Dichlorodiphenyltrichloroethane, p,p']								
Decabromodiphenyl ether	1163-19-5	840	19000	9.3	NA	NA	93	-None Specified
DEHP [see Bis(2-ethylhexyl)phthalate]								
Diallate	2303-16-4	16	82	0.6	NA	NA	6	-Carcinogen –None Specified
Diazinon	333-41-5	70	1200	0.2	0.00005	0.00005	2	-Neurological
Dibenz (a,h) anthracene	53-70-3	#	#	0.7	NA	NA	7	-Carcinogen
Dibenzofuran	132-64-9	320	6300	15	36	36	150	-None Specified
Dibromo-3-chloropropane, 1,2,- [or DBCP, 1,2-]	96-12-8	0.7	3.8	0.001	NA	NA	0.01	-Carcinogen –Reproductive
Dibromobenzene, 1,4-	106-37-6	430	3600	7.8	27	27	78	-Liver
Dibromochloromethane	124-48-1	1.5	2.3	0.003	0.2	0.2	0.03	-Carcinogen –Liver
Dibromoethane, 1,2- [or EDB]	106-93-4	0.1	0.2	0.0001	0.07	0.07	0.001	-Carcinogen –Reproductive
Dibutyl phthalate	84-74-2	8200	170000	47	1.5	1.5	470	-Mortality
Dicamba	1918-00-9	2300	40000	2.6	2.4	2.4	26	-Developmental

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		Residential (mg/kg)	Commercial/Industrial (mg/kg)					
Dichloroacetic acid	79-43-6	21	120	0.005	8.1	8.1	0.05	-Carcinogen –Liver –Neurological- Reproductive
Dichloroacetonitrile	3018-12-0	340	2900	0.03	N/A	N/A	0.3	-None Specified
Dichlorobenzene, 1,2-	95-50-1	880	5000	17	2.8	2.8	170	-Body Weight
Dichlorobenzene, 1,3-	541-73-1	380	2200	7	2.8	2.8	70	-None Specified
Dichlorobenzene, 1,4-	106-46-7	6.4	9.9	2.2	0.09	0.09	22	-Carcinogen –Liver
Dichlorobenzidine, 3,3'-	91-94-1	2.1	9.9	0.003	0.0009	0.0009	0.03	-Carcinogen
Dichlorobenzophenone, 4,4'-	90-98-2	2500	5100	25	190	190	250	-None Specified
Dichlorodifluoromethane	75-71-8	77	410	44	NA	NA	440	-Liver
Dichlorodiphenyldichloroethane, p,p- [or DDD, 4,4'-]	72-54-8	4.2	22	5.8	0.01	0.01	58	-Carcinogen
Dichlorodiphenyldichloroethane, p,p- [or DDE, 4,4'-]	72-55-9	2.9	15	18	0.04	0.04	180	-Carcinogen
Dichlorodiphenyldichloroethane, p,p- [or DDT, 4,4'-]	50-29-3	2.9	15	11	0.06	0.06	110	-Carcinogen –Liver
Dichloroethane, 1,1-	75-34-3	390	2100	0.4	NA	NA	4	-Kidney
Dichloroethane, 1,2- [or EDC]	107-06-2	0.5	0.7	0.01	0.2	0.2	0.1	-Carcinogen –None Specified
Dichloroethene, 1,1-	75-35-4	95	510	0.06	0.03	0.03	0.6	-Liver
Dichloroethene, cis-1,2-	156-59-2	33	180	0.4	NA	NA	4	-Blood
Dichloroethene, trans-1,2-	156-60-5	53	290	0.7	75	75	7	-Blood –Liver
Dichlorophenol, 2,3-	576-24-9	230	4100	0.0008	1.2	1.2	0.008	-Immunological
Dichlorophenol, 2,4-	120-83-2	190	2400	0.003	0.1	0.1	0.03	-Immunological
Dichlorophenol, 2,5-	583-78-8	240	4600	0.02	4.3	4.3	0.2	-Immunological
Dichlorophenol, 2,6-	87-65-0	220	3600	0.007	2.5	2.5	0.07	-Immunological
Dichlorophenol, 3,4-	95-77-2	230	3700	0.01	2	2	0.1	-Immunological
Dichlorophenoxy acetic acid, 2,4-	94-75-7	770	13000	0.7	0.9	0.9	7	-Blood –Kidney –Liver
Dichloropropane, 1,2-	78-87-5	0.6	0.9	0.03	0.09	0.09	0.3	-Carcinogen –Nasal
Dichloropropene, 1,3-	542-75-6	1.4	2.2	0.002	0.09	0.09	0.02	-Carcinogen –Gastrointestinal –Nasal
Dichloroprop	120-36-6	370	5800	0.3	0.3	0.3	3	-None Specified
Dichlorvos	62-73-7	0.3	0.4	0.0006	0.00002	0.00002	0.006	-Carcinogen –Neurological
Dicofol [or Kelthane]	115-32-2	2.2	11	0.01	0.0008	0.0008	0.1	-Adrenals –Carcinogen
Dicrotophos [see Bidrin]								
Dieldrin	60-67-1	0.06	0.3	0.002	0.0001	0.0001	0.02	-Carcinogen –Liver
Diethyl phthalate	84-66-2	61000	*	86	5.9	5.9	860	-Body Weight
Diethylene glycol, monoethyl ether	111-90-0	130000	*	63	750	750	630	-Kidney
Diisopropyl methylphosphonate	1445-75-6	4500	49000	3.6	85	85	36	-None Specified
Dimethoate	60-51-5	13	170	0.006	0.0004	0.0004	0.06	-Neurological
Dimethoxybenzidine, 3,3'-	119-90-4	69	330	0.2	NA	NA	2	-Carcinogen

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		Residential (mg/kg)	Commercial/Industrial (mg/kg)					
Dimethrin	70-38-2	24000	440000	2500	1.3	1.3	25000	-Liver
Dimethylaniline, 2,4-	95-68-1	0.5	1	0.0005	19	19	0.005	-Blood –Carcinogen –Spleen
Dimethylaniline, N,N-	121-69-7	55	380	0.1	12	12	1	-Spleen
Dimethylbenzidine, 3,3’-	119-93-7	0.1	0.6	0.001	NA	NA	0.01	-Carcinogen
Dimethylfomamide, N,N-	68-122-2	1400	8600	3	210	210	30	-Gastrointestinal –Liver
Dimethylphenol, 2,4-	105-67-9	1300	18000	1.7	1.9	1.9	17	-Blood –Neurological
Dimethylphenol, 2,6-	576-26-1	34	370	0.04	5.2	5.2	0.4	-Kidney –Liver –Spleen
Dimethylphenol, 3,4-	95-65-8	71	1000	0.06	3.4	3.4	0.6	-Kidney –Liver –Spleen
Dimethylphthalate	131-11-3	690000	*	380	7.8	7.8	3800	-Kidney
Dinitrobenzene, 1,2-(o)	528-29-0	23	240	0.01	0.2	0.2	0.1	-Spleen
Dinitrobenzene, 1,3-(m)	99-65-0	5.8	64	0.004	0.4	0.4	0.4	-Spleen
Dinitrobenzene, 1,4-(p)	100-25-4	35	890	0.04	0.4	0.4	0.4	-Spleen
Dinitro-o-cresol, 4,6-	534-52-1	8.4	180	0.4	NA	NA	4	-Metabolic Disorders
Dinitrophenol, 2,4-	51-28-5	110	1200	0.06	0.01	0.01	0.6	-Eye
Dinitrotoluene, 2,4-	121-14-2	1.2	4.3	0.0004	0.07	0.07	0.004	-Carcinogen –Liver –Neurological
Dinitrotoluene, 2,6-	606-20-2	1.2	3.8	0.0004	0.005	0.005	0.004	-Blood –Carcinogen –Kidney –Neurological
Di-n-octylphthalate	117-84-0	1700	39000	480000	NA	NA	4800000	-Kidney –Liver
Dinoseb	88-85-7	65	840	0.03	0.03	0.03	0.3	-Developmental
Dioxane, 1,4-	123-91-1	23	38	0.01	0.5	0.5	0.1	-Carcinogen
Dioxins, as total 2,3,7,8-TCDD equivalents (e)	1746-01-6	0.000007	0.00003	0.003	0.0000006	0.0000006	0.03	-Carcinogen
Diphenamid	957-51-7	2300	4100	2.6	20	20	26	-Liver
Diphenyl [see Biphenyl, 1,1-]								
Diphenylamine, N,N-	122-39-4	2000	40000	14	NA	NA	140	-Kidney –Liver
Diphenylhydrazine, 1,2-	122-66-7	1.1	4.8	0.001	0.007	0.007	0.02	-Carcinogen
Diquat	85-00-7	190	4300	800	60	60	8000	-Eye
Disulfoton	298-04-4	3.3	66	0.09	0.1	0.1	0.9	-Neurological
Diuron	330-54-1	150	2300	0.3	0.2	0.2	3	-Blood
EDB [see Dibromoethane, 1,2-]								
EDC [see Dichloroethane, 1,2-]								
Endosulfan (alpha+beta+sulfate)	115-29-7	450	7600	3.8	0.005	0.0008	38	-Cardiovascular –Kidney
Endothall	145-73-3	1800	44000	0.4	0.4	0.4	4	-Gastrointestinal
Endrin	72-20-8	25	510	0.001	0.001	0.001	10	-Liver
EPEG [see Ethylphthalyl ethylglycolate]								
Epichlorohydrin	106-89-8	14	80	0.03	1.1	1.1	0.3	-Carcinogen –Kidney –Nasal
EPN [see Ethyl p-nitrophenyl phenylphosphorothioate]								

Contaminants	CAS#s	Direct Exposure		Leachability Based on Groundwater Criteria (mg/kg)	Leachability Based on Freshwater Surface Water Criteria (mg/kg)	Leachability Based on Marine Surface Water Criteria (mg/kg)	Leachability Based on Groundwater of Low Yield/Poor Quality (mg/kg)	Target Organs/Systems or Effects
		Residential (mg/kg)	Commercial/Industrial (mg/kg)					
EPTC [see Ethyl dipropylthiocarbamate, S-]								
Ethanol	64-17-5	*	*	40	NA	NA	400	-Developmental
Ethion	563-12-2	42	920	1.7	0.003	0.003	17	-Neurological
Ethoprop	1319-48-4	7.4	120	0.005	0.001	0.002	0.05	-Neurological
Ethoxyethanol acetate, 2-	111-15-9	14000	130000	8.8	8.4	8.4	88	-Developmental
Ethoxyethanol, 2-	110-80-5	10000	72000	13	NA	NA	130	-Reproductive
Ethyl acetate	141-78-6	9100	53000	26	26	26	260	-Body Weight
Ethyl acrylate	140-88-5	2	3	0.002	0.6	0.6	0.02	-Carcinogen
Ethyl chloride [or Chloroethane]	75-00-3	3.9	5.4	0.06	NA	NA	0.6	-Carcinogen –Developmental
Ethyl dipropylthiocarbamate, S- [or EPTC]	759-94-4	1400	14000	11	15	15	110	-Cardiovascular
Ethyl ether	60-29-7	260	1400	5	850	850	50	-Body Weight
Ethyl methacrylate	97-63-2	630	3500	3.5	NA	NA	35	-Kidney
Ethyl p-nitrophenyl phenylphosphorothioate [or EPN]	210-64-5	0.8	18	0.02	0.003	0.003	0.2	-Neurological
Ethylbenzene	100-41-4	1500	9200	0.6	12	12	6	-Developmental –Kidney –Liver
Ethylene diamine	107-15-3	1100	11000	0.6	3.2	3.2	6	-Blood –Cardiovascular
Ethylene glycol	107-21-1	110000	*	56	65	65	560	-Kidney
Ethylene oxide	75-21-8	0.3	0.4	0.0002	20	20	0.002	-Carcinogen
Ethylene thiourea [or ETU]	96-45-7	7	57	0.001	5.8	5.6	0.01	-Carcinogen –Thyroid
Ethylphthalyl ethylglycolate [or EPEG]	84-72-0	260000	*	1200	NA	NA	12000	-Kidney
ETU [see Ethylene thiourea]								
Fenamiphos	22224-92-6	19	340	0.02	0.003	0.003	0.2	-Neurological
Fensulfothion	115-90-2	19	310	0.01	0.004	0.004	0.1	-Neurological
Fenvalerate [see Pydrin]								
Floumeturon	2164-17-2	980	16000	0.9	1.8	1.8	9	-None Specified
Fluoranthene	206-44-0	3200	59000	1200	1.3	1.3	12000	-Blood –Kidney –Liver
Fluorene	86-73-7	2600	33000	160	17	17	16000	-Blood
Flouride	7782-41-4	840**	130000	6000	30000	15000	60000	-Teeth mottling
Fluoridone	59756-60-4	7000	180000	2500	460	460	25000	-Kidney –Reproductive
Fonofos	944-22-9	140	2100	0.4	0.003	0.003	4	-Liver –Neurological
Formaldehyde	50-00-0	23	31	2.4	0.4	0.4	24	-Carcinogen –Gastrointestinal
Furan	110-00-9	4.8	26	0.09	NA	NA	0.9	-Liver
Furfural	98-01-1	190	2400	0.09	2.7	2.7	0.9	-Liver –Nasal
Glycidaldehyde	765-34-4	15	120	0.01	NA	NA	0.1	-Adrenals –Blood –Kidney
Glyphosate [or Roundup]	1071-83-6	8800	220000	3.3	0.5	0.5	33	-Kidney
Guthion [or Methyl azinphos]	86-50-0	120	2400	0.2	0.0002	0.0002	2	-Neurological

Contaminants	CAS#s	Direct Exposure		Leachability Based on Groundwater Criteria (mg/kg)	Leachability Based on Freshwater Surface Water Criteria (mg/kg)	Leachability Based on Marine Surface Water Criteria (mg/kg)	Leachability Based on Groundwater of Low Yield/Poor Quality (mg/kg)	Target Organs/Systems or Effects
		Residential (mg/kg)	Commercial/Industrial (mg/kg)					
Heptachlor	76-44-8	0.2	1	23	0.01	0.01	230	-Carcinogen –Liver
Heptachlor epoxide	1024-57-3	0.1	0.5	0.6	0.0001	0.0001	6	-Carcinogen –Liver
Hexachloro-1,3-butadiene	87-68-3	6.2	13	1	110	110	10	-Carcinogen –Kidney
Hexachlorobenzene	118-74-1	0.4	1.2	2.2	0.0006	0.0006	22	-Carcinogen –Liver
Hexachlorocyclohexane, alpha- [or BHC, alpha-]	319-84-6	0.1	0.6	0.0003	0.0003	0.0003	0.003	-Carcinogen
Hexachlorocyclohexane, beta- [BHC,beta-]	319-85-7	0.5	2.4	0.001	0.003	0.003	0.01	-Carcinogen
Hexachlorocyclohexane, delta- [or BHC, delta-]	319-86-8	24	490	0.2	NA	NA	2	-Kidney –Liver
Hexachlorocyclohexane, gamma- [or Lindane or BHC, gamma-]	58-89-9	0.7	2.5	0.009	0.003	0.003	0.09	-Carcinogen –Kidney –Liver
Hexachlorocyclopentadiene	77-47-4	9.5	50	400	24	24	4000	-Gastrointestinal
Hexachloroethane	67-72-1	38	87	0.2	0.2	0.2	2	-Carcinogen –Kidney
Hexachlorophene	70-30-4	26	670	53	26	26	530	-Neurological
Hexahydro-1,3,5-trinitro-1,3,5-triazine [or RDX]	121-82-4	7.7	28	0.002	1.3	1.3	0.02	-Carcinogen –Reproductive
Hexane, n-	110-54-3	680	3900	2.1	1200	1200	21	-Neurological
Hexanone, 2- [or methyl butyl ketone]	591-78-6	24	130	1.4	NA	NA	14	-None Specified
Hexazinone	51235-04-2	2300	32000	1.1	120	120	11	-Body Weight
Hydroquinone	123-31-9	2600	35000	1.4	0.02	0.02	14	-Blood
Indeno(1,2,3-cd)pyrene	193-39-5	#	#	6.6	NA	NA	66	-Carcinogen
Iron	7439-89-6	53000	*	***	***	***	***	-Gastrointestinal
Isobutyl alcohol	78-83-1	6400	42000	8.9	200	200	89	-Neurological
Isophorone	78-59-1	540	1200	0.2	3.8	3.8	2	-Carcinogen –None Specified
Isopropyl benzene [see Cumene]								
Karate [see Cyhalothrin, lambda]								
Kelthane [see Dicofol]								
Lead	7439-92-1	400	1400	***	NA	***	***	-Neurological

Contaminants	CAS#s	Direct Exposure		Leachability Based on Groundwater Criteria (mg/kg)	Leachability Based on Freshwater Surface Water Criteria (mg/kg)	Leachability Based on Marine Surface Water Criteria (mg/kg)	Leachability Based on Groundwater of Low Yield/Poor Quality (mg/kg)	Target Organs/Systems or Effects
		Residential (mg/kg)	Commercial/Industrial (mg/kg)					
Limoene	138-86-3	640	3600	42	NA	NA	420	-Kidney–Liver
Lindane [see Hexachlorocyclohexane, gamma-]								
Linuron	330-55-2	160	3100	0.04	1.4	1.4	0.4	-Blood
Lithium	7439-93-2	1700	44000	***	NA	NA	***	-None Specified
Malathion	121-75-5	1500	24000	4.2	0.003	0.003	42	-Neurological
Maleic anhydride	108-31-6	3200	2400	2.8	NA	NA	28	-Kidney
Maleic hydrazide	123-33-1	1000	5400	16	3.4	3.4	160	-Kidney
Malonitrile	109-77-3	1.2	13	0.0006	NA	NA	0.006	-Liver –Spleen
Maneb	12427-38-2	410	8400	2.9	0.5	0.5	29	-Thyroid
Manganese	7439-96-5	3500	43000	***	NA	NA	***	-Neurological
MCPA [see Methyl-4-chlorophenoxy acetic acid, 2-]								
MCPP [see Propionic acid, 2-(2-methyl-4-chlorophenoxy)]								
Mercury ©	7439-97-6	3	17	2.1	0.01	0.03	21	-Neurological
Mercury, methyl- [see Methylmercury]								
Merphos	150-50-5	2.5	52	0.5	NA	NA	5	-Neurological
Merphos oxide	78-48-8	2.5	56	0.3	0.3	0.3	3	-Neurological
Methacrylonitrile	126-98-7	1	5.9	0.003	NA	NA	0.03	-Liver
Methamidophos	10265-92-6	3.1	36	0.001	0	0	0.01	-Neurological
Methanol	67-56-1	13000	90000	14	180	180	140	-Developmental-Eye-Neurological
Methidathion	950-37-8	68	950	0.003	0.0001	0.0001	0.03	-Liver
Methomyl	16752-77-5	38	200	1.2	0.007	0.007	12	-Kidney-Spleen
Methoxy-5nitroaniline, 2-	99-59-2	19	71	0.006	NA	NA	0.06	-Carcinogen
Methoxychlor	72-43-5	420	8800	160	0.1	0.1	1600	-Developmental –Reproductive
Methyl acetate	79-20-9	6800	38000	16	NA	NA	160	-Liver
Methyl acrylate	96-33-3	260	1500	0.9	NA	NA	9	-Non Specified
Methyl azinphos [see Guthion]								
Methyl bromide [see Bromomethane]								
Methyl butyl ketone [see Hexanone,2-1]								

Contaminants	CAS#s	Direct Exposure		Leachability Based on Groundwater Criteria (mg/kg)	Leachability Based on Freshwater Surface Water Criteria (mg/kg)	Leachability Based on Marine Surface Water Criteria (mg/kg)	Leachability Based on Groundwater of Low Yield/Poor Quality (mg/kg)	Target Organs/Systems or Effects
		Residential (mg/kg)	Commercial/Industrial (mg/kg)					
Methyl chloride [or Chloromethane]	74-87-3	4	5.7	0.01	2.3	2.3	0.1	Carcinogen- -Neurological
Methyl chloroform [see Trichloroethane, 1,1,1-]								
Methyl ethyl ketone [or Butanone, 2-]	78-93-3	16000	110000	17	490	490	170	-Developmental
Methyl isobutyl ketone [or MIBK]	108-10-1	4300	44000	2.6	110	110	26	-Kidney –Liver
Methyl methacrylate	80-62-6	1900	10000	0.1	32	32	1	-Nasal
Methyl parathion [or Parathion, methyl]	298-00-0	20	370	0.06	0.0003	0.0003	0.6	-Blood –Neurological
Methyl styrene (mixed)	25013-15-4	120	770	0.8	NA	NA	8	-Nasal
Methyl styrene, alpha	98-83-9	1500	10000	11	NA	NA	110	-Kidney –Liver
Methyl tert-butyl ether [or MTBE]	1634-04-4	4400	24000	0.09	150	150	0.9	-Eye –Kidney –Liver
Methyl-4-chlorophenoxy acetic acid, 2- [or MCPA]	94-74-6	35	500	0.02	0.4	0.4	0.2	-Kidney –Liver
Methylaniline, 2-	95-53-4	2.6	6.4	0.0009	0.2	0.2	0.009	-Carcinogen
Methylene bis (2-chloroaniline), 4,4-	101-14-4	6.4	23	0.001	NA	NA	0.01	-Carcinogen –Liver –Bladder
Methylene bromide	74-95-3	96	550	0.3	NA	NA	3	-Blood
Methylene chloride	75-09-2	17	26	0.02	7.3	7.3	0.2	-Carcinogen –Liver
Methylene diphenyl diisocyanate	101-68-8	400	210	NA	NA	NA	NA	-Nasal
Methylmercury [or Mercury, methyl]	22967-92-6	1.1	6.1	0.002	NA	NA	0.02	-Neurological
Methylnaphthalene, 1-	90-12-0	200	1800	3.1	10	10	31	-Nasal
Methylnaphthalene, 2-	91-57-6	210	2100	8.5	9.1	9.1	85	-Nasal
Methylphenol, 2- [or Cresol, o-]	95-48-7	2900	31000	0.3	1.9	1.9	3	-Neurological
Methylphenol, 3- [or Cresol, m-]	108-39-4	2900	33000	0.3	3.3	3.3	3	-Neurological
Methylphenol, 4- [or Cresol, p-]	106-44-5	300	3400	0.03	0.5	0.5	0.3	-Neurological –Respiratory
Metolachlor	51218-45-2	12000	200000	1.2	0.01	0.01	12	-Body Weight
Metribuzin	21087-64-9	54	290	2.2	0.8	0.8	22	-Kidney –Liver
Metsulfuron, methyl [see Ally]								
Mevinphos	7786-34-7	18	270	0.01	0.0003	0.0003	0.1	-Neurological
MIBK [see Methyl isobutyl ketone]								
Molinate	2212-67-1	120	1300	0.1	0.1	0.1	1	-Reproductive
Molybdenum	7439-98-7	440	11000	***	NA	NA	***	-Gout
MTBE [see Methyl tert-butyl ether]								
Naled	300-76-5	150	2400	0.1	0.0002	0.0002	1	-Neurological
Naphthalene	91-20-3	55	300	1.2	2.2	2.2	12	-Nasal
Nickel	7440-02-0	340**	35000	130	NA	11	1300	-Body Weight

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		Residential (mg/kg)	Commercial/Industrial (mg/kg)					
(b,c)								
Nitrate	14797-55-8	140000	*	***	NA	NA	***	-Blood
Nitrite	14797-65-0	8700	220000	***	NA	NA	***	-Blood
Nitroaniline, m-	99-09-2	21	130	0.01	NA	NA	0.1	-Blood –Carcinogen
Nitroaniline, o-	88-74-4	24	130	0.1	NA	NA	1	-Blood
Nitroaniline, p-	100-01-6	17	96	0.008	5.9	5.9	0.08	-Blood -Carcinogen
Nitrobenzene	98-95-3	18	140	0.02	0.6	0.6	0.2	-Adrenals –Blood –Kidney –Liver
Nitroglycerin	55-63-0	27	54	0.03	NA	NA	0.3	-Carcinogen –Cardiovascular
Nitrophenol, 4-	100-02-7	560	7900	0.3	0.3	0.3	3	-None Specified
Nitroso-di-ethylamine, N-	55-18-5	0.003	0.005	0.000001	0.00003	0.00003	0.00001	-Carcinogen
Nitroso-dimethylamine, N-	62-75-9	0.009	0.02	0.000003	0.01	0.01	0.00003	-Carcinogen
Nitroso-di-n-butylamine, N-	924-16-3	0.05	0.08	0.00009	0.0005	0.0005	0.0009	-Carcinogen
Nitroso-di-n-propylamine, N-	621-64-7	0.08	0.2	0.00005	0.005	0.005	0.0005	-Carcinogen
Nitroso-diphenylamine, N-	86-30-6	180	730	0.4	0.3	0.3	4	-Carcinogen
Nitroso-N-methylethylamine, N-	10595-95-6	0.02	0.04	0.000006	0.0002	0.0002	0.00006	-Carcinogen
Nitrotoluene, m-	99-08-1	640	4700	1.4	3.6	3.6	14	-Spleen
Nitrotoluene, o-	88-72-2	400	3300	0.9	7.3	7.3	9	-Spleen
Nitrotoluene, p-	99-99-0	750	12000	0.9	7.3	7.3	9	-Spleen
Nonylphenol	25154-52-3	100	2200	20	14	3.4	200	-Kidney
Octamethylpyrophosphoramide	152-16-9	130	1600	0.06	NA	NA	0.6	-Neurological
Oxamyl	23135-22-0	1700	22000	0.9	0.04	0.04	9	-Body Weight
Paraquat	1910-42-5	340	5500	16	230	230	160	-Respiratory
Parathion	56-38-2	500	11000	1	0.01	0.01	10	-Neurological
Parathion, methyl [see Methyl parathion]								
PCBs [or Aroclor mixture]	1336-36-3	0.5	2.6	17	0.002	0.002	170	-Carcinogen –Immunological
PCE [see Tetrachloroethene]								
Pebulate	1114-71-2	2000	5800017000	8.5	7.4	7.4	85	-Blood
Pendimethalin	40487-42-1	3200	58000	28	1	1	280	-Liver
Pentachlorobenzene	608-93-5	45	480	3.9	1.2	1.2	39	-Kidney –Liver
Pentachloronitrobenzene	82-68-8	3.3	12	0.2	0.03	0.03	2	-Carcinogen –Liver
Pentachlorophenol	87-86-5	7.2	28	0.03	0.2	0.2	0.3	-Carcinogen –Kidney –Liver
Permethrin	52645-53-1	4200	96000	2500	0.007	0.007	25000	-Liver
Phenanthrene	85-01-8	2200	36000	250	NA	NA	2500	-Kidney

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		Residential (mg/kg)	Commercial/Industrial (mg/kg)					
Phenmedipham [or Betanal]	13684-63-4	21000	450000	150	18	18	1500	-None Specified
Phenol	108-95-2	500**	220000	0.05	0.03	0.03	0.5	-Developmental
Phenylenediamine, m-	108-45-2	360	4000	0.2	NA	NA	2	-Liver
Phenylenediamine, o-	95-54-5	17	54	0.004	NA	NA	0.04	-Carcinogen
Phenylenediamine, p-	106-50-3	12000	160000	6.2	NA	NA	62	-Whole Body
Phenylphenol, 2-	90-43-7	490	2100	0.4	0.8	0.8	4	-Carcinogen
Phorate	298-02-2	16	320	0.3	0.001	0.001	3	-Neurological
Phosmet	732-11-6	1600	33000	5	0.004	0.004	50	-Liver – Neurological
Phthalic acid, p-	100-21-0	8000	45000	110	NA	NA	1100	- Bladder
Phthalic anhydride	85-44-9	11000	63000	76	NA	NA	760	-Kidney –Nasal –Respiratory
Polychlorinated dibenzo-p-dioxins [see Dioxins]								
Prometon	1610-18-0	1200	23000	2.4	14	14	24	-None Specified
Prometryn	7287-19-6	320	6100	0.7	0.5	0.5	7	-Bone Marrow –Kidney –Liver
Propachlor	1918-16-7	990	17000	1.1	0.1	0.1	11	-Liver
Propanil	709-98-8	390	67000	0.4	0.2	0.2	4	-Spleen
Propazine	139-40-2	1600	28000	0.2	2.7	2.7	2	-Body Weight
Propionic acid, 2-(2-methyl 4-chlorophenoxy) [or MCPP]	93-65-2	64	800	0.03	NA	NA	0.3	-Kidney
Propoxur [see Baygon]								
Propylene glycol	57-55-6	*	*	560	140	140	5600	-Blood –Bone Marrow
Propylene glycol monomethyl ether	107-98-2	38000	390000	20	NA	NA	200	-Kidney –Liver –Neurological
Propylene oxide	75-56-9	3.1	9.3	0.0006	NA	NA	0.006	-Carcinogen –Nasal -Respiratory
Pydrin [or Fenvalerate]	51630-58-1	2100	46000	70	0.0001	0.0001	700	-Neurological
Pyrene	129-00-0	2400	45000	880	1.3	1.3	8800	-Kidney
Pyridine	110-86-1	20	130	0.03	5.4	5.4	0.3	-Liver
Quinoline	91-22-5	0.3	1.3	0.0009	NA	NA	0.009	-Carcinogen
RDX [see Hexahydro-1,3,5-trinitro-1,3,5-triazine]								
Resmethrin	10453-86-8	2500	56000	1200	0.01	0.01	12000	-Reproductive
Ronnel	299-84-3	4200	88000	1300	0.2	0.2	13000	-Liver
Roundup [see Glyphosate]								

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		Residential (mg/kg)	Commercial/Industrial (mg/kg)					
Selenium (b,c)	7782-49-2	440	11000	5.2	0.5	7.4	52	-Hair Loss –Neurological –Skin
Sevin [see Carbaryl]								
Silver (b)	7440-22-4	410	8200	17	0.01	0.06	170	-Skin
Silvex [see Trichlorophenoxy propionic acid]								
Simazine	122-34-9	7.8	35	0.08	0.1	0.1	0.8	-Blood –Carcinogen
Strontium	7440-24-6	52000	*	***	NA	NA	***	-Bone
Strychnine	57-24-9	23	380	0.02	0.3	0.3	0.2	-Mortality
Stryene	100-42-5	3600	23000	3.6	16	16	36	-Blood –Liver –Neurological
TCDD, 2,3,7,8- [see Dioxins, as total 2,3,7,8 –TCDD equivalents]								
TCE [see Trichloroethene]								
Temik [see Aldicarb]								
Terbacil	5902-51-2	920	14000	0.5	14	14	5	-Liver –Thyroid
Tebufos	13071-79-9	1.9	29	0.50.02	0.001	0.001	0.2	-Neurological
Terbutryn	886-50-0	88	2200	0.020.2	0.09	0.09	2	-Blood
Tetrachlorobenzene, 1,2,4,5-	95-94-3	12	100	0.20.5	0.4	0.4	5	-Kidney
Tetrachloroethane, 1,1,1,2-	630-20-6	2.9	4.3	0.50.01	NA	NA	0.1	-Carcinogen –Kidney –Liver
Tetrachloroethane, 1,1,2,2-	79-34-5	0.7	1.2	0.0010.001	0.08	0.08	0.01	-Carcinogen –Liver
Tetrachloroethene [or PCE]	127-18-4	8.8	18	0.030.03	0.1	0.1	0.3	-Carcinogen –Liver
Tetrachlorophenol, 2,3,4,6-	58-90-2	2100	30000	3.2	0.07	0.07	32	-Liver
Tetraethyl dithiopyrophosphate	3689-24-5	35	510	0.1	0.0004	0.0004	1	-Bone Marrow –Neurological
Thallium	7440-28-0	6.1	150	2.8	9	9	28	-Hair Loss –Liver
Thiobencarb	28249-77-6	810	16000	2.9	NA	NA	29	-Kidney
Thiram	137-26.8	400	7700	1.1	0.005	0.005	11	-Neurological
Tin	7440-31-5	47000	880000	***	NA	NA	***	-Kidney –Liver
Toluene	108-88-3	7500	60000	0.5	5.6	5.6	5	-Kidney –Liver –Neurological
Toluene diisocyanate, 2,4/2,6-mixture	26471-62-5	1.3	15	NA	NA	NA	NA	-Respiratory
Toluidine, p-	106-49-0	2.2	4.5	0.0009	NA	NA	0.009	-Carcinogen
Toxaphene	8001-35-2	0.9	4.5	31	0.002	0.002	310	-Carcinogen -Developmental
Triallate	2303-17-5	980	16000	8.4	6	6	84	-Liver -Spleen

Contaminants	CAS#s	Direct Exposure		Leachability Based on Groundwater Criteria (mg/kg)	Leachability Based on Freshwater Surface Water Criteria (mg/kg)	Leachability Based on Marine Surface Water Criteria (mg/kg)	Leachability Based on Groundwater of Low Yield/Poor Quality (mg/kg)	Target Organs/Systems or Effects
		Residential (mg/kg)	Commercial/Industrial (mg/kg)					
Tributyltin oxide	56-35-9	25	570	7.5	0.2	0.2	76	-Immunological
Trichloro 1,2,2-trifluoroethane, 1,1,2- [or CFC 113]	76-13-1	18000	96000	11000	NA	NA	110000	-Neurological
Trichloroacetic acid	76-03-9	770	8800	0.04	400	400	0.4	-None Specified
Trichlorobenzene, 1,2,3-	87-61-6	650	8200	4.6	5.6	5.6	46	-Adrenals
Trichlorobenzene, 1,2,4-	120-82-1	660	8500	5.3	1.7	1.7	53	-Adrenals
Trichlorobenzene, 1,3,5-	108-70-3	260	2300	16	NA	NA	160	-None Specified
Trichloroethane, 1,1,1- [or Methyl chloroform]	71-55-6	730	3900	1.9	2.6	2.6	19	-None Specified
Trichloroethane, 1,1,2-	79-00-5	1.4	2	0.03	0.09	0.09	0.3	-Carcinogen –Liver
Trichloroethene [or TCE]	79-01-6	6.4	9.3	0.03	0.9	0.9	0.3	-Carcinogen –None Specified
Trichlorofluronomethane	75-69-4	270	1500	33	NA	NA	330	-Cardiovascular –Kidney –Respiratory
Trichlorophenol, 2,4,5-	95-95-4	7700	130000	0.07	1.5	1.5	0.7	-Kidney –Liver
Trichlorophenol 2,4,6-	88-06-2	70	230	0.06	0.1	0.1	0.6	-Carcinogen
Trichlorophenoxy acetic acid, 2,4,5-	93-76-5	690	9500	0.4	0.8	0.8	4	-Kidney
Trichlorophenoxy propionic acid, 2 (2,4,5-) [or Silvex]	93-72-1	660	14000	5.4	NA	NA	54	-Liver
Trichloropropane, 1,1,2-	598-77-6	76	460	0.3	NA	NA	3	-Kidney –Liver –Thyroid
Trichloropropane, 1,1,2-	96-18-4	0.06	0.1	0.0001	0.001	0.001	0.001	-Carcinogen –Kidney –Liver
Trichloropropene, 1,2,3-	96-19-5	18	98	0.4	NA	NA	4	-Eye
Triethylamine	121-44-8	41	270	NA	NA	NA	NA	-Nasal
Trifluralin	1582-09-8	92	280	3.6	0.2	0.2	36	-Blood –Carcinogen -Liver
Trimethyl phosphite	512-56-1	19	57	0.004	NA	NA	0.04	-Carcinogen
Trimethylbenzene, 1,2,3-	526-73-8	18	96	0.3	NA	NA	3	-None Specified
Trimethylbenzene, 1,2,4-	95-63-6	18	95	0.3	7.2	7.2	3	-None Specified
Trimethylbenzene, 1,3,5-	108-67-8	15	80	0.3	6.7	6.7	3	-None Specified
Trinitrobenzene, 1,3,5-	99-35-4	2000	26000	1	0.09	0.09	10	-Blood –Spleen
Trinitrophenylmethylnitramine	479-45-8	790	15000	1.4	NA	NA	14	-Kidney –Liver –Spleen
Trinitrotoluene, 2,4,6-	118-96-7	28	97	0.006	0.3	0.3	0.06	-Carcinogen –Liver
Trithion [see Carbophenothion]								
TRPH	NOCAS	460	2700	340	340	340	3400	-Multiple Endpoints Mixed Contaminants
Uranium, soluble salts	7440-61-1	110	820	***	NA	NA	***	-Kidney
Vanadium	7440-62-2	67**	10000	980	NA	NA	9800	-Hair Loss
Vernam	1929-77-7	51	510	0.1	0.2	0.2	1	-Body Weight

Contaminants	CAS#s	Direct Exposure		Leachability Based on Groundwater Criteria (mg/kg)	Leachability Based on Freshwater Surface Water Criteria (mg/kg)	Leachability Based on Marine Surface Water Criteria (mg/kg)	Leachability Based on Groundwater of Low Yield/Poor Quality (mg/kg)	Target Organs/Systems or Effects
		Residential (mg/kg)	Commercial/ Industrial (mg/kg)					
Vinyl acetate	108-05-4	320	1700	0.4	3	3	4	-Kidney –Nasal
Vinyl chloride (i)	75-01-4	0.2	0.8	0.007	0.02	0.02	0.07	-Carcinogen –Liver
Xylenes, total	1330-20-7	130	700	0.2	3.9	3.9	2	-Neurological
Zinc	7440-66-6	26000	630000	***	NA	***	***	-Blood
Zinc phosphide	1314-84-7	26	660	***	NA	NA	***	-Body Weight
Zineb	12122-67-7	4100	82000	19	0.7	0.7	190	Thyroid