TOXIC CONTAMINATION SOURCE ASSESSMENT POLICY

1. PURPOSE

This Policy describes the circumstances or factors that indicate the possible need for the Department of Environmental Quality (Department) to conduct an assessment of potential sources of toxic contamination pursuant to Section 62.1-44.19:10. This document also provides guidelines for the selection of appropriate source assessment activities as well as for the development of strategies to remediate the contamination once the source(s) have been identified.

2. BACKGROUND

In 2000, the General Assembly amended the Water Quality Monitoring and Restoration Act per Section 62.1-44.19:10 to require the Department to develop a written policy detailing when and how it will conduct source assessments for toxic contamination. The Legislature also amended the Virginia Environmental Emergency Response Fund (VEERF) to stipulate per Section 10.1-2500.A.ii that the VEERF can be used for the purpose of conducting assessments of potential sources of toxic contamination in accordance with this policy.

3. CIRCUMSTANCES INDICATING POSSIBLE NEED FOR TOXIC CONTAMINATION SOURCE ASSESSMENT

The decision to conduct a toxic contaminant source assessment will normally be based on one or more of the following circumstances or factors:

- analytical results of contaminant analysis of fish tissue exceed a Virginia Department of Health (VDH) screening level for a specific toxic contaminant, and the VDH has requested an intensive follow up study to determine the magnitude and geographical extent and potential source(s) of contamination in the fish,

- analytical results of contaminant analysis of fish tissue exceed the Department's contaminant screening values that are computed using EPA risk assessment techniques for noncarcinogen and carcinogen effects (the State Water Control Board adopted risk level of 10^{-5} is used in the calculations for carcinogen effects),

- analytical results of contaminants in sediments exceed the effects range-median screening values provided by the National Oceanic and

Atmospheric Administration to assess the potential effects of sediment contamination to aquatic life,

- analytical results of contaminant analysis of one or more surface water samples exceed the water quality criterion for a toxic pollutant listed the Water Quality Standards regulation (9 VAC 25-260-5 et seq.),

- analytical results of contaminant analysis of one or more ground water samples exceed the water quality criterion for a toxic pollutant listed the Water Quality Standards regulation (9 VAC 25-260-5 et seq.) or maximum contaminant levels from the EPA Drinking Water Regulations and Health Advisories,

- analytical results of contaminant analysis of one or more soil samples indicate a potential toxicity problem due to exceedences in the EPA Region III Risk Based Concentrations Table,

- analytical results of contaminant analysis of one or more air samples indicate the need for a toxic contamination source assessment due to exceedences in the EPA Region III Risk Based Concentrations Table,

- toxicity demonstrated by a whole effluent toxicity test for a municipal wastewater treatment plant (the Department would need to explore client/pretreatment information) or industrial waste waters (cooling, non-contact cooling, process/runoff), or

- biological monitoring macroinvertebrate data indicate moderate to severe biological impairment suspected due to toxicity (the Department would first have to collect and analyze water, sediment and fish to identify toxic stresser/contaminant and then proceed with source assessment).

Notwithstanding the above factors, the Director may determine the need for the Department to conduct a source assessment for toxic contamination based upon potential threats to human health or the environment.

4. SOURCE ASSESSMENT ACTIVITIES

Source assessment activities include, but are not limited to, the actions described in this section.

The selection of the appropriate action from an array of source assessment activities is

dependent on whether the toxicant is:

- a persistent, long lived chemical that was historically used but its current manufacture and use is banned in the United States (such as Polychlorinated Biphenyls) PCBs, DDT, chlordane, etc. (e.g. place contaminants), or;

- a toxic pollutant that is currently manufactured in the United States and introduced through current use into the environment or generated as a waste product (e.g. effluents/discharges to air or water).

These are two distinct types of sources and present a totally different investigation and management scenario. For example, sample analysis from potential deposition areas such as areas behind dams and other physical barriers will potentially be more useful for historical use contaminants whereas effluent sampling will prove viable for pollutants in current use. Consideration will also have to be given to the affinity of the toxic contaminant for soil, air or water.

Development of Study Plan

An action plan will be prepared for each contaminant problem to search for and identify potential sources of the toxic contaminant. The action plan will include, as a minimum, the objective of the study plan, a definition of the study area, the scope of the plan, a description of the activities within phases, central and/or regional office staffing requirements, OSHA safety requirements, assignment of responsibility for specific study plan tasks, QA/QC for field sampling and laboratory analyses, and costs of implementing the plan.

The study area will be defined prior to initiation of a search of potential sources. The Department will use, where available, the results from the initial and follow up collections of fish tissue and/or data to establish a study area which covers the portion of the watershed where the highest tissue levels of the toxic contaminant were found for the initial focus of the source identification efforts. However, results from any follow-up monitoring could indicate a need to widen the search.

The plan is to detail activities, which may yield data on toxic releases for the contaminant in question in the study area and to substantiate current and historical sources and land use activities. During the project and at the advice of Department management, affected localities, and citizen groups, the investigation priorities may be modified on the basis of discovery. However, as with the in-stream work, the overall goal will be a methodical, thorough investigation at each stage so that confident, science-based decisions can be made about the existence of sources. The approach will be both coordinated and thorough so potential sources are not overlooked. However, this plan will not hamper immediate

action on questions or requests put to the Department.

The study plan will contain communication and public involvement components to keep the citizens within the affected watersheds informed.

The study plan will include an identification of the staff team within the Department, which will be responsible for implementing the study plan. The Department will continue to investigate available information at these sites.

Study Phases and Activities

The plan will normally consist of three phases, focusing first on searches of paper and electronic information about discharges and pollution incidents in the area of concern. In Phase 2 the Department will send inspectors to the study area to investigate potential sources identified in the first phase of the study. If sources for the toxic contaminant are not identified during the first two phases of the plan, a third phase involving additional monitoring will be required to assist in source identification.

Phase 1 - Discharge and Incident Identification

This phase will consist of a file and database review and communication with federal, state, and local officials, as well as communication with local industry, businesses and citizen groups to gather information.

Environmental media to be investigated include air, water, and waste media. Information bases exist mainly for regulated activities but information for unregulated activities will also be sought. The overriding goal will be to collect dependable, applicable information to understand and detail the origins of the toxicity problem before making potentially expensive decisions.

Department staff will pull together a potential list of source categories that will serve as the focus of regional office searches for sources. This will include identification by SIC category of users of the product. Staff will consult with manufacturers and representatives of the appropriate industries regarding their use or generation of the chemical.

The Department's Regional Office investigations will include, but not be limited to, searches of the Toxics Substances Control Act (TSCA) database, information from Superfund Remediation investigations, investigations of data from the Virginia Pollutant Discharge Elimination System (VPDES) dischargers to waters in the study area, air releases, and hazardous waste sites. This search will also include an evaluation of EPA and the Department Toxic Release Inventories of facilities with toxic releases and VDH 1992

public files on chemical use reported by industry for Virginia. Potential facilities in the TRI database will be queried using geographic location, standards industrial classification (SIC), chemical names, and CAS number for the chemical. If the toxic contaminant is known to be used in agricultural or forestry management (such as a pesticide), the historical and current land use needs to be identified as potential sources.

More perennially investigations by the Department's Regional Office will also include, but not be limited to, searches of the following information:

Baseline, in-house information:

- all currently permitted, and to the extent possible, historical piped discharges to the study watershed;
- all currently permitted, and to the extent possible, historical smoke-stacked sources in the study watershed;
- all currently permitted waste facilities and landfills, and document to the extent possible the location of historical and abandoned dump sites;
- the location of all leaking underground and above-ground storage tanks and the status of remediation;
- VA DEQ February, 1994 List of Abandoned Waste Sites in Virginia;
- Department Pollution Incident Reports for pollutant sources in the watershed;
- Department pretreatment programs for potential or actual pollutant sources:

Baseline, outside information:

- EPA files and literature for potential pollution incidents in the watershed, including Superfund sites and the TOSCA database;
- US Geological Survey insight and characterization of hydrology and sediment related transport in the study area;
- Department of Emergency Services incident files;

- Department of Game and Inland Fisheries and DCR files;
- Railroad companies files;
- Electric utility and/or petroleum/oil/gas company files;
- Virginia Department of Health and Virginia Department of Agriculture files;
- local fire, emergency response, and planning commission files;
- local industries, businesses and citizen groups for potential or actual current and historical pollutant sources;

Criteria for Phase 1 Identification of Possible Sources:

The Department will review all pertinent information in electronic and paper format to determine if a candidate facility meets the following criteria:

1. The facility is located in an area where the watershed could be affected by migration of contaminants into surface water bodies that feed the watershed or in circumstances where air release may result in potential contamination of a watershed.

2. Activities conducted at the facility which could have used or produced suspected chemicals.

3. The toxic contaminant was detected in any sampling events.

If a candidate facility does not meet criteria, then it will be eliminated as a possible source. If a facility meets either criteria number two or three, it will be identified as a possible source and considered for future investigations.

Phase 1 Products:

A table will be prepared listing possible sources by site name, facility identification numbers such as VPDES, PCS, TRI, and Superfund site. There will be a separate listing of sites that were eliminated as possibilities. A report will be prepared with recommendations for future investigations by a source identification team during Phase

Phase 2 - Site Inspections

Site specific investigations will result from detailed file research performed by the regional offices in conjunction with sediment and tissue data from the monitoring studies. As a result of site visits, file searches, and interviews, candidate sites for the Department's investigation will be identified to determine whether the facility is a source for the compound of concern. The site will also be identified if it is a candidate for future sampling.

Work elements of this phase are: subsequent site visits (including working with the EPA during the conduct of any TOSCA inspections), site interviews, and site investigations - including sample collections for analysis - to identify the presence of the toxic contaminant, and industry follow-up investigations.

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Phase 2 Products:

Preliminary Report of Finding

Phase 3 - Additional Monitoring

If sources are not identified in the first two phases of the study, then additional monitoring will be conducted during the third phase of the study. The type of monitoring will be dependent on the results of Phases 1 and 2 and could possibly consist of targeted sediment monitoring, air monitoring, analysis of stack swipes, effluent surveys, and/or limited soils and fish tissue monitoring within the segment(s) of highest priority, including direct tributaries. Prioritization will depend on discoveries through Phase 1 and 2, and will consider Department management input.

If it is necessary to further define the origins or sources of the toxic contaminant in the fish and sediment of the waterbody, a survey of effluents of the waterbody will be conducted. This survey will involve permitted effluents as well as other discharges which are identified in the course of investigation. The effluent survey will include a 24-hour composite sample analysis or other suitable monitoring of each permitted discharge in the study zone that meet the criteria.

A list of all permitted discharges will be provided by the regional offices.

The analysis will be performed for the target toxic analyte. Consideration should be given to budgeting for and contracting with an analytical laboratory that has the ability and sample capacity to allow for additional samples from candidate discharges not identified in the original project scope.

Phase 3 Products:

A final report will document the surveys and will include interpretation of the data in reference to environmental quality and potential impact from the discharges or emissions of detected contaminants. The report will identify any specific activities which should be taken to further delineate or remediate sources.

Summary of Products from the Study

The study phases will generate where deemed appropriate the following products:

1. Work maps with the following information:

    - jurisdictional boundaries
    - point sources (piped) discharge location, current and historical
    - pollution incident locations, as identified
    - monitoring locations for fish tissues and sediments,
    - potential or actual sources of the toxic contaminant

2. Tables:

    - permitted and historical piped discharges
    - permitted and historical air emissions
    - current and historical waste dumps and landfills
    - pollution incidents on file with date and type of incident
    - industrial activity, current and historical, based on available information

3. Monitoring and inventory data references:

- water monitoring station locations, data sampled, and results
- CEDS, PTS, DMRs, and water permit files
- AIRS, TRI Report, and air permit files
- existing toxics databases and files
- annual water monitoring reports, historical 305(b), historical 303(d), STORET, PreP and special field studies files

Communication

Periodic presentations of data summaries and conclusions to Department management, any task forces formed and citizen groups will be necessary components of the project. Periodic postings will be made to the DEQ web page.

5. USE OF THE VEERF FOR TOXIC CONTAMINATION SOURCE ASSESSMENTS

At his sole discretion, the Director may use Section 10.1-2500.A.ii of the VEERF to conduct assessments of potential sources of toxic contamination in accordance with this policy developed pursuant to Section 62.1-44.19.10. Source assessment activities described in this policy under item four are eligible for funding. These costs include personnel, skilled contractual services for collection and/or analysis of samples, administrative (including but not limited to associated travel, meals and lodging costs required for these activities.), equipment and supplies.

6. DEVELOPMENT OF REMEDIATION STRATEGIES

The remediation strategy should be based on a risk assessment performed by appropriately trained staff. These sites are likely to have multiple media contaminated (water/tissue, soil/surface water, subsoil/groundwater) and different human receptors (construction worker, trespasser, fisherman, resident, worker) and it is important that staff with appropriate credentials perform a risk assessment on these data.

Of equal concern is the adequate protection of water, air and soil for ecological concerns. The remediation strategy should include a risk evaluation of ecological concerns such as fish and fish predators. Remediation should protect the ecological food chain as well as humans.

Source assessment may result in a decision for "no action." However, if the Department source identification studies or industry follow-up investigation indicate the need for further action, the following steps will be taken as appropriate to ensure remediation of the source of toxic contamination:

- Site Characterization
- Site Assessment
- Risk Assessment
- Remediation Assessment

- Corrective Action Plan

Oversight of the remediation strategy may require use of VEERF or an agency enforcement action or Voluntary Remediation Programs, as appropriate.

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7. Approval of the director is required prior to conducting a toxic contamination source assessment in accordance with this policy.

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Dennis H. Treacy Date
Directory, Department of Environmental Quality