

567—137.8(455H) Site assessment.

137.8(1) Purpose. The purpose of the site assessment is to define the nature and extent of contamination, along with identifying likely exposure pathways, with the aim of characterizing potential, current and future risks and making an informed decision concerning an appropriate response in the context of probable future land uses at the site and in the surrounding area. Assessment is to be conducted with the recognition that contaminant fate and transport may alter the current areal extent and depth of contamination. It is recognized that the scope of such an assessment may be appropriately varied dependent upon interrelated factors including the nature and severity of the contamination, the complexity of specific details of the site and its setting, and the nature of the chosen response, if known.

137.8(2) Site assessment plan. The participant is encouraged, but not required, to submit for department review a site assessment plan, prior to proceeding with the site assessment. Participants choosing to initiate site assessment without department review and approval of a work plan shall notify the department in writing of their intentions. Likewise, participants choosing to proceed to the risk evaluation/response action phase in accordance with rule 137.9(455H) without seeking review of the site assessment report shall give prior notice to the department of their intentions. The notice shall include a schedule for implementation and completion, a description of the area to be assessed and the scope of the proposed assessment to be undertaken, any planned construction activities in the affected area and a proposed date for submission of the site assessment report for department review. If the notice includes an intention to go directly to the risk evaluation/response action phase, it shall also include a general description of the site assessment results, a schedule for submission of the risk evaluation/response action document and the reasons for not requesting department review and approval of the site assessment report.

The plan is intended to lay out the rationale to be followed in the conduct of the site assessment. The purpose for this optional stage is to provide an opportunity for the participant and the department to reach a consensus regarding the appropriate scope of the site assessment. The development of a consensus should serve to diminish the likelihood that the department will find the final site assessment to be deficient and, for the benefit of the participant, to avoid the expenditures and time associated with the collection of what may ultimately prove to be unnecessary data.

In order to accomplish this, it is suggested that the plan should address relevant, known characteristics related to the site and its history as well as plans for addressing pertinent details spelled out in the subsequent sections on the site assessment and the site assessment report. Departmental review may result in suggestions from the department regarding perceived shortcomings or proposed activities which are deemed to be unnecessary.

The participant may find it desirable to conduct some preliminary investigation in order to develop a site assessment plan.

137.8(3) Site assessment details. In order to meet the stated purpose of the site assessment, it will be necessary to characterize numerous attributes related to the enrolled site and its setting. The following objectives are intended to provide a framework in which to accomplish this purpose. It is recognized that these objectives may exceed the appropriate scope of some site assessments and that there may be situations in which it may be necessary to define additional objectives. Any such deviation would preferably be addressed in a site assessment plan. The department may also develop guidance documents that recommend more specific procedures for accomplishing site assessment objectives. Such guidance documents will be readily available to the public. In general, an acceptable site assessment should address the following items.

a. Identify and address the medium or media of concern associated with the contamination situation for which the site is enrolled. The regulatory classification or jurisdiction of contaminants shall be indicated if applicable and, if known, e.g., the compound is regulated under the Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act (TSCA), or Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

b. Characterize the nature, extent, and degree of contamination in both horizontal and vertical dimensions. This should involve appropriate sample numbers and locations within the contaminated area and beyond the area contaminated in excess of the background or statewide standard. Analyses should be conducted for the contaminants of concern, breakdown products, and other contaminants likely to be

present at significant levels. The department may also require analyses for additional contaminants which are not the focus of enrollment in the program, but which may be of special concern. Special concerns might include waste handling or treatment problems posed by the additional contaminants, or unacceptable risks remaining unaddressed within the affected area, due to the presence of the additional contaminants. In the case of groundwater, attention should also be given to the possibility of contaminant accumulation in strata overlying confining layers and to the possible presence of non-aqueous phase liquids (NAPL). In the case of groundwater, more than one round of sampling shall be incorporated, appropriately separated in time. In the case of soils, particular attention should be given to characterizing shallow soil contamination, from zero to six inches in depth.

c. Characterize the nature of the source of contamination or propose a conceptual model explaining the presence of the contamination of concern.

d. Characterize local contamination maxima or hot spots for the purposes of evaluation against relevant standards and to identify handling or treatment concerns that they may pose.

e. Characterize the stratigraphy. This should be done to a depth extending to the first significant confining layer below the deepest contamination. Descriptions should rely primarily on results gathered in the site assessment, but relevant reference materials or geologic logs from other sources may be incorporated as a supplement.

f. Characterize the hydrologic properties of the site and its vicinity to a distance appropriate to the fate, transport and exposure concerns associated with the site. This characterization should consider both horizontal and vertical components of groundwater movement as well as other influences on groundwater hydrology such as pumping wells, injection wells, surface water bodies, effects of seasonal or precipitation-driven variability, and possible aquifer interconnections, including those related to existing or abandoned wells. Water level measurements, related to a common datum, screening of appropriate depth intervals, and determination of hydraulic conductivity will generally be considered as necessary.

g. Characterize physical and chemical properties of the site and its environs associated with contaminant fate and transport, e.g., percent organic matter, redox potential, soil bulk density, and transmissivity.

h. Characterize topographic and cultural features of the site and its immediate vicinity. Cultural features may include, but not be limited to, buildings, basements, paved areas, roadways, utilities, storage tanks and associated piping, piles, impoundments, wells, and waste disposal systems.

i. Evaluate concerns related to whether the contamination situation is dynamic or stable; if dynamic, address fate and transport and breakdown products appropriately.

j. Identify and characterize receptor or exposure concerns. This most clearly involves concerns for drinking water and exposures to contaminated soils, as suggested by the statewide standards, but additional concerns should be identified and addressed by the participant or the department, as the situation warrants, e.g., vapors to basements, threats to water supply lines, threats to surface waters, or environmental threats.

k. Characterize current and probable future uses of the site and its surroundings. If probable future uses differ significantly from current uses, then characterize them separately and conduct the assessment in a fashion which addresses concerns arising from the possible change in use.

l. Evaluate the potential for contaminants to migrate from one medium to another. The following subparagraphs prescribe requirements for assessing potential migration of contamination from one medium to another. Requirements in the following subparagraphs may be waived if it can be demonstrated in accordance with procedures established in 567—Chapter 135 or the latest version of ASTM Standards related to the Phase II environmental site assessment process that migration of contamination from one medium to another will not cause a violation of the applicable standard in the receiving medium. The assessment activities prescribed in the following subparagraphs are intended to determine if significant migration of contamination from one medium to another has occurred. If evidence of significant migration of contamination from one medium to another (i.e., generally a contaminant concentration in the receiving medium in excess of the statewide standard) is discovered, full-scale characterization of the receiving medium may be required.

(1) The water from any pond or lake on the site or within 300 feet of the site shall be sampled and analyzed for the contaminants of concern, if it is reasonably possible that contaminants from the site could

impact the pond or lake. Any surface stream that runs through the site or within 300 feet of the site should be sampled at a location downstream of any potential impact from the site and analyzed for the contaminants of concern. Depending on the characteristics of the contaminants (e.g., solubility), associated sampling and analysis of sediments may be required.

(2) Groundwater at the location most likely to be impacted by each known substantial area of soil contamination shall be sampled and analyzed for the contaminants of concern. If the area of soil contamination exceeds 10,000 square feet, additional groundwater samples may be required.

(3) Soil vapors in each area that is most likely to be impacted by known groundwater or soil contamination shall be sampled and analyzed for the volatile organic contaminants of concern. If the area of soil or groundwater contamination exceeds 10,000 square feet, additional soil vapor samples may be required. If vapors may be impacting an existing enclosed space, a soil vapor sample shall be collected from a location that is most likely to have vapor contamination adjacent to the enclosed space.

If the potential for the existence of problematic concentrations of the vapors in the enclosed space cannot be dismissed based on soil vapor sampling, sampling and analysis of vapors inside the enclosed space may be conducted to determine whether or not a problem exists. Appropriate measures for distinguishing between contaminant vapors originating from within the enclosed space versus those from the external sources that are under investigation may be made with the approval of the department.

Ambient air sampling may be required if a very large area or extremely high concentrations of highly volatile contaminants exist in shallow soil or evidence of vapor contamination exists, such as odors or a high vapor reading on a vapor-screening instrument.

(4) If a water line exists within the zone of known organic contamination of soil, groundwater or soil vapor and the potential for significant diffusion of contaminants into the water line cannot otherwise be dismissed, a sample from the water line shall be collected at the nearest location where any impact may exist and that sample shall be analyzed for the organic contaminants of concern. All such samples should be collected at times following minimum movement within the water line (e.g., early morning following a weekend).

137.8(4) *Site assessment report.* The site assessment report shall include the presentation of all information gathered relative to the foregoing description of the site assessment, arranged in appropriate sections of the report. It shall include a summary of preliminary information on which the site assessment is based, e.g., background and site history. The report shall discuss the sampling strategy and methods used in the assessment. The department encourages the use of innovative or screening techniques to expedite investigations and to control costs, provided that such techniques are approved by the department and are supported through verification by accepted scientific practices. The report shall also include a description of the quality assurance/quality control (QA/QC) protocols followed during the investigation. QA/QC protocols shall be consistent with accepted scientific practices, including those set forth in appropriate EPA or ASTM guidance or otherwise approved by the department.

The presentation should be organized so as to facilitate the assimilation of information by the reader. Maps to be presented, as appropriate, might include maps illustrating the location of the site in a larger geographical context; maps showing cultural features associated with the site and its environs; maps illustrating the contamination extent and concentration in three dimensions; maps illustrating the site hydrology in three dimensions; and maps illustrating receptors, potential receptors, and relevant pathways of exposure. Cross-sectional diagrams should be included to illustrate stratigraphy, geological boring information, and hydrologic and contaminant factors with depth. Tables and graphs should be designed for the purpose of summarizing data in a meaningful fashion, including information about successive rounds of sampling. Appendices should include well logs, copies of laboratory analytical reports, and raw data used to calculate parameters presented elsewhere in the report. Appended material shall be labeled in a fashion permitting the cross-referencing of appended materials and the body of the report.

137.8(5) *Approval of site assessment report.* The department suggests, but does not require, that the site assessment report be approved prior to proceeding with the subsequent risk evaluation/response action phase. Unless notice has already been given prior to initiation of the site assessment, participants choosing to proceed to the risk evaluation/response action phase without department review and approval of the site assessment report must notify the department in advance as provided in subrule 137.8(2).

137.8(6) *Public notification.* Before or upon completion of the site assessment, the participant shall provide the department with the names and addresses of the owners and occupants of all property adjacent to the site enrolled in the land recycling program and any additional properties where contaminants from the enrolled site have migrated or are likely to migrate in the future. The department shall notify by direct mailing all such property owners and occupants, the city or county in which the property is located, and officials of any potentially impacted public water supply of the site's enrollment in the land recycling program and of the scope of work described in the participation agreement. The department shall give the notified parties the opportunity to obtain updates regarding the status of activities relating to the site that is enrolled in the land recycling program. The department may also require the participant of a site enrolled in the land recycling program to publish public notice in a local newspaper if the department determines that widespread interest in the site exists or is likely to exist. The department may provide additional opportunities for public participation if, after consultation with the participant, the department determines such opportunities are warranted.