



STATE OF TENNESSEE

DEPARTMENT OF ENVIRONMENT AND CONSERVATION

DIVISION OF UNDERGROUND STORAGE TANKS

TECHNICAL GUIDANCE DOCUMENT - 020

EFFECTIVE DATE - May 1, 2008

RE: REQUIREMENTS FOR PETROLEUM VAPOR IMPACT MANAGEMENT

I. General Guidance

In accordance with Rule 1200-1-15-.06(4)(a), the discovery of a petroleum vapor impact shall be reported to the Division of Underground Storage Tanks (Division) within seventy-two (72) hours using the Hazard Notification Report (HNR) Form. The form may be submitted by facsimile machine or electronic mail.

A. Purpose

The purpose of this Technical Guidance Document (TGD) is to assist the regulated community in understanding and complying with the requirements for management of a petroleum vapor impact specified in Rule 1200-1-15-.06(4)(b)2.

B. Fund Eligibility/Coverage

An eligible owner or operator conducting UST corrective actions is entitled to coverage of reasonable costs from the Tennessee Petroleum Underground Storage Tank Fund (Fund), subject to Rule 1200-1-15-.09(10)(a), which states:

“Upon confirmation of a release in accordance with rule 1200-1-15-.05(3) or after a release from the UST system is identified in any other manner, owners and/or operators or petroleum site owners shall comply with the requirements of rule 1200-1-15-.06 as necessary to investigate the release, characterize the site and control any hazards posed by the release in order to stabilize the site, prevent significant risk to human health and safety, and/or continuing damage to the environment.”

Therefore, failure to comply with the requirements of rule 1200-1-15-.06 addressed in this TGD may result in the loss of Fund coverage.

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Attachments

Petroleum Vapor Impact- Hazard Management Report

This report format and other forms are available for download on the Division’s website at <http://state.tn.us/environment/ust/>

II. Definitions

For the purposes of this TGD, the following definitions apply:

- A. **Combustible Gas Indicator (CGI)** – An instrument used to detect and measure concentrations of combustible gases or vapors in the air. This instrument is capable of detecting the presence of any gas or vapor which, when combined with oxygen in free air, presents a potential hazard due to flammability/explosion.
- B. **Confined Space** – A space that has limited or restricted means of entry or exit; is large enough for a person to enter and is not designed for continuous occupancy. These spaces may include, but are not limited to, underground vaults, tanks, storage bins, pits and diked areas, vessels, sewers and silos.
- C. **Explosion/Fire Hazard** – Any situation where the petroleum vapor concentrations are greater than, or equal to, 10% of the lower explosive limit or are between the upper and lower flammable limits as defined below. For the purpose of this TGD, dangerous levels are considered to be any concentration greater than or equal to 10% of the lower explosive limit.
- D. **Explosive Limits** - The Division considers this range of concentrations to be any concentration that is greater than, or equal to, 10% of the lower explosive limit.
- E. **Flammable** - A material which is easily ignited and burns with extreme rapidity. The two primary measures of this physical hazard are the flashpoint and the autoignition temperature. For specific information on the definition and test methods of flammable materials, refer to 29 CFR 1910.1200. Flammability is the ability of a material to generate a sufficient concentration of combustible vapors to be ignited and is bounded by the upper flammable limit and the lower flammable limit.
- F. **Hazard Notification Report (HNR)** – A notification form required to report to the Division within seventy-two (72) hours the discovery of impacted drinking water, petroleum vapors, free product, and/or other hazards.
- G. **Initial Response** – Preliminary response activities taken to immediately provide petroleum vapor abatement. Initial response activities may include, but not be limited to, the methods listed in Section IV, Petroleum Vapor Hazard Response - Temporary. These activities shall continue until vapors are abated to the satisfaction of the Division or a petroleum vapor permanent abatement system is installed and operational.
- H. **Initial Response and Hazard Management Report (IRHMR)** – A required report detailing the actions that have been taken to address the initial hazards discovered at or in the vicinity of the petroleum site. The IRHMR is due within sixty (60) calendar days after the responsible party has been directed by the Division to begin an investigation. The IRHMR is a one time submittal per release.
- I. **Lower Explosive Limit (LEL) or Lower Flammable Limit (LFL)** – The lowest concentration of a substance in air (usually expressed in percent by volume) that will produce a flash or fire when an ignition source (e.g., heat, electric, arc, or flame) is present. At concentrations lower than the LEL, propagation of a flame will not occur in the presence of an ignition source.

- J. **Petroleum Vapor Hazard** - The presence of petroleum vapors as detected by an Organic Vapor Detector (OVD) [concentrations > one hundred (100) PPM].
- K. **Petroleum Vapor Impact (PVI)** – The presence of petroleum vapors as detected by an Organic Vapor Detector (OVD) [concentrations > ten (10) parts per million (ppm)], any detectable Combustible Gas Indicator (CGI) reading, or olfactory senses.
- L. **Petroleum Vapor Impact-Hazard Management Report (PVI-HMR)** – A required report due within thirty (30) days of the initial discovery, detailing the actions that have been taken to address a petroleum vapor impact discovered after the submittal of the IRHMR. This report shall only be submitted upon initial discovery of a petroleum vapor impact or as directed by the Division in accordance with the attached PVI-HMR Guidelines.
- M. **Petroleum Vapor Permanent Abatement (PVPA) Proposal** – A proposal prepared in accordance with guidance provided by the Division as specified in Section V, Petroleum Vapor Hazard Response - Permanent.
- N. **Upper Explosive Limit (UEL) or Upper Flammable Limit (UFL)** - The highest concentration of a vapor or gas (highest percentage of the substance in air) that will produce a flash or fire when an ignition source (e.g., heat, electric, arc, or flame) is present. At higher vapor concentrations, the mixture is too "rich" to produce a flash or fire.

III. Petroleum Vapor Complaint Response

Upon notification of any petroleum vapor complaint, readings shall be collected utilizing an OVD **and** CGI. If any concentration is detected (OVD > 10 ppm, any detectable CGI reading) or by olfactory, then the responsible party and/or corrective action contractor shall personally notify the Division, all occupants and/or property owners of impacted buildings, and/or utility districts concerning the vapor impact.

IV. Petroleum Vapor Hazard Response – Temporary

In accordance with rule 1200-1-15-.06(4)(b)2., upon discovery and/or confirmation of any vapor hazard, immediate action shall be taken to eliminate the vapor hazard unless directed to do otherwise by the Division. These initial response activities are approved for implementation prior to submittal of the HNR. All temporary response activities that are expected to exceed \$2,500.00 in total costs shall require the submittal of a cost proposal to the Division for approval prior to implementation.

Petroleum Vapor Hazard	Initial Response Activity Description
Building or confined space (≥10% LEL reading on a CGI)	Immediately call local Emergency Management Responder/ Fire Department
Building or confined space (>100 PPM on an OVD or any detectable reading on a CGI)	Examples of activities to abate vapor hazards may include, but are not limited to: Educt vapors from the building or confined space environment utilizing explosion proof fan/blower(s); cross ventilation; flush or cover building drain(s); flush sanitary sewer(s) with surfactant with permission from the local authority, etc.

Unless directed to do otherwise by the Division, an IRHMR shall be submitted after initiation of the initial response activities related to petroleum vapor impacts. If a petroleum vapor impact is discovered after the submittal of the IRHMR, then a PVI-HMR shall be submitted within thirty (30) days.

V. Petroleum Vapor Hazard Response - Permanent

If a petroleum vapor hazard remains after the initial response activity, then the Division may require a Petroleum Vapor Permanent Abatement (PVPA) proposal in accordance with rule 1200-1-15-.06(4)(b)2. A proposal shall be submitted in accordance with the table below. **Any permanent response activity for petroleum vapor abatement without prior Division approval will not be Fund reimbursable.** A cost proposal shall be attached to the PVPA proposal and submitted to the Division for approval in accordance with the attached cost sheet prior to implementation of any permanent response activity.

Petroleum Vapor Hazard	Items to be included in the PVPA Proposal
Building (includes basement)	The proposal shall detail the activities required to install a vapor extraction system (internal or external) and/or eliminate negative pressure from HVAC systems. The proposal shall include, but not be limited to, a cost proposal and diagram depicting the proposed vapor abatement system installation.
Confined space (sewers, vaults, etc.)	The proposal shall detail the activities required to internally line or replace a sewer line, replace a vault with a water tight receptacle, install a permanent explosion proof blower system, etc. The proposal shall include, but not be limited to, a cost proposal and diagram depicting the proposed vapor abatement system installation.
Other	As approved by the Division

VI. Monitoring

Based on site conditions, the Division may establish sampling and/or monitoring requirements that exceed TGD - 007. The Division will establish the reporting format and frequency of any additional monitoring requirements.

VII. Reporting Schedule

Upon discovery of a petroleum vapor impact or hazard, the following reports shall be submitted as listed below.

- A. In accordance with Rule 1200-1-15-.06(4)(a), a Hazard Notification Report (HNR) form shall be submitted to the Division within seventy-two (72) hours of discovery of a petroleum vapor impact or hazard.
- B. In accordance with Rule 1200-1-15-.06(4)(c), an IRHMR is due within sixty (60) calendar days after the responsible party has been directed by the Division to begin an investigation. The IRHMR is a one time submittal per release. The report shall be prepared in accordance with the current IRHMR Guidelines.

- C. If the petroleum vapor impact or hazard is initially discovered after the submittal of the IRHMR, then a PVI-HMR shall be submitted within thirty (30) days after the discovery of the petroleum vapor impact. This report shall be completed in accordance with the attached PVI-HMR guidance.

- D. In accordance with Rule 1200-1-15-.06(4)(b)2., the Division **may** require a PVPA proposal and establish a submittal deadline.



STATE OF TENNESSEE

DEPARTMENT OF ENVIRONMENT AND CONSERVATION

DIVISION OF UNDERGROUND STORAGE TANKS

PETROLEUM VAPOR IMPACT – HAZARD MANAGEMENT REPORT

Effective May 1, 2008

Instructions

If a petroleum vapor hazard is discovered after the submittal of the Initial Response Hazard Management Report, then a Petroleum Vapor Impact-Hazard Management Report (PVI-HMR) is due within thirty (30) calendar days after initial response activities have been implemented and shall be submitted in accordance with Technical Guidance Document - 020. The PVI-HMR shall contain **all** data gathered during petroleum vapor hazard response activities. Environmental assessment activities and evaluation of the subsurface investigation shall be directed by a licensed professional geologist under the Tennessee Geologist Licensure Act of 2007 (*T.C.A. §62-36-101 et seq.*) or a registered professional engineer under the Tennessee Architects, Engineers, Landscape Architects, and Interior Designers Law and Rules (*T.C.A. §62-2-101 et seq.*).

If the PVI-HMR will not be submitted by the established deadline, then a written request, justifying an extension shall be submitted to the appropriate environmental field office before the established deadline. An extension is not automatic and enforcement actions may be taken to insure prompt compliance with established deadlines. Failure to meet established deadlines may result in the loss of Fund coverage.

Each section of the PVI-HMR shall be prepared and assembled in the order presented within these guidelines. Text shall be provided explaining the associated tables and maps. All variations from the procedures detailed in the Environmental Assessment Guidelines (EAG) shall be explained and justified. All maps shall be in appendices as required below. All maps shall be on 8.5 × 11 or 11 × 17 inch paper and include, at a minimum, a North arrow, legend, scale bar and figure number. The PVI-HMR guidelines are intended to provide a structured outline. Any information that is not specifically requested but is relevant to the project shall be included. The preparer shall assemble the required information in each section so as to provide a comprehensive document. All pages of the report, including the tables and figures, shall be consecutively numbered.

All correspondence, reports, laboratory analysis sheets, etc. shall contain the TN UST Facility ID Number. Photostatic copies of the laboratory analysis sheets are not acceptable unless the originals have previously been submitted in another report.

THIS REPORT IS NOT COMPLETE UNLESS THE FOLLOWING DOCUMENTS ARE ATTACHED TO THE REPORT IN AN APPENDIX:

	<u>Attached (Yes/No)</u>
A. Properly Completed Signature Page	_____
B. Scaled Site Map	_____
Update the site map from the previously submitted report including locations of petroleum vapor impact(s).	
C. Vicinity Map	_____
Update the vicinity map from the previously submitted report including locations of petroleum vapor impact(s).	
D. Scaled Map of Petroleum Vapor Impacted Utilities (if available and applicable)	_____
This is a GIS map available from utility district or GIS vendors.	
E. Petroleum Vapor Impact Measurement Table	_____
F. Petroleum Vapor Hazard Response Cost Sheet	_____
Costs shall not exceed those identified in the current Reimbursement Guidance Document – 001, which is available on the Division’s website.	
G. Cost Proposal for Petroleum Vapor Permanent Abatement	_____
This proposal may be submitted prior to submittal of the PVI-HMR.	

A. Facility and General Information	
1. Date of Report:	_____
2. Facility ID #:	_____
3. Facility Name:	_____
4. Facility Address:	_____

5. Corrective Action Contractor (CAC) responsible for petroleum vapor impact management:

6. CAC Address: _____

7. Subcontractor(s) including, but not limited to, plumber, utility district representative responsible for petroleum vapor permanent abatement management, etc:

Subcontractor Name: _____

Subcontractor Address: _____

Subcontractor Name: _____

Subcontractor Address: _____

Subcontractor Name: _____

Subcontractor Address: _____

B. Petroleum Vapor Impact History

1. Date petroleum vapor impact discovered: _____

2. Date petroleum vapor impact confirmed : _____

3. Date petroleum vapor impact reported to the Division: _____

Method of contact: Electronic Mail Telephone Facsimile
 Other Explain _____

Division personnel contacted: _____

Reported by: _____

4. Location(s) of petroleum vapor impact(s) (check all that apply):
 Residence Commercial/ Public Building
 Sanitary Sewer Storm Sewer Utility Vault
 Other Explain _____

5. Name(s), address(es) and telephone number(s), if applicable, of locations where petroleum vapor impact (s) was/were discovered:

- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____

6. If applicable, provide any details about the construction of the petroleum vapor impacted receptor: _____

C. Petroleum Vapor Impact Response Management

1. Date initial response activity was implemented: _____

2. Describe the type of initial response activity that was implemented:

3. Date initial response activity was terminated, if applicable: _____

4. Date permanent response activity was implemented, if applicable:

5. Describe the type of petroleum vapor permanent impact response activity that was implemented, if applicable: _____

