

TITLE: **Applying Generic Petroleum Standards Under the Voluntary Action Program**

DATE EFFECTIVE: March 2009

HISTORY: Update of VA30008.03.004 - Revision was necessary to conform to the 2009 rule revisions; however, the archived TDC document remains accurate under the 2002 VAP rules.

KEYWORDS: Applicable standards, petroleum, residential land use, commercial land use, Bureau of Underground Storage Tank Regulations (BUSTR)

RULE/ AUTHORITY: Ohio Administrative Code (OAC) 3745-300-07, 3745-300-08, 3745-300-09; Ohio Revised Code (ORC) 3746.04(B)(1); see also ORC 3737.882(B), OAC 1301:7-9-13 for applicable petroleum standards.

QUESTION: How are the BUSTR generic standards for petroleum applied under the Voluntary Action Program?

ANSWER: Under Ohio EPA's Voluntary Action Program (VAP), the generic petroleum standards for residential, commercial, and industrial properties are the generic standards developed by the State Fire Marshal, Bureau of Underground Storage Tank Regulations (BUSTR), by rule under ORC 3737.882(B). ORC 3746.04(B)(1) specifically directs the use of BUSTR's generic numerical clean-up standards for petroleum at residential and commercial properties in the VAP. However, the generic standards rule, OAC 3745-300-08(B), provides for the use of BUSTR's generic numerical standards for petroleum at industrial properties, as well. Allowing the use of BUSTR's generic numerical standards for industrial land uses simplifies the determination of generic applicable standards for petroleum, especially for properties with a commercial/industrial use limitation.

The BUSTR generic standards apply to petroleum releases at residential, commercial, or industrial properties, regardless of the petroleum source. For example, in a voluntary action, the BUSTR generic standards apply to petroleum releases from aboveground storage tanks and former manufacturing processes not regulated by BUSTR, as well as from underground storage tank (UST) systems regulated by BUSTR. However, the use of BUSTR's standards in a voluntary action occurs within the VAP rule framework, as explained below.

VAP-eligibility and identified areas. The BUSTR generic standards may be used under the VAP as long as the property is VAP-eligible. ORC 3746.02 and OAC 3745-300-02 provide the conditions which render a property ineligible to participate in the VAP. For example, a property must first receive a “no further action” determination from BUSTR for each petroleum UST system subject to regulation by BUSTR to proceed in the VAP.

After BUSTR’s no further action determination, the UST system area would be considered a VAP identified area pursuant to OAC 3745-300-06(E) due to the broad criteria for the designation of identified areas. Data used to obtain a BUSTR no further action determination may be used to demonstrate compliance with VAP applicable standards, if a VAP certified laboratory was used to analyze the data and appropriate laboratory affidavits are included in the VAP NFA letter. Any prior data must be evaluated within the context of the VAP rules to determine whether it meets the data quality objectives for the voluntary action. In some cases, it may be necessary to supplement the BUSTR data with additional data to ensure the identified area has been sufficiently characterized to comply with VAP rule requirements.

If a VAP certified laboratory was not used, then the identified area will have to be re-sampled to obtain VAP certified laboratory data.

BUSTR’s generic standards. Based on discussion between BUSTR and Ohio EPA, BUSTR considers its “action levels” contained in look-up tables found in OAC 1301:7-9-13(J)(3) to be the generic numerical standards for petroleum at residential, commercial, and industrial properties in the VAP. Also, BUSTR requires the removal of all free product to the maximum extent practicable in order for a property to meet generic applicable standards. BUSTR defines “free product” in OAC 1301:7-9-13(C) as a separate liquid hydrocarbon phase that has a measured thickness of greater than one one-hundredth (0.01) of a foot. For guidance on addressing free product, see Free product removal, below.

Applying standards to complete exposure pathways. The BUSTR petroleum standards are applied in a voluntary action much like other VAP standards. The standards are applied as part of the property’s Phase II Property Assessment. Under the Phase II Property Assessment, the complete exposure pathways for the property are determined in accordance with OAC 3745-300-07(F)(1).

For complete exposure pathways at a property that are not included in BUSTR action level look up tables, the volunteer can either derive

the property's standards for that pathway through a VAP property-specific risk assessment conducted in accordance with OAC 3745-300-09 or apply VAP generic standard in accordance with OAC 3745-300-08, e.g., standards for sediment or surface water.

BUSTR has generic soil standards for the following pathways:

- direct contact with soil,
- soil leaching to ground water used for drinking water use,
- soil leaching to ground water used for non-drinking water use,
- soil to outdoor air, and
- soil to indoor air.

BUSTR also has generic ground water standards for:

- ground water ingestion
- ground water to outdoor air, and
- ground water to indoor air.

Chemicals of concern identification and assessment. For hazardous substances and petroleum, the chemicals of concern (COCs) at a voluntary action property are identified using VAP rules, for example, OAC 3745-300-06(C)(4) and 3745-300-07(E)(3) (e.g., considering release history, facility operations, typical constituents). As with all voluntary actions, the volunteer assesses the petroleum COCs as part of the Phase II Property Assessment, in accordance with OAC 3745-300-07(F)(5), to determine concentrations of the COCs in the property's environmental media. Further, VAP rules require the assessment of these COCs to determine the applicable standards for each complete exposure pathway and identified area at the property. See OAC 3745-300-07(F)(4).

When using BUSTR standards as generic standards for a voluntary action, only those COCs for which BUSTR requires assessment need to be evaluated for compliance with applicable standards. BUSTR has divided petroleum products into 5 categories or analytical groups, and the volunteer must analyze for the COCs specified by the appropriate analytical group indicated in OAC 1301:7-9-13(H)(1)(c). Table 1 in OAC 1301:7-9-13(H)(1)(c) provides a decision matrix for which COCs and petroleum distillate fractions must be evaluated based on the appropriate analytical group (See Table 1, attached). However, analytical groups 3, 4 and 5 require consideration of COCs for which BUSTR does not have generic standards (see Petroleum COCs included in BUSTR's standards, below). For analytical groups

3, 4, and 5, the volunteer should follow VAP rule requirements (see above) to determine which additional COCs need to be evaluated. If assessment for additional petroleum COCs is necessary, then the COCs must be evaluated in accordance with OAC 3745-300-09. Hazardous substances may be evaluated in accordance with either OAC 3745-300-08 or 3745-300-09.

Petroleum COCs included in BUSTR's standards. The COCs for which BUSTR provides generic standards are:

- Benzene, Toluene, Ethyl-benzene, Total Xylenes (BTEX)
- Methyl Tertiary Butyl Ether (MTBE)
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Chrysene
- Dibenzo(a,h)anthracene
- Indo(1,2,3-cd)pyrene
- Napthalene
- Total petroleum hydrocarbons (TPH)

BUSTR has applicable standards for TPH that are based on soil saturation for light (C6 to C12), middle (C10 to C20), and heavy (C20 to C34) distillate petroleum fractions. Free product on ground water is also considered a contaminant; therefore, investigating for the presence of free product also needs to be considered.

For a petroleum-only release (i.e., without co-mingled hazardous substances) within an identified area or exposure unit, the BUSTR generic standards are generally limited to the COCs listed above (for exceptions, see chemicals of concern identification and assessment, above). If any other petroleum constituents are detected in the petroleum release, only the BUSTR generic standards need to be applied to the release. If BUSTR generic standards are not applied to the petroleum release, then the petroleum is assessed in accordance with OAC 3745-300-09(C).

Property-specific information needed to apply standards. As previously mentioned, the application of BUSTR's standards requires knowledge about the type of petroleum released to the environment (see Chemicals of concern identification and assessment, above). The application of BUSTR's standards also requires use of the property's soil type [i.e., class 1, 2 or 3 soil types as specified in Table

2 of OAC 1301:7-9-13(H)(2)] and the depth to ground water (i.e., < 15 feet, 15-30 feet, 31-50 feet and > 50 feet). The intended land use (i.e., residential or non-residential) and excavation worker activities must also be known to apply BUSTR's standards. See the BUSTR generic standards (action level look-up tables) under OAC 1301:7-9-13(J)(3).

Ground water standards - BUSTR's and VAP's. As with the application of BUSTR's soil standards, a volunteer must first follow VAP rule requirements when assessing ground water media during a voluntary action. Ground water zones must be evaluated in accordance with OAC 3745-300-07(E)(2) in order to determine whether the zones meet or exceed unrestricted potable use standards (UPUS). If the ground water zone meets UPUS, then the volunteer must demonstrate the protection of the zone from exceeding UPUS in the future. See OAC 3745-300-07(E)(3) and 3745-300-10(D). If the ground water zone exceeds UPUS, then the volunteer must demonstrate that the applicable ground water response requirements contained in OAC 3745-300-10(E) will be met for the appropriate ground water classification as determined by 3745-300-10(A) and (B).

As previously mentioned, BUSTR has generic ground water standards for ground water ingestion, ground water to indoor air, and ground water to outdoor air. The BUSTR standards for ground water ingestion are analogous to the VAP's generic UPUS and should be used whenever generic UPUS for petroleum are applied at the property. The other ground water standards are non-drinking water standards and may be applied in accordance with the applicable ground water response requirements contained in OAC 3745-300-10(E).

As previously mentioned, free product on ground water is also considered a contaminant by BUSTR; therefore, investigating for the presence of free product also needs to be considered. Discussion with BUSTR has indicated that ground water with free product does not meet BUSTR standards for ground water ingestion. Therefore, the presence of free product means the ground water zone does not meet VAP UPUS. In addition, BUSTR requires the removal of all free product to the maximum extent practicable in order for a property to meet BUSTR generic standards (see Free product removal, below).

Land use definitions. When applying BUSTR's generic standards in the VAP, the land use category for the property is determined using the VAP rule, namely OAC 3745-300-08(C)(2)(c)(i) through (iii). The

BUSTR action level look-up tables contain generic standards for residential and non-residential land uses. The BUSTR action levels for residential land use should be used for residential property under the VAP, and the action levels for non-residential land use should be used for commercial or industrial property under the VAP.

Free product removal. As noted above, BUSTR requires the investigation of TPH. BUSTR has standards for TPH in soil that are based on soil saturation limits, which are dependant on the petroleum distillate being investigated and the soil class. BUSTR standards also call for the removal of all free product to the maximum extent practicable, regardless of depth. See OAC 3701:7-9-13(G)(3). For the VAP, BUSTR's TPH soil saturation standards only need to be applied within the VAP's direct contact point of compliance (see Points of Compliance, below). However, the removal of free product from ground water to the maximum extent practicable is required regardless of depth in order for a VAP property to meet BUSTR's generic standards.

Points of compliance. As a general rule, the point of compliance (POC) for the property's demonstration of compliance with standards is determined under the VAP by OAC 3745-300-07(I)(1)(a) through (c). The POC is from the surface to at least 2 feet for direct contact with soil in a commercial or industrial land use, deeper for other pathways pursuant to OAC 3745-300-07(I)(1)(a). For example, BUSTR soil standards may be applied to the depth necessary to address a complete exposure pathway to soils for the construction or excavation activities defined in OAC 3745-300-08(C)(2)(c)(iv). Regarding free petroleum product removal, the point of compliance is the depth at which the petroleum exists.

Standards derived through a property-specific risk assessment. Deriving standards through a VAP property-specific risk assessment remains an alternative to use of generic standards for any land use. OAC 3745-300-09 governs the performance of VAP property-specific risk assessments. The NFA letter for a property needs to identify the applicable standards relied upon for the property, in accordance with OAC 3745-300-13(E).

Multiple chemical adjustment of petroleum standards. The BUSTR generic standards under OAC 1301:7-9-13 are not adjusted for multiple chemicals, except as required by OAC 1301:7-9-13(J)(4). BUSTR only requires multiple chemical adjustment of standards for analytical groups 4 and 5 [see OAC 1301:7-9-13(H)(1)(c)] when there

are 10 or more non-carcinogenic or carcinogenic COCs present. When this exception does not apply, the BUSTR generic standards are not considered within a multiple chemical adjustment of VAP standards. In other words, when VAP rules OAC 3745-300-08 and 3745-300-09 require adjustment of certain COCs, the adjustment would not include the multiple petroleum COCs for which the BUSTR generic standards apply. In a situation where a volunteer uses the BUSTR generic standards for the petroleum COCs at a property's identified area and VAP standards (e.g., VAP generic standards for hazardous substances, property-specific risk assessment derived standards, or background values) for the other COCs, the BUSTR standards would not be considered within the multiple chemical adjustment of the property's remaining standards.

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