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We Protect Hoosiers and Our Environment.

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Frequently Asked Questions (FAQs)
Announcement of Changes to TPH Procedures for Ground Water
July 28, 2010

1. **Why is IDEM no longer requesting total petroleum hydrocarbon (TPH) delineation in the ground water?**
   IDEM is not requiring a TPH investigation in the ground water for several reasons: the individual chemicals of concern (COCs) are considered to be better risk indicators, default TPH closure levels are based on theoretical fuel formulations while actual hydrocarbon fuel mixtures vary widely in ground water at sites, and Method 8015 TPH measurements may result in false positives.

2. **Do I still need to investigate and delineate TPH in the soil? What purpose does the soil TPH migration-to-ground water (MTG) closure level serve now considering that IDEM is no longer requesting delineation of TPH in ground water?**
   Yes. The soil investigation process has not been affected by this announcement. However, IDEM plans additional evaluation of this question as a part of the *RISC Technical Guide* revision process that is underway. Certainly, since IDEM is no longer requesting TPH delineation in ground water, the TPH MTG assessment serves a somewhat different purpose. TPH MTG assessment may help to inform decisions about where TPH confirmatory sampling of a drinking water well is necessary as a precautionary step. TPH MTG assessment may also help to determine where the primary contaminant mass or source area is to target areas for remediation.

3. **Do I need to investigate and delineate TPH in the ground water?**
   No. However, site-specific fractionation of TPH may be necessary to confirm that drinking water from a potable well is safe for consumption. TPH drinking water samples should be fractionated following State of Washington Department of Ecology (WDOE) protocol found at http://www.ecy.wa.gov/biblio/97602.html . This measurement will be requested when all relevant COCs are determined to be below residential closure levels, and IDEM desires confirmation that TPH is not an issue. The IDEM project manager may request analysis of drinking water well samples for TPH and COCs when petroleum contamination is in close proximity to a drinking water well. IDEM will accept a Method 8015 analysis for screening purposes (see FAQ #14).

4. **Do I look for TPH at other types of sites besides underground storage tank sites and petroleum facilities?**
   Not necessarily. Sites with contaminants from petroleum hydrocarbon fuel mixtures other than those listed in Table 8-3 of the *RISC Technical Guide* Chapter 8 should be investigated by properly identifying the COCs that are indicative of each mixture. If the petroleum hydrocarbon source is not known, it should be treated as an "unknown" consistent with the information presented in Table 8-3.

5. **Are the non-carcinogen end points in the ground water ingestion pathway accounted for if TPH is not delineated in ground water?**
   The carcinogens identified in Table 8-3 of the *RISC Technical Guide* Chapter 8 are the primary risk drivers within petroleum hydrocarbon mixtures. If they are not present in sufficient quantity to result in an estimate of excess cancer risk, it is unlikely that the non-carcinogens will be present at levels of concern (note the relative difference in ground water ingestion closure levels between many carcinogens and non-carcinogens). However, IDEM has identified in Table 8-3 certain non-carcinogenic COCs associated with specific petroleum mixtures that should be evaluated separately to assure there is no health hazard to drinking water receptors.

6. **When should we stop requesting that the responsible parties/program applicants look for ground water TPH?**
   The transition policy is specific to each remedial section, and is provided as follows:

   LUST/ELTF Technical/Brownfields: The policy is effective immediately for ground water sampling and analysis.

   ELTF Claims: This section is generally not going to reimburse expenses related to ground water TPH investigation/sampling completed after June 30, 2010.

   VRP: Effective immediately, program participants will no longer be required to evaluate ground water for TPH except where a potential receptor may exist. If VRP participants choose to eliminate TPH in ground water from an existing project, the Certificate of Completion would not include TPH as a contaminant of concern. If TPH in groundwater has been part of an ongoing project, the program participants may continue to monitor for TPH, but will have to achieve the remedial objective approved in the Remediation Work Plan in order to include TPH as a contaminant of concern in the Certificate of Completion. For future projects TPH evaluation in ground water will not be requested (unless a potential receptor exists), but may be included at the participant's request. Initial screening of groundwater can be completed by Method 8015, and the outcome of the screening will determine the need to fractionate the samples following WDOE protocol (see FAQ #15).

   STATE CLEANUP:

   Sites in Progress - If TPH analysis in ground water has been an ongoing part of the remediation project the responsible party may choose to continue or eliminate analysis for TPH in ground water. If TPH analysis is continued approved remedial objectives must be met. If TPH analysis is eliminated IDEM will not include TPH as a COC in its closure determination and No Further Action letter.

   New Sites will only be required to collect appropriate individual petroleum COCs in ground water. Private drinking water/municipal production wells will require sampling for TPH if the State Cleanup project manager determines that the well may potentially be impacted. Initial screening of groundwater can be completed by Method 8015, and the outcome of the screening will determine the need to fractionate the samples following WDOE protocol (see FAQ #15).

Independent Closure Process (ICP) Eligible Sites - State Cleanup will amend its ICP guidance to account for the new policy for TPH in ground water. Ground water assessments under the ICP will only require analysis for individual COCs. Sites will be allowed to proceed under the ICP as a low priority, if they can demonstrate to IDEM's satisfaction that they do not have individual COCs in ground water and do not have a nearby private drinking water or municipal well.

7. I heard that there may be more TPH changes in the future... Is this true?
This policy focuses on ground water TPH issues only. It is possible there may be changes as to how IDEM addresses TPH in soil (see FAQ #2 on first page). If additional changes are determined to be necessary, they will be incorporated into the revised *RISC Technical Guide* for consideration through the nonrule policy document process.

8. Is IDEM requiring fractionation analyses in triplicate?
No, IDEM is not requiring triplicate analysis of TPH in each well. It is our understanding that some labs require a 3 sample minimum (other labs may not have this requirement). These labs may charge for 3 samples regardless of whether you submit 1 or 2 samples for analysis. However, trip blanks, MS/MSD, field duplicate, etc. may be required to meet QA/QC objectives, therefore multiple samples for a single well may ultimately be necessary anyway.

9. There is discretion for requesting a volatile petroleum hydrocarbons (VPH) analysis when an extractable petroleum hydrocarbons (EPH) analysis is completed for diesel range organics (DRO) and high end hydrocarbon oils. Are there conditions under which we should expect to do VPH with EPH, or should we simply ask the IDEM PM anytime we do fractionation for EPH? Anytime there is a reasonable possibility that both diesel range and gasoline range organics may be co-mingled (due to multiple product releases), IDEM staff will request VPH in addition to EPH. It is best to check with the IDEM PM before fractionating for EPH alone.

10. Is it necessary to notify the lab that the IDEM-reportable DRO carbon range is not the same range specified by the WDOE method? WDOE analyzes out to C34 with EPH where IDEM only requires analysis out to C28 for DRO.
It will be necessary to notify the lab of the appropriate carbon range if our interest is diesel and the associated fractions. This will be necessary because your "normal" WDOE EPH analysis will quantify EC21-34 (among other fractions). However, IDEM's evaluation will be limited to EC21-28. In cases where there is a release of high end hydrocarbon oils, modification of the EC range may not be necessary.

11. How will IDEM communicate the need for additional COCs? In particular, I am concerned about Ethylene dibromide (EDB, also known as 1,2-dibromoethane) and Ethylene dichloride (EDC, also known as 1,2-dichloroethane) at pre-1996 gasoline releases?
IDEM intends to include these COCs in an updated version of Table 8-3 when the revised RISC technical guide is released and finalized. In the interim, project managers will use their discretion to determine whether EDB or EDC should be evaluated at their sites. This will be communicated through site work plan and sampling plan review comments.

12. There is some question about how to use VPH and EPH results in the calculator. I assume whenever we do both VPH and EPH we need to take the higher of any overlap fraction results for use with any of DRO, high end hydrocarbon oils, or waste oil?
Yes, that is correct.

13. What sample containers are required in the WDOE method? What are the preservation requirements?
Section 8.3 (Table 2) of the WDOE VPH Method identifies container size and preservation requirements for VPH analysis. For aqueous samples, 40-mL vials are required. Section 8.3 (Table 3) of the WDOE EPH Method identifies the container size and preservation requirements for EPH analysis. That section (and elsewhere within) indicates that 1-Liter amber glass bottles are required.

14. Can I use Method 8015 to screen drinking water wells for TPH rather than the more expensive WDOE fractionation method?
Yes. You can run Method 8015 as a preliminary screening tool to determine if there is enough TPH in the drinking water sample to run the WDOE fractionation method. IDEM has established a reporting limit of 300 micrograms per liter (µg/L) for TPH gasoline range organics (GRO) and 450 µg/L for TPH-DRO. If the Method 8015 analysis indicates less than 300 µg/L gasoline range organics (GRO) or less than 450 µg/L DRO is present in the water sample, then we will consider TPH to be present at less than the reporting levels for fractionation, and no further TPH analysis is necessary. However, if either of those levels is exceeded, then IDEM will request further evaluation of the drinking water using the WDOE fractionation method.

15. So does this mean there are TPH closure levels associated with Method 8015?
No. These criteria (300µg/L GRO and 450µg/L DRO) are not risk-based closure levels. IDEM considers these levels to be a reasonable approximation of the minimum amount of TPH that must be present in drinking water in order to perform the WDOE fractionation. Using these criteria may provide analytical cost savings at drinking water wells that have low levels of TPH.

16. Can I request a silica gel cleanup of the drinking water sample submitted for the 8015 analysis to remove polar compounds?
Yes, but only when analyzing for DRO and high end hydrocarbon oils. Silica gel cleanup is not appropriate for GRO.