North Carolina
Department of Environment and Natural Resources

Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary
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December 6, 2005

To: Commercial Laboratories and Environmental Service Companies and Consultants

Subject: Response to comments on the adoption of the Update of the Massachusetts Department of Environmental Protection (MADEP), Method for Determination of Volatile Petroleum Hydrocarbons (VPH) and Method for Determination of Extractable Petroleum Hydrocarbons (EPH) May 2004 revision 1.1.

This document addresses the response to adopt the May 2004 Revision 1.1 of the MADEP EPH and VPH methods. The public comment period was open from October 4, 2005 to November 4, 2005. The UST Section received comments from three parties on the adoption of the May 2004 Revision 1.1 of the MADEP EPH and VPH methods.

Comment 1: I'd like to see the methods dropped and replaced with the EPA methods of 8015B GRO and DRO if individual targets are needed then 8260. I do not believe the MADEP methods represent good science. If you continue to use them then please use them without any special modifications.

Response 1: TPH concentration data cannot be used to quantitatively estimate human health risk. The same concentration of TPH may represent very different compositions and very different risk to human health and the environment. By using the MADEP methods, we can more precisely identify compounds within a certain carbon fraction class.

Under a performance-based method system, the UST Section allows discretion on the part of the laboratory to select the appropriate method to show compliance with regulatory requirements. It will be the responsibility of the laboratory to provide auditors with all of the QC data and documentation required to substantiate the quality of reported results.

Comment 2: I think our biggest concern is whether the State of North Carolina will allow the use of sonication (SW846 3550) for the extraction of soil samples.

Response 2: The UST Section considers method 3550 an acceptable preparation method.

Comment 3: In reviewing the data in the MADEP methods and WSC-CAM –IV B questions arise concerning which reporting parameters NCDENR will require with adoption of the update. Many sections of the method are "optional." We request guidance on which options will be required. Such guidance has typically been provided to the laboratories through the laboratory certification section in the form of audits, checklists and technical discussions.

Response 3: As a performance-based method, the UST Section accepts all the QA/QC requirements of the WSC-CAM –IV A and B for the updated revision except when using the existing report forms. The use of all "optional" sections will be left to the discretion of the laboratories.

Comment 4: We are assuming NCDENR will continue to require reporting of unadjusted ranges for the aliphatic and aromatic ranges for VPH and EPH. The updated definitions in the QA/QC document contradict this approach, as does the updated Required EPH Data Report Information form. Will it be required that the target PAH compound be subtracted from the hydrocarbon ranges? Will the updated Report Information form be required as well? What are the specifics on how this method update will need to be implemented?

Response 4: The UST Section will require labs to report adjusted ranges, subtract out the target compounds, and use the current report forms per the July 14, 2004 memo. As you aware, when reporting the unadjusted range, one is actually double counting the compounds that elute in the target carbon range. Adjusted ranges will provide a more realistic and precise determination the health risk of the actual unknown portion of the carbon fractions.

Comment 5: WSC-CAM-IV B reporting limits must be equal or less than the MCP criteria and based on the lowest calibration standard. The MADEP method suggests calibration ranges of individual components and states the RL will be 100X the lowest standard. How does this apply to reporting limits for the hydrocarbon ranges? Will the reporting limits be dictated by NCDENR or can the MCP Method 1 compliance limits be implemented?

Response 5: The Report Limits (RLs) shall be greater or equal to the concentration of the lowest calibration standard. The RLs for soil hydrocarbon range will be 100x the concentration of the aqueous RLs for the associated ranges. For example:

<u>EPH</u>

The aqueous RL of C9-C12 is 15 ug/l. Therefore, the soil RL is 100x 15 ug/l,

15 ug/l x 100 $\approx$ 1500 ug/kg = 1.5 mg/kg

We may also convert the concentration from aqueous reporting units to soil reporting units, (10 g dry weight of soil is used)

(15 ug/lx1l/0.01kg) = 1500 ug/kg = 1.5 mg/kg

Please repeat the same calculation for C19-C36 and C11-C22.

<u>VPH</u>

The aqueous RL for C5-C8 is 40 ug/l. Therefore, the soil RL is 100x40 ug/l,

40 ug/l x 100 ≈ 4000 ug/kg = 4 mg/kg

Or, we may convert the concentration from aqueous reporting units to soil reporting units, (5g dry weight of soil was used and preserved in 5 ml methanol, of which100 ul was injected to the 5 ml sparger)

40 ug/l x (5 ml/5g) x (5ml/0.1 ml) = 2000 ug/kg = 2 mg/kg

Please repeat the same calculation for C9-C12 and C9-C10.

Comment 6: The term presumptive certainty is introduced in the MADEP update. How does NCDENR interpret the need for this status? Will the MADEP MCP Method Report Certification Form be required?

Response 6: Again, The UST Section accepts all results generated using any of the optional provisions of the May 2004 version of the methods. The laboratories will continue to use the current reporting forms, but will be reporting the adjusted concentration (subtracting out the concentrations of all target compounds).

Comment 7: We are interested in pursuing use of GC/MS for the MADEP methods. The EPH method does not consider the use of GC/MS to quantitate the hydrocarbon ranges to be a 'significant modification" of the method. The VPH method, however, does consider the use of GC/MS a significant modification." What resources are available to obtain information on GC/MS use for these methods. What guidelines can be provided to define adequate documentation of equivalency? As a significant modification precludes presumptive certainty, what will be needed to assure certification and data acceptability?

Response 7: The UST Section will *not* consider the use of GC/MS a significant modification of either the VPH or EPH methods. The UST Section encourages all laboratories to use GC/MS for confirming the positive results and eliminating heterogeneous sampling.

UST Section has received and reviewed data, and the data shows that there is no statistical difference between TPH values quantified using GC/MS and those derived from conventional TPH methods using GC/FID.

Our commitment to a performance-based method approach challenged us to find a better way, and your successful implementation will be the resources from which we will draw during our next method revision.

Comment 8: We continue to evaluate the changes we need to implement to be compliant with the updated version of the MADEP EPH and VPH methods. What forum will be used to clarify the questions on implementing and reporting of these method changes for 2006? Most of the questions seem to arise on how and which options of the method need to be implemented. When the MADEP methods were originally adopted guidance came from the laboratory certification

section. We would like clarification on where to direct future inquiries and questions on these method changes.

Response 8: A forum or training opportunities for the updated MADEP methods will be discussed at the next Commercial Laboratories Association of North Carolina meeting.

The MADEP methods were originally adopted by the UST Section. Therefore, the Lab Certification and the UST Section will work together to implement these methods. However, please consult the Lab Certification Section if your lab has any certification questions or issues it needs to address .

Due to the different considerations associated with different instrumentation, we recommend consulting with your individual instrument company to optimize your instrument's operating parameters prior conducting the carbon range analyses by GC/MS.

We appreciate the efforts of those who have taken the time to provide us with their comments. We hope we have addressed the major issues and concerns raised. Please contact Houngjen Sun at houngjen.sun@ncmail.net or 919-733-1313 if you have additional question or concerns. The UST Section will continue to evaluate these and other proposals and will post any updates under What's New at http://wastenot.enr.state.nc.us.

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