



# TRH/BTEXN and F1 to meet the Draft 2011 NEPM Requirements

## INTRODUCTION

TPH has been reported in Australia for many years in four fractions i.e. C6 - C9 (Volatile fraction) and C10 - C14, C15-C28 & C29-C36 (Semi-Volatile fractions).

The long awaited draft revision of the NEPM was released for public comment on 24<sup>th</sup> September 2010 with one of the most significant changes being the inclusion of HILs for petroleum hydrocarbons. The rationale behind the development of the fractions is outlined within Schedule B1, section 2.2.3 [1]. This in effect allocates HILs on the basis of a combined aliphatic and aromatic fraction (assuming the constitution of fresh, unweathered petrol and/or diesel). HILs are expressed for the Volatile fraction C6 - C10, and the Semi-Volatile fractions >C10 - C16, >C16-C34 and >C34.

**This update seeks to communicate ALS plans in addressing these changing needs while being cognisant of long term project requirements and the need for data consistency.**

## TPH vs TRH TERMINOLOGY

For TRH, there is no change in extraction methods. TRH simply better reflects what has previously been listed in guidelines and reported as TPH. ALS will continue to apply the terminology "TPH" to the current and "TRH" to the new fractions in order to maintain continuity with historical data and Electronic Data Deliverables (EDDs).

## F1 and F2

The draft NEPM guideline value for the 'C6-C10 fraction minus BTEX' is now termed "F1". ALS will report 'F1' as a routine parameter along with TRH/(C6-C10)/BTEX.

The first semi-volatile guideline fraction, '>C10-C16 minus Naphthalene' is now termed "F2". To facilitate the application of guideline levels for F2, ALS will automatically report Naphthalene as part the volatile TRH C6-C10/BTEXN suite. This will allow industry to calculate F2. Where both PAH and VOC Naphthalene data exists on the same sample, industry will need to make a decision as to which Naphthalene number should be used. From a lab perspective both should be entirely valid results and cognisant of holding times and preservatives (or lack of) the conservative approach may be to use the greater of the two Naphthalene numbers.

## REPORTING and PLANNING

ALS recognises that there may be a lag between the adoption of the new NEPM reporting and other regulatory guidelines (state or national). In consultation with key industry clients, ALS has taken the decision to commence **simultaneous reporting of both the current "TPH/BTEX" and the new 'TRH/BTEXN' fractions for both soils and waters - effective progressively through the first week of April 2011.**

This will allow industry to match historical data (especially for ground water) and assess whether any variance in data is due to changes in fraction reporting or a real change in sample results. This proactive reporting change will also benefit clients for 'soon to start' projects through allowing a complete data set to be generated in the new reporting format. ALS will commence wholesale reporting of new and old fractions unless specifically requested otherwise.

ALS method codes, analytes and LORs are summarised below with the currently reported ten TPH/BTEX parameters shaded in yellow and the new nine TRH/BTEXN reported parameters shaded in green. All 19 parameters will be reported by default by ALS

	Waters LOR		Soils LOR	
<b>EP080/071: Total Petroleum Hydrocarbons</b>				
C6 - C9 Fraction	20	µg/L	10	mg/kg
C10 - C14 Fraction	50	µg/L	50	mg/kg
C15 - C28 Fraction	100	µg/L	100	mg/kg
C29 - C36 Fraction	50	µg/L	100	mg/kg
C10 - C36 Fraction*	50	µg/L	50	mg/kg
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2011 Draft</b>				
C6 - C10 Fraction	20	µg/L	10	mg/kg
C6 - C10 Fraction minus BTEX (F1)	20	µg/L	10	mg/kg
>C10 - C16 Fraction	100	µg/L	50	mg/kg
>C16 - C34 Fraction	100	µg/L	100	mg/kg
>C34 - C40 Fraction	100	µg/L	100	mg/kg
>C10 - C40 Fraction*	100	µg/L	50	mg/kg
<b>EP080: BTEXN</b>				
Benzene	1	µg/L	0.2	mg/kg
Toluene	2	µg/L	0.5	mg/kg
Ethylbenzene	2	µg/L	0.5	mg/kg
meta- & para-Xylene	2	µg/L	0.5	mg/kg
ortho-Xylene	2	µg/L	0.5	mg/kg
Sum of BTEX*	2	µg/L	0.2	mg/kg
Total Xylenes*	2	µg/L	0.5	mg/kg
Naphthalene	5	µg/L	1	mg/kg

\* = Calculated as the sum of individual analytes reported at or above the LOR.  
\* F1 is calculated as the difference between the C6-C10 fraction and Sum of BTEX.

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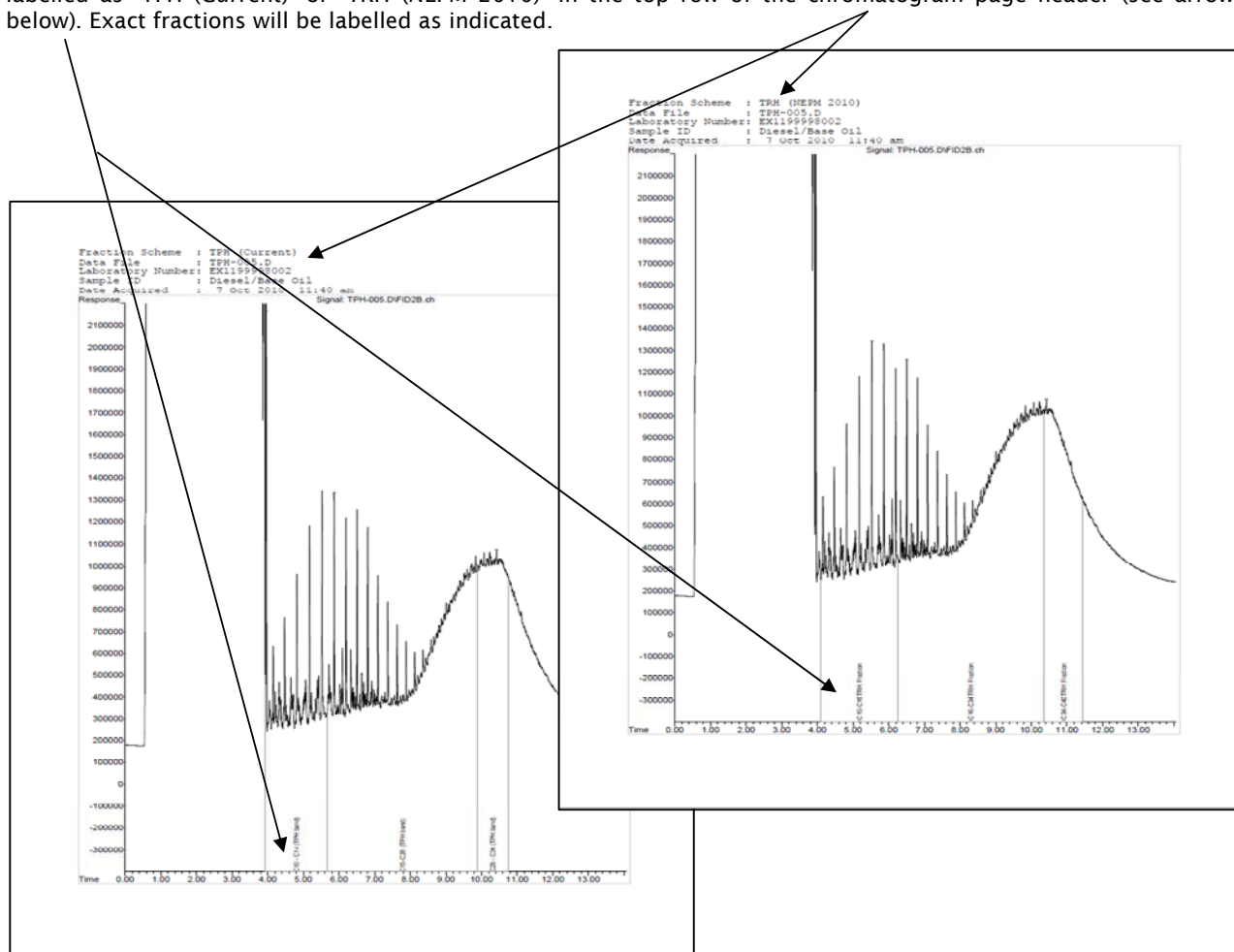
## DEFINITIONS FOR TRH FRACTIONS AND ACCREDITATION

Current fractions, e.g. C6 - C9 and C10 - C14 are discontinuous and this does lead to some inconsistencies in the definition of boundaries by different laboratories. The new fractions e.g. C6 - C10 and >C10-C16 are continuous and unambiguously defined. In this case, the first fractions would include all compounds falling in a boiling point range between n-hexane and n-decane, including hexane and decane and the second fraction would include all compounds with a boiling point greater than that of n-decane but including that of n-hexadecane.

ALS Brisbane, Sydney, Melbourne (Springvale) and Perth have completed the necessary NATA submissions and these sites now offer fully accredited reporting of the new fractions providing maximum flexibility to meet local needs.

## CHROMATOGRAMS

ALS provides (upon request) a PDF Chromatogram of the Semi-Volatile TPH and/or TRH. Where data has been acquired for the current 'TPH' and new 'TRH' fractions, separate chromatograms will be supplied and will be labelled as 'TPH (Current)' or 'TRH (NEPM 2010)' in the top row of the chromatogram page header (see arrows below). Exact fractions will be labelled as indicated.



## SAMPLING, PRESERVATION AND SUITES

ALS TPH/TRH/BTEXN sampling bottles and preservation remain unchanged. All major suites will automatically be updated to include the additional compounds with (any) price increases re-negotiated on an individual client basis.

## REFERENCES

[1] "Schedule B1: Guideline on the Investigation Levels for Soil and Groundwater" of the "Draft Variation to the National Environment Protection (Assessment of Site Contamination) Measure", September 2010, National Environment Protection Council.

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