

CRC Project A-114/RW-111 RFP Q &A

8.9.18

1. Could you share a list of compounds with associated detection limits that the filters and sorbent tubes will be analyzed for?

Please see the attached list for the compounds and detection limits for the analysis of the sorbent tubes. We have no immediate plans on the composition analysis on the filters, but would like to retain the filters for possible analysis in the future.

2. Would EPA prepare and send the sorbent tubes to the contractor since they are going to do the analysis or is the contractor responsible for this part?

Yes, EPA plans on preparing the sorbent tubes to be shipped the contractor. The contractor will not be responsible for procuring the tubes.

3. Does each vehicle need to be tested using the same dilution ratio? Or is there a range for each dilution ratio that CRC will accept? For example, a low-end dilution ratio of $X \pm Y\%$.

No, each vehicle does not need to be tested at the same dilution ratio, rather a range that is appropriate for the vehicle should be chosen for each.

4. There were no details on the speciation method for the sorbent tubes. Currently, DNPH cartridges and Impingers are commonly used to sample total NMOG for carbonyls, aldehydes and alcohols. Will DNPH cartridges and Impingers be sufficient for the speciation mentioned in the RFP?

We are not planning a carbonyl analysis using DNPH cartridges or an alcohol analysis with impingers. We are planning on using Tenax sorbent tubes to collect heavy VOCs and SVOCs for speciation analysis with a method based on EPA TO-17.

5. Can CRC provide the vehicle and engine specifications for the GDI 2013 Hyundai Sante Fe? (i.e. Displacement, emission technologies, engine family, etc...)

*2.4L Naturally Aspirated, I4, engine family: DHYSV02.41UE
6-speed automatic transmission
EPA Tier 2 Bin 5*

Class	Compound	MDL
		(ng/uL)
<i>n</i> -alkane	decane	0.0628
<i>n</i> -alkane	undecane	0.0365
PAH	naphthalene	0.0444
<i>n</i> -alkane	dodecane	0.0249
PAH	1-methylnaphthalene	0.0100
<i>n</i> -alkane	tridecane	0.0197
PAH	2-methylnaphthalene	0.0105
<i>n</i> -alkane	tetradecane	0.0045
PAH	2,6-dimethylnaphthalene	0.0058
PAH	acenaphthylene	0.0365
PAH	acenaphthene	0.0090
<i>n</i> -alkane	pentadecane	0.0121
PAH	dibenzofuran	0.0008
PAH	flourene	0.0042
<i>n</i> -alkane	hexadecane	0.0316
<i>n</i> -alkane	heptadecane	0.0416
<i>b</i> -alkane	pristane	0.1146
PAH	methyl flourene	0.0073
<i>n</i> -alkane	octadecane	0.0585
PAH	phenanthrene	0.0044
<i>b</i> -alkane	phytane	0.1456
PAH	anthracene	0.0028
<i>c</i> -alkane	dodecyclohexane	0.0211
<i>n</i> -alkane	nonadecane	0.0645
<i>b</i> -alkane	2-methylnonadecane	0.0170
<i>b</i> -alkane	3-methylnonadecane	0.0185
PAH	9-methylanthracene	0.0466
<i>n</i> -alkane	eicosane	0.0293
PAH	flouranthene	0.0214
<i>n</i> -alkane	heneicosane	0.0511
PAH	pyrene	0.0031
<i>b</i> -alkane	pentadecylcyclohexane	0.0050
<i>n</i> -alkane	docosane	0.0703
PAH	retene	0.0234
<i>n</i> -alkane	tricosane	0.0824
<i>n</i> -alkane	tetracosane	0.1740
PAH	benz(a)anthracene	0.0035
<i>n</i> -alkane	pentacosane	0.0765
PAH	chrysene	0.0032
<i>c</i> -alkane	nonadecyclohexane	0.0126

<i>n</i> -alkane	hexacosane	0.1109
PAH	1-methylchrysene	0.0044
<i>n</i> -alkane	heptacosane	0.1651
<i>n</i> -alkane	octacosane	0.1997
PAH	benzo(b)flouranthene	0.0113
PAH	benzo(k)flouranthene	0.0060
sterane/hopane	20R-C27 cholestane	0.0229
sterane/hopane	AAA-20S chlolestane	0.0180
<i>n</i> -alkane	nonacosane	0.2613
PAH	benzo(e)pyrene	0.0058
PAH	benzo(a)pyrene	0.0056
PAH	perylene	0.0083
sterane/hopane	ABB-methylcholestane	0.0065
sterane/hopane	17A(H)-22,29,30-trisnorhopane	0.0533
<i>n</i> -alkane	triacontane	0.1305
sterane/hopane	ABB-ethylcholestane	0.0048
<i>n</i> -alkane	hentriacontane	0.1682
sterane/hopane	17A-(H-21B(H))-hopane	0.0112
<i>n</i> -alkane	dotriacontane	0.3267
PAH	indeno(1,2,3-cd)pyrene	0.0033
PAH	dbenz(a,h)anthracene	0.0115
PAH	benzo(ghj)perylene	0.0113
<i>n</i> -alkane	trtriacontane	0.1236
<i>n</i> -alkane	tetratriacontane	0.1416
<i>n</i> -alkane	pentatriacontane	0.1668
<i>n</i> -alkane	hexatriacontane	0.1199
PAH	coronene	0.1757
<i>n</i> -alkane	heptatriacontane	0.1114
<i>n</i> -alkane	octatriacontane	0.1413
sterane/hopane	17B(H)21A(H)-30Norhopane	0.0095

Internal Standards
Dodecane-D ₂₆
Hexadecane-D ₃₄
Eicosane-D ₄₂
Octacosane-D ₅₈
Hexatriacontane-D ₇₄
Decanoic acid-D ₁₉
Heptadecanoic acid-D ₃₃
αα-20R-Cholestane-D ₄
Phthalic 3,4,5,6-D ₄ acid
Benzaldehyde-D ₆
4,4'-Dimethoxybenzophenone-D ₈
Acenaphthene-D ₁₀
Chrysene-D ₁₂
Dibenz[ah]anthracene-D ₁₄
Levoglucosan-U-13C ₆
Cholesterol-2,2,3,4,4,6-D ₆