SDG NARRATIVE

LAB NAME: CHEMTECH CONSULTING GROUP
CASE: 49666
SDG: C0AA3
CONTRACT: 68HERH20D0011
LAB CODE: CHM
CHEMTECH PROJECT: M4103
MODIFICATION REF. NUMBER: NA

Sample ID	EPA Sample ID	pH
M4103-01	C0AA3	1.0
M4103-02	C0AB6	
M4103-03	C0AB7	
M4103-03ME	C0AB7ME	
M4103-03RE	C0AB7RE	
M4103-04	C0AB8	
M4103-04ME	C0AB8ME	
M4103-04RE	C0AB8RE	
M4103-05	C0AB9	
M4103-05ME	C0AB9ME	
M4103-05RE	C0AB9RE	
M4103-06	C0AC0	
M4103-06ME	C0AC0ME	
M4103-06RE	C0AC0RE	
M4103-07	C0AC1	
M4103-07ME	C0AC1ME	
M4103-07RE	C0AC1RE	
M4103-08	C0AC2	
M4103-08ME	C0AC2ME	
M4103-08RE	C0AC2RE	
M4103-09	C0AC5	
M4103-10	C0AC6	1.0
M4103-11	C0AC9	

2 Water samples were delivered to the laboratory intact on 10/06/2021.
9 Soil samples were delivered to the laboratory intact on 10/06/2021.

Test requested on the Chain of Custody was Volatile Organic by Method SFAM01.1.

Sample Tags were not received with the samples.

The temperature of the samples was measured using an I R Gun. The samples temperature was 2.9 degree Celsius for the samples received on 10/06/2021.

Shipping Discrepancies and/or QC issues:
Issue 1: Sample tags were not received with samples at the laboratory. Sample tag numbers may or may not be listed on the TR/COC.

Resolutions 1: The laboratory will note the samples with the missing tags in the SDG Narrative and proceed with the analysis of the samples. The resolution will be applied to all samples received for this Case.

Issue 2: The airbill for the shipment received on 10/6/2021 does not match the airbill on the received COC.

Resolution 2: In accordance with previous direction from Region 3, the laboratory will note the discrepancy in the SDG Narrative and proceed with the analysis of the samples. The resolution will be applied to all COCs received for this Case.

Issue 3: One cooler was sent to the laboratory on 10/5 for Case 49666.

Resolution 3: Per Region 3, please note that the return airbill for the cooler is located in the FedEx pouch located on the outside of the cooler, rather than inside the cooler. Please note the issue in the SDG Narrative and proceed with the analysis of the samples.

Low Volatiles:
The analysis performed on instrument MSVOA_U were done using GC column DB-624UI 20m 0.18mm 1.0 um. Cat#121-1324UI
The analysis performed on instrument MSVOA_W were done using GC column RXI-624SIL MS 30m 0.25mm 1.4 um. Cat#13868.
The analysis performed on instrument MSVOA_X were done using GC column DB-624UI 20m 0.18mm 1.0 um. Cat#121-1324UI
The analysis of VOC-SFAM was based on method SFAM01.1_LOW.

The Holding Times were met for all analysis.
The Surrogate recoveries met the acceptable criteria except for
C0AB7 [1,1,2,2-Tetrachloroethane-d2 - 147%, 1,2-Dichlorobenzene-d4 - 150%, 1,2-Dichloropropane-d6 - 160%, 2-Hexanone-d5 - 136%],
C0AB7ME [Chloroethane-d5 - 24%],
C0AB8 [1,2-Dichlorobenzene-d4 - 121%],
C0AB8ME [Chloroethane-d5 - 23%],
C0AB8RE [1,1,2,2-Tetrachloroethane-d2 - 122%, 1,2-Dichlorobenzene-d4 - 131%, 1,2-Dichloropropane-d6 - 153%, Benzene-d6 - 146%],
C0AB9 [1,1,2,2-Tetrachloroethane-d2 - 199%, 1,2-Dichlorobenzene-d4 - 216%, 1,2-Dichloropropane-d6 - 251%, 2-Hexanone-d5 - 160%, Benzene-d6 - 221%, Toluene-d8 - 149%],
C0AB9ME [Chloroethane-d5 - 24%],

C0AB9RE [1,1,2,2-Tetrachloroethane-d2 - 262%, 1,2-Dichlorobenzene-d4 - 209%, 1,2-Dichloropropane-d6 - 375%, 2-Hexanone-d5 - 202%, Benzene-d6 - 319%, Chloroethane-d5 - 152%, Toluene-d8 - 177%],
C0AC0 [1,2-Dichloropropane-d6 - 137%],
C0AC0ME [Chloroethane-d5 - 24%],
C0AC1 [1,1,2,2-Tetrachloroethane-d2 - 140%, 1,2-Dichlorobenzene-d4 - 138%, 1,2-Dichloropropane-d6 - 158%, Benzene-d6 - 135%],
C0AC1ME [Chloroethane-d5 - 24%],
C0AC2 [1,1,2,2-Tetrachloroethane-d2 - 149%, 1,2-Dichlorobenzene-d4 - 175%, 1,2-Dichloropropane-d6 - 158%, Benzene-d6 - 135%],
C0AC2ME [Chloroethane-d5 - 23%],
C0AC2RE [1,1,2,2-Tetrachloroethane-d2 - 135%, 1,2-Dichlorobenzene-d4 - 150%, 1,2-Dichloropropane-d6 - 153% and Benzene-d6 - 138%]. As per method, up to three surrogates are allowed to fail. No corrective action was taken except Samples which is failed for Surrogate recoveries, as corrective action sample was reanalyzed.

The Internal Standards Areas met the acceptable requirements except for C0AB7, C0AB7RE, C0AB8, C0AB8RE, C0AB9, C0AB9RE, C0AC0, C0AC0RE, C0AC1, C0AC1RE, C0AC2 and C0AC2RE. Samples were Internal Standards recoveries failed, as corrective action samples were reanalyzed and analyzed Medium Level all analysis reported.

Instrument Performance Check met requirements.
The Retention Times were met for all samples.

The Tuning criteria met requirements.
The Initial Calibration met the requirements.
The %RSD met requirement for initial Calibration except for Dichlorodifluoromethane (31.2%) for the initial calibration dated 10/08/2021 with W instrument, As per method, the %RSD up to two Compounds are allowed to fail to meet the minimum criteria as long as the compound meets the maximum of 40% RSD. No further corrective action was taken.

The Continuing Calibration met the requirements.
The Closing Continuing Calibration (VSTD025569) file ID VW020397.D met the requirements except for Dichlorodifluoromethane (51.5%) 4-Methyl-2-pentanone (51.2%). As per method, up to two target analyte in closing CCV are allowed to exceed the %D values. Therefore no further corrective action was taken.

The Blank analysis indicated presence of Toluene [34ug/Kg] FileID:VU045284.D (VBLK028) {VU1012MBL01} due to possible lab contamination.
The Blank analysis indicated presence of Chloroform [3.8ug/L], Methylene chloride [0.82ug/L] FileID:VX024821.D (VBLK609) {VX1015WBL01} due to possible lab contamination.
The Blank analysis indicated presence of Chloroform [3.4ug/L] FileID:VX024827.D (VBLK610) {VX1015WBL02} due to possible lab contamination. As per method, less than 2 times the respective CRQL is allowed to fail for Methylene chloride and less than the respective CRQL is allowed to fail for Chloroform and Toluene. Therefore no further corrective action was taken.

The Storage blank indicate the presence of Methylene chloride [8.8ug/Kg] File ID: VW020452.D {VHBLK001} lab contamination. As per method, less than 2 times the respective CRQL is allowed to fail for Methylene chloride. Therefore, no further corrective action was taken.

The storage blank analysis indicated presence of Chloroform [3.5ug/L] FileID: VX024828.D {VHBLK002} due to lab contamination. As per method, less than the respective CRQL is allowed to fail for Chloroform. Therefore no further corrective action was taken.

The Sample #C0AC0ME, C0AC1ME, C0AC2ME have the concentration of target compound below Method detection limits, therefore it is not reported as Hit in Form1.

See **Manual Integration report f**or the manual integration information at the end of the case narrative.

Calculation:
Low/Med Water Level Calculation

$$\text{Concentration in ug/L} = \frac{(Ax)\,(Is)\,(DF)}{(Ais)\,(RRF)\,(Vo)}$$

Where,
Ax = Area of the characteristic ion (EICP) for the compound to be measured.
Ais = Area of the characteristic ion (EICP) for the internal standard.
Amount of internal standard added in ng.
RRF = Mean Relative Response Factor from the initial calibration standard.
Vo = Total volume of water purged, in mL.
DF = Dilution Factor

Low/Med Level Soil/Sediment Calculation

$$\text{Concentration in ug/Kg dry Weight basis)} = \frac{(A_x)(I_s)(D_f)}{(Ais)(RRF)(Ws)(D)}$$

Where,
Ax = Area for the compound to be measured
Ais = Area for the specific internal standard
Is = Amount of internal standard added in Nano grams (ng)
RRF = Relative response factor of the calibration standard.
Df = Dilution factor
Ws= Weight of sample

$$D = \frac{100 - \%\text{moisture}}{100}$$

Medium-Level Soil/Sediment Concentration

$$\text{Concentration}(\mu g/Kg = \frac{(Ax)(Iis)(AVt)(1000)(DF)}{(Ais)\overline{RRF})(Va)(Ws)(S)}$$

Where

Ax	=	Area for the compound to be measured
Ais	=	Area for the specific internal standard
Is	=	Amount of internal standard added in nanograms (ng)
S	=	% Solids/100
$\overline{RRF}$	=	Mean Relative Response Factor from the ambient temperature purge of the initial calibration standard
AV_t	=	Adjusted total volume of the methanol extract plus soil water in mL determined by: $AV_t = V_t + \{W_s - [W_s(S)]$. Where Vt = total volume of methanol extract in mL. This volume is typically 5.0 mL, even though only 0.1 mL is transferred to the vial in Section 10.2.3.6. The quantity derived from {Ws - [Ws(S)]} is the soil water volume and is expressed in mL.
Va	=	Volume of the aliquot of the sample methanol extract (i.e., sample extract not including the methanol added to equal 100 µL), in µL added to reagent water for purging
Ws	=	Weight of soil/sediment extracted, in g
DF	=	Dilution Factor. The DF for analysis of soil/sediment sample extracts for volatiles by the medium-level method is defined as the ratio of the volume (µL) taken from the extract used to make the dilution plus the clean solvent added for the dilution (µL), to the volume taken from the extract used to make the dilution. For example, if 10 µL of the extract was taken and added to 90 µL of clean solvent, then ration would be (10 µL + 90 µL/10 µL)= a DF of 10.

Example sample **C0AB9ME** for **Methylcyclohexane:**

Ax	=	3012
Ais	=	281571
Is	=	250
S	=	52.9/100 = 0.529
$\overline{RRF}$	=	0.746
AV_t	=	7.01
Va	=	100
Ws	=	4.28
DF	=	1
Avt	=	5 + [4.28 - (4.28 X 52.9/100)] = 7.01

$$\text{Concentration}(\mu g/Kg) = \frac{(3012)(250)(7.01)(1000)(1)}{(281571)(0.746)(100)(4.28)(0.529)}$$

Final Reported results = 110ug/Kg

Relative Response Factor = **Dichlorodifluoromethane**: RUN **VW10/08/2021** for **2.5** ppb

$$RRF = \frac{\text{Area of compound}}{\text{Area of Internal Standard}} \times \frac{\text{Conc. of Internal Standard}}{\text{Conc. of Compound}}$$

$$RRF = \frac{2151}{219300} \times \frac{25}{2.5}$$

RRF= 0.098

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature _____ Name: Nimisha Pandya.

Date: _____ Title: Document Control Officer.