SDG NARRATIVE

LAB NAME: CHEMTECH CONSULTING GROUP
CASE: 49662
SDG: EW403
CONTRACT: 68HERH20D0011
LAB CODE: CHM
CHEMTECH PROJECT: M3879
MODIFICATION REF. NUMBER: 3064.0

Sample ID	EPA Sample ID	pH
M3879-01	EW402	
M3879-02	EW403	
M3879-03	EW404	
M3879-04	EW405	
M3879-05	EW406	
M3879-06	EW407	
M3879-07	EW408	
M3879-08	EW409	
M3879-09	EW410	
M3879-10	EW411	
M3879-11MS	EW411MS	
M3879-12MSD	EW411MSD	
M3879-13MS	EW410MS	
M3879-14MSD	EW410MSD	

14 Soil samples were delivered to the laboratory intact on 09/22/2021.

Test requested on the Chain of Custody was Semivolatile Organic, Semivolatile Organic-SIM, Pesticide and Aroclor 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 3.9, 3.1 degree Celsius for the samples received on 09/22/2021.

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 laboratory has one open SDG for seven days, SDG EW403 - which does not contain any samples for laboratory QC for Pesticides analysis. The laboratory would like to confirm if they may use sample EW410 received with shipment. The laboratory has confirmed that this sample is not a PE, blank, or rinsate sample.

Resolution 2: In accordance with SFAM01.1, Exhibit A, Section 5.5.4.1, the laboratory can proceed with using the selected samples for laboratory QC.

Semivolatiles :

The samples were analyzed on instrument BNA_G using GC Column ZB-GR Semi Volatiles Guardian which is 30 meters, 0.25 mm ID, 0.5 um df, Catalog # 7HG-G027-17-GGA.

Semis volatile Organic sample for Soil was extracted by Method SFAM01.1 on 09/30/2021, The analysis of SVOC-SFAM was based on method SFAM01.1.

The Holding Times were met for all analysis.
The Surrogate recoveries met the acceptable criteria except for,
EW410 [4,6-Dinitro-2-methylphenol-d2 - 6%, 4-Nitrophenol-d4 - 8%]. As per method four surrogates are allowed to fail. Therefore no further corrective action was taken.
The Internal Standards Areas met the acceptable requirements.
The Retention Times were acceptable for all samples.
The MS {EW411MS} recoveries met the requirements for all compounds except for N-Nitroso-di-n-propylamine[32%] .
The MSD {EW411MSD} recoveries met the requirements for all compounds except for N-Nitroso-di-n-propylamine[32%] .
The RPD for MSD {EW411MSD} met the requirements. No corrective action is required for failure to meet the MS/MSD criteria by the SOW.
The Blank Spike for {PB139486BS} recoveries met the requirements for all compounds.
The Blank analysis did not indicate the presence of lab contamination.
The Tuning criteria met requirements.
The Initial Calibration met the acceptable requirements.
The Continuous Calibration met the acceptable requirements.

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

Concentration of SOIL Sample:

Concentration ug/Kg,

$$\text{(dry weight basis)} = \frac{(Ax)\,(Is)\,(Vt)\,(DF)\,(GPC)}{(Ais)\,(\overline{RRF})\,(Vi)\,(Wt)\,(D)}$$

Where,
Ax = Area of the characteristic ion for the compound to be measured.
Ais = Area of the characteristic ion for the internal standard.

Is = Amount of internal standard injected in ng.
Vi = Volume of extract injected in microliters (uL)
Vt = Volume of concentrated extract in microliters (uL)
Wt = Weight of the original sample extracted in g
Df = Dilution factor

$\overline{RRF}$ = Mean Relative Response Factor determined from the initial calibration standard.
GPC = $\frac{Vin}{Vout}$ = GPC factor (If no GPC is performed, GPC=1)
Vout = Volume of extract collected after GPC cleanup.

D = % dry weight or $\frac{100 - \%Moisture}{100}$

Example calculation of EW403 for Pyrene:

Ax = 22138
Ais = 259232
Is = 20
Vi = 1
Vt = 500
Wt = 30.1
Df = 1
RRF = 1.317
GPC = 2
D= 0.779

Concentration

$$\text{(dry weight basis) ug/Kg} = \frac{(22138)\,(20)\,(500)\,(1)\,(2)}{(259232)\,(1.317)\,(1)\,(30.1)\,(0.779)}$$

$$= 55 \text{ ug/Kg}$$

RRF Calculation of standard 20 ppb for Naphthalene with G instrument for method 09/30/2021.

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

$$= 189071/173952 \times 20/20$$

$$= 1.087 \text{ (Reported RRF)}$$

Semivolatiles SIM:
The samples were analyzed on instrument BNA_M using GC Column ZB-GR Semi Volatiles Guardian which is 30 meters, 0.25 mm ID, 0.5 um df, Catalog # 7HG-G027-17-GGA.

Semis volatile Organic samples for Soil were extracted by Method SFAM01.1 on 09/30/21, the analysis of SVOCMS Gropu2 was based on method SFAM01.1_SVOC-SIM. MA 3064.0 See the MA instructions at the end of the Case Narrative.

The Holding Times were met for all analysis.
The Surrogate recoveries met the acceptable criteria.
The Internal Standards Areas met the acceptable requirements.
The Retention Times were acceptable for all samples.
The MS {EW411MS} recoveries met the requirements for all Compounds except for Pentachltophenol [0%].
The MSD {EW411MSD} recoveries met the requirements for all Compounds except for Pentachltophenol [0%].
The RPD {EW411MSD} met the requirements. No corrective action is required for failure to meet the MS/MSD criteria by the SOW.
The Blank Spike for {PB139487BS} recoveries met the requirements for all compounds.
The Blank analysis did not indicate the presence of lab contamination.
The Initial Calibration met the requirements.
The Continuous Calibration met the requirements.

The Samples EW403 have the concentration of target compound below Method detection limits; Therefore it is not reported as Hit in Form1.

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

Concentration of SOIL Sample:

Concentration ug/Kg,

$$\text{(dry weight basis)} = \frac{(Ax)\,(Is)\,(Vt)\,(DF)\,(GPC)}{(Ais)\,(\overline{RRF})\,(Vi)\,(Wt)\,(D)}$$

Where,
Ax = Area of the characteristic ion for the compound to be measured.
Ais = Area of the characteristic ion for the internal standard.
Is = Amount of internal standard injected in ng.
Vi = Volume of extract injected in microliters (uL)
Vt = Volume of concentrated extract in microliters (uL)
Wt = Weight of the original sample extracted in g
Df = Dilution factor

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RRF = Mean Relative Response Factor determined from the initial calibration standard.
GPC = Vin = GPC factor (If no GPC is performed, GPC=1)

Example calculation of EW402 for Naphthalene:

Ax = 1743
Ais = 21196
Is = 0.4
Vi = 1
Vt = 500
Wt = 30.1
Df = 1
RRF = 1.187
GPC = 2
D= 0.876

Concentration

(dry weight basis) ug/Kg = $\frac{(1743)\ (0.4)\ (500)\ (1)\ (2)}{(21196)\ (1.187)\ (1)\ (30.1)\ (0.876)}$

= 1.1 ug/Kg

RRF Calculation of standard 0.4 ppb Naphthalene with instrument M for method 09/27/2021.

RRF= Area of compound / X Conc. of Internal Standard /

Area of Internal Standard Conc. of Compound

= 27754/24060 X 0.4/0.4

= 1.154 (Reported RRF)

Pesticides:
The analyses for Pesticides were performed on instrument ECD D. The front column is ZB-Multi-Residue-2 which is 30 meters, 0.32 mm ID, 0.2 um df. The rear column ZB-Multi-Residue-1 which is 30 meters, 0.32 mm ID, 0.50 um df.

The sample was analyzed on a single injection dual column system. To distinguish the second column analysis from the first column a -2 suffix was added to the file id on the form 1. These refer to forms were both columns are reported. Form 1s for the IBLK and ALCS are referenced as IBLK(1)/IBLK(2), MS(1)/MS(2), MSD(1)/MSD(2) and PLCS01(1)/PLCS01(2) respectively.

Pesticide sample was extracted by method SFAM01.1 on 09/29/2021 and analyzed on 09/30/2021. The sample was extracted and analyzed within contractual holding time.

The soil sample was subjected to Florisil and GPC Cleanup.
The Surrogate recoveries met the acceptable criteria.
EW410MS met the requirements.
EW410MSD met the requirements.
The RPD met the requirements.
The Blank analysis did not indicate the presence of lab contamination.
Blank and Laboratory Control Sample met the requirements.
Retention Times met the requirements.
Florisil check met the requirements.
Resolution Check met the requirements.
The Retention Times were acceptable for all samples.
The Initial Calibration met the requirements.
The Individual Mix A met the requirements.
The Individual Mix B met the requirements.
The PEM met the requirement.

Samples EW410MS and EW410MSD failed to meet the %D for the results between the two columns Criteria.

PLCS465 have the concentration of target compound# delta-BHC in first column below Method detection limits, therefore it is not reported as hit in Form1.

Calculation for the Concentration in Soil Samples

$$\text{Concentration ug/Kg (Dry weight basis)} = \frac{(Ax)\,(Vt)\,(DF)\,(GPC)}{(CF)\,(Vi)\,(Ws)\,(D)}$$

Where,
Ax = Response (peak area or height) of the compound to be measured.
CF = Mean Calibration Factor from the initial calibration (area/ng).
Vt = Volume of the concentrated extract in uL
Vi = Volume of extract injected (uL). (If a single injection is made onto two columns, use ½ the volume in the syringe as the volume injected onto each column).
Ws = Weight of sample extracted (g).

$$D = \%\text{ dry weight or } \frac{100 - \%\text{Moisture}}{100}$$

$$GPC = \frac{Vin}{Vout} = \text{GPC factor (If no GPC is performed, GPC=1)}$$

DF = Dilution Factor.

Example of 4,4'-DDE calculation

Calibration Factor Calculation 4,4'-DDE in the first column

$$\text{Calibration factor (CF)} = \frac{\text{peak area}}{\text{Mass injected in ng}}$$

$$= \frac{11678350}{10ng}$$

= 1167840

Mean Calibration Factor = average of 5 point calibration factor

= 1191960

No target **Pesticdes** were detected in the samples.

Aroclors:

The analyses were performed on instrument GCECD_R. The front column is ZB-MR1 which is 30 meters, 0.32 mm ID, 0.5 um df, Catalogue # 7HM-G016-17. The rear column is ZB-MR2 which is 30 meters, 0.32 mm ID, 0.25 µm; Catalogue # 7HM-G017-11.

The sample was analyzed on a single injection dual column system. To distinguish the second column analysis from the first column a -2 suffix was added to the file id on the form 1. These refer to forms were both columns are reported. Form 1s for the IBLK and ALCS are referenced as IBLK(1)/IBLK(2), MS(1)/MS(2), MSD(1)/MSD(2), and ALCS01(1)/ALCS01(2) respectively.

Aroclor sample was extracted by Method SFAM01.1 on 09/28/2021 and analyzed on 09/29/2021. All the samples were subjected to a Sulfuric acid cleanup. The sample was extracted and analyzed within contractual holding time.

The Surrogate recoveries met the acceptable criteria.
EW411MS met the requirements.
EW411MSD met the requirements.
The RPD met the requirements.
The Laboratory Control Sample met requirements.
The Blank analysis did not indicate the presence of lab contamination.
The Initial Calibration met the requirements.
The Continuing Calibrations met the requirements.
The Retention Times were acceptable for all samples.

Samples EW407, EW410 and EW411 failed to meet the %D for the results between the two columns Criteria.

Sample # EW403, EW405, EW406 have the concentration of target compound# Aroclor-1260 below Method detection limits, therefore it is not reported as hit in Form1.

See **Manual Integration report** for the manual integration information at the end of the Case narrative.

Calculation for Concentration in Soil samples:

$$\text{Concentration ug/Kg (Dry weight basis)} = \frac{(Ax)\,(Vt)\,(DF)\,(GPC)}{(CF)\,(Vi)\,(Ws)\,(D)}$$

Where,
Ax = Response (peak area or height) of the compound to be measured.
CF = Mean Calibration Factor from the initial calibration (area/ng).
Vt = Volume of the concentrated extract in uL

Vi = Volume of extract injected (uL). (If a single injection is made onto two columns, use ½ the volume in the syringe as the volume injected onto each column).
Ws = Weight of sample extracted (g).
D = % dry weight or $\frac{100 - \%\text{Moisture}}{100}$
GPC = $\frac{Vin}{Vout}$ = GPC factor (If no GPC is performed, GPC=1)
DF = Dilution Factor

Example of AR1260 calculation for Peak 1

Calibration factor Peak 1 100ppb ISTD= $\frac{\text{peak area}}{\text{Mass injected ng}}$
Column1

$$= \frac{25091632}{0.100}$$

= 250916320 calibration factor for Peak 1 100ppb

Average of 5 peaks = 229724750

No target **Aroclors** were detected in the samples.

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.