December 6, 2017

Manitoba Sustainable Development
Programs and Strategies
1007 Century Street
Winnipeg, MB R3H 0W4

E-mail: warren.rospad@gov.mb.ca

Attention: Warren Rospad

Re: Remedial Plan
2445 Ferrier Street, Winnipeg, MB
Pinchin File: 120309

Pinchin Ltd. (Pinchin) is pleased to submit this Remedial Plan (RP) to Manitoba Sustainable Development, Programs and Strategies for approval prior to a completing remedial excavation at 2445 Ferrier Street, Winnipeg, MB (Site).

The Site is currently developed with one two-storey office building and a warehouse, occupied by Stefanchuk Concrete and Material Services. Pinchin has been retained by Stefanchuk Concrete and Material Services (Client) to conduct a remedial excavation at the Site in relation to an order issued by Manitoba Sustainable Development prior to the Client relocating to another property. The Client does not own the Site. Contact information for the Client is as follows:

Wayne Mackelson
Stefanchuk Concrete and Material Services
2445 Ferrier Street
Winnipeg, MB R2V 4P4
Phone: 204.227.2249
Email: wayne@stefanchuk.ca

1.0 BACKGROUND

Pinchin was provided a letter titled "*Decommissioning of SCMS Inc. bulk materials handling facility, 2445 Ferrier Street, Winnipeg*" dated September 12, 2016, issued to the Client by Manitoba Sustainable Development. Manitoba Sustainable Development conducted an inspection of the Site on September 2, 2016 in response to concerns regarding activities on the property. The letter indicated that the waste oil storage area does not meet current requirements. Staining was observed in the waste oil storage area and near the dispenser of the aboveground diesel storage tank. Manitoba Sustainable Development required remediation of the impacted soils with receipts from a licensed soil treatment facility being provided to Manitoba Sustainable development.

The letter also noted that the storage of materials at the Site reportedly caused an increase in elevation of some areas, affecting drainage. The concrete washout area appeared to encroach upon the neighbouring property to the north. The letter reported that SCMS Inc. (Client) indicated that these areas will be graded to pre-existing conditions upon decommissioning, with some material used as fill at the new facility location. The letter stated that SCSM Inc. was required to complete the tasks prior to initiating operations at their 50 Nicolas Avenue location in Winnipeg, Manitoba. The scope of work outlined in this Remedial Plan and the work being undertaken by Pinchin does not include grading of these areas.

Prior to conducting a remedial excavation at the Site, Pinchin collected soil samples from the Site. On January 9, 2017, an excavator operated by Winnipeg Environmental Remediations Incorporated (WERI) was used to collect soil samples from two areas on-Site, the AST dispenser area (Excavation 1) and the waste oil storage area (Excavation 2). The locations of the areas investigated are shown on Figure 1, and the locations of the soil samples are shown in Figure 2. Soil samples were collected from the ground surface in areas of staining. The ground surface was frozen and the greatest depth advanced was 0.75 metres below ground surface (mbgs).

Seven soil samples were submitted for laboratory analysis of petroleum hydrocarbons (PHCs) in the F1 to F4 fraction ranges (F1-F4), benzene, toluene, ethylbenzene and xylenes (collectively referred to as BTEX), and polycyclic aromatic hydrocarbons (PAHs).

Soil laboratory analytical results were compared with the applicable criteria stipulated in the most recent Canadian Council of Ministers of the Environment (CCME) "*Environmental Quality Guidelines*", the CCME "*Canada-Wide Standards for Petroleum Hydrocarbons in Soil*", dated 2008 and the CCME "*Canadian Environmental Soil Quality Guidelines for the Protection of Environmental and Human Health - Polycyclic Aromatic Hydrocarbons*", dated 2010 (CCME Soil Guidelines). Soil results were compared to the CCME Soil Guidelines for commercial land use, fine grained surface soils excluding the protection of potable water, livestock watering and aquatic life.

All soil samples submitted for laboratory analysis exceeded one or more of the analytical parameters. The following exceedances were identified:

- Soil sample EX1-2 collected at the fuel dispensing area at a depth of 0.4 mbgs exceeded the CCME Soil Guidelines for PHCs (F2) (960 milligrams per kilogram (mg/kg) vs. the CCME Soil Guideline of 260 mg/kg);
- Soil sample EX1-3 collected at the fuel dispensing area at a depth of 0.2 mbgs exceeded the CCME Soil Guidelines for PHCs (F2) (7,500 mg/g vs. the CCME Soil Guideline of 260 mg/kg) and PHCs (F3) (10,500 mg/kg vs. the CCME Soil Guideline of 1,700 mg/kg);

- Soil sample EX2-3 collected at the waste oil spill area at a depth of 0.3 mbgs exceeded the CCME Soil Guidelines for PHCs (F2) (2,000 mg/kg vs. the CCME Soil Guideline of 260 mg/kg) and PHCs (F3) (4,800 mg/kg vs. the CCME Soil Guideline of 1,700 mg/kg);
- Soil sample EX2-7 collected at the waste oil spill area at a depth of 0.6 mbgs exceeded the CCME Soil Guidelines for PHCs (F2) (1,800 mg/kg vs. the CCME Soil Guideline of 260 mg/kg);
- Soil sample EX2-8 collected at the waste oil spill area at a depth of 0.6 mbgs exceeded the CCME Soil Guidelines for PHCs (F2) (1,100 mg/kg vs. the CCME Soil Guideline of 260 mg/kg);
- Soil sample EX2-8 collected at the waste oil spill area at a depth of 0.6 mbgs exceeded the CCME Soil Guidelines for PHCs (F2) (2,300 mg/kg vs. the CCME Soil Guideline of 260 mg/kg); and
- Soil sample EX2-11 collected at the waste oil spill area at a depth of 0.5 mbgs exceeded the CCME Soil Guidelines for PHCs (F2) (5,700 mg/kg vs. the CCME Soil Guideline of 260 mg/kg), PHCs (F3) (55,000 mg/kg vs. the CCME Soil Guideline of 1,700 mg/kg) and PHCs (F4) (15,000 mg/kg vs. the CCME Soil Guideline of 3,300 mg/kg).

The locations of the above soil samples are shown on Figure 2. A summary of laboratory soil analytical results with exceedances are shown in Table 1. All soil excavated from the ground was containerized in 1 m^3 soil bags and are being stored on-Site.

2.0 SCOPE OF WORK AND METHODOLOGY

The scope of work to be completed includes excavation of impacted soils, verification soil sampling, and excavation backfilling.

The remedial excavation will be conducted in general accordance with the following documents:

- Manitoba Sustainable Development guidelines entitled:
  - "Environmental Site Assessments in Manitoba", dated June 2016;
  - "Manitoba Criteria for BTEX in Investigation Results", dated June 2016; and
  - "Treatment and Disposal of Petroleum Contaminated Soil", dated June 2016.
- Manitoba Sustainable Development information bulletins entitled:
  - "Application of the CCME Canada-Wide Standard for Petroleum Hydrocarbons in Soil: Management Limits", dated June 2016;
  - "Contaminated Sites Remediation Regulation Reporting Requirements and Standards", dated June 2016; and

- "CCME Guidance on Environmental Site Characterization – Laboratory Analysis", dated June 2016.

- Pinchin's standard operating procedures (SOPs).
- Canadian Standards Association publication entitled "*Phase II Environmental Site Assessment, CSA Standard Z769-00 (R 2013)*".

2.1 Excavation Activities

2.1.1 Pre-Excavation Activities

The following activities will be completed prior to conducting the excavation:

- Obtain approval of the RP describing the proposed remedial excavation from Manitoba Sustainable Development prior to any remedial excavation activities occurring; and
- Underground services in the vicinity of the work area will be cleared by public utility locators and a private utility locator.

2.1.2 Excavation Activities

Upon completion of the pre-excavation activities, the following will be completed by WERI and monitored by Pinchin:

- At the request of the Client, create an excavation with a surface area of approximately 13.5 m^2 and a depth of 0.4 mbgs in the fuel dispensing area, and create an excavation with a surface area of approximately 30 m^2 and a depth of approximately 0.7 mbgs in the waste oil spill area. The soil will be transported directly from the Site for disposal at an approved waste disposal facility. Soil currently stored in 1 m^3 soil bags will also be transported from the site for disposal at an approved waste disposal facility.

2.1.3 Excavation Verification Soil Sampling

Following the completion of the excavations, Pinchin will document the environmental status of the soil at the excavation limits by completing the activities noted below.

- The soil will be examined for visual/olfactory evidence of impacts and a verification soil sampling program will be conducted in accordance with Pinchin's SOPs; and
- Soil samples will be collected from the sidewalls and floor of the excavations using the excavator bucket or directly from the sidewalls and floor of the excavation by Pinchin personnel at the frequency specified in Pinchin's SOPs for field screening for petroleum-derived vapour concentrations in soil headspace using a photoionization detector and combustible gas indicator (i.e., RKI Eagle 2) calibrated to hexane and isobutylene. The results of the field screening will be used to select "worst case" soil samples for submission to the laboratory for analysis of PHCs (F1-F4), BTEX, VOCs and PAHs.

2.1.4 Excavation Backfilling

The excavation will be backfilled using "3/4 down" crushed limestone.

2.2 Analytical Laboratory

Selected soil and groundwater samples will be delivered to Maxxam Analytics Inc. (Maxxam) in Winnipeg, MB for analysis. Maxxam is an independent laboratory accredited by the Standards Council of Canada and the Canadian Association for Laboratory Accreditation. Formal chain of custody records of the sample submissions will be maintained between Pinchin and the staff at Maxxam.

2.3 QA/QC Protocols

Various quality assurance/quality control (QA/QC) protocols will be followed during the remedial excavation to ensure that representative samples are obtained and that representative analytical data is reported by the laboratory.

Field QA/QC protocols that will be employed by Pinchin will include the following:

- Soil samples will be extracted from areas not in direct contact with the excavator bucket and/or sampling equipment, where possible, to minimize the potential for cross-contamination;
- Soil and groundwater samples will be placed in laboratory-supplied sample jars and vials;

- Soil and groundwater samples will be placed in coolers on ice immediately upon collection, with appropriate sample temperatures maintained prior submission to the laboratory;
- Dedicated and disposable nitrile gloves will be used for sample handling;
- Non-dedicated sampling equipment will be cleaned before initial use and between uses to minimize the potential for cross-contamination by washing with an Alconox™/potable water mixture followed by a deionized water rinse; and
- Sample collection and handling procedures will be performed in general accordance with Manitoba Sustainable Development Guidelines and Pinchin's SOPs for excavations.

Maxxam's internal laboratory QA/QC consists of the analysis of laboratory duplicate, method blank, matrix spike and spiked blank samples, an evaluation of relative percent difference calculations for laboratory duplicate samples, and an evaluation of surrogate recoveries.

2.4 Regulatory Criteria

Pinchin will compare the soil laboratory analytical results with the applicable criteria stipulated in the most recent CCME "*Environmental Quality Guidelines*", the CCME "*Canada-Wide Standards for Petroleum Hydrocarbons in Soil*", dated 2008 and the CCME "*Canadian Environmental Soil Quality Guidelines for the Protection of Environmental and Human Health - Polycyclic Aromatic Hydrocarbons*", dated 2010.

Pinchin will the compare groundwater laboratory analytical results with the applicable Ontario Ministry of the Environment and Climate Change "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011.

2.5 Report

Pinchin will prepare a factual report for the Site documenting the findings of the remedial excavation. A copy of the report will be provided to Manitoba Sustainable Development.

3.0 CLOSING

We trust that the information provided herein is sufficient for Manitoba Sustainable Development to approve the RP. If you have any questions, or require additional information, please do not hesitate to contact the undersigned.

Sincerely,

Pinchin Ltd.

Prepared by:

Mario Muan, B.Sc.
Environmental Scientist
204.452.0983 ext. 2236
mmuan@pinchin.com

Reviewed by:

Grant Eftoda, B.Sc. (Eng.)
Regional Practice Lead
204.452.0983 ext. 2224
geftoda@pinchin.com

Attach. Figure 1 Excavation Location Plan
Figure 2 Sample Location Plan
Table 1 Samples Submitted for Laboratory Analysis
Table 2 Petroleum Hydrocarbon and BTEX Analysis for Soil
Table 3 Polycyclic Aromatic Hydrocarbons

LEGEND

APPROXIMATE PROPERTY LIMITS

PINCHIN

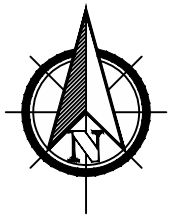
PROJECT NAME: REMEDIAL PLAN			
CLIENT NAME: STEFANCHUK CONCRETE AND MATERIALS SERVICES			
PROJECT LOCATION: 2445 FERRIER STREET, WINNIPEG, MANITOBA			
FIGURE NAME: EXCAVATION LOCATION PLAN			FIGURE NO. 1
APPROXIMATE SCALE: AS SHOWN	PROJECT NO.: 120309	DATE: DECEMBER 2017	

LEGEND

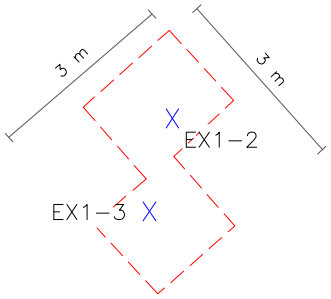
APPROXIMATE TEST PIT LIMITS

EX1-1 SAMPLE DESIGNATION

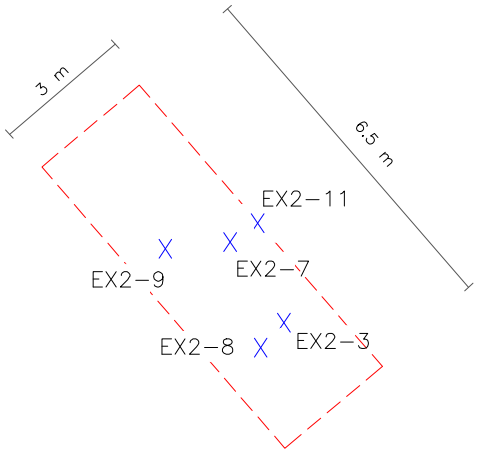
X SAMPLING LOCATION/ SUBMITTED FOR ANALYSIS



EXCAVATION 1



EXCAVATION 2



PINCHIN

PROJECT NAME: REMEDIAL PLAN			
CLIENT NAME: STEFANCHUK CONCRETE AND MATERIALS SERVICES			
PROJECT LOCATION: 2445 FERRIER STREET, WINNIPEG, MANITOBA			
FIGURE NAME: SAMPLE LOCATION PLAN			FIGURE NO.: 2
APPROXIMATE SCALE: AS SHOWN	PROJECT NO.: 120309	DATE: DECEMBER 2017	

TABLE 1
SAMPLES SUBMITTED FOR LABORATORY ANALYSIS
Wayne Mackelson
2445 Ferrier Street, Winnipeg, Manitoba

Samples			Parameters			
Sampling Location	Sample ID	Sample Depth Range (mbgs)	SOIL SAMPLES	PHCs (F1-F4) & BTEX	PAHs	Rationale/Notes
EX1	EX1-2	0.40		●	●	Assess soil conditions in relation to potential on site impacts caused by an active fuelling station
EX1	EX1-3	0.20		●	●	Assess soil conditions in relation to potential on site impacts caused by an active fuelling station
EX2	EX2-3	0.30		●	●	Assess groundwater conditions in relation to potential on site impacts caused by a reported waste oil spill
EX2	EX2-7	0.60		●	●	Assess groundwater conditions in relation to potential on site impacts caused by a reported waste oil spill
EX2	EX2-8	0.60		●	●	Assess groundwater conditions in relation to potential on site impacts caused by a reported waste oil spill
EX2	EX2-9	0.60		●	●	Assess groundwater conditions in relation to potential on site impacts caused by a reported waste oil spill
EX2	EX2-11	0.50		●	●	Assess groundwater conditions in relation to potential on site impacts caused by a reported waste oil spill

Notes:

PHCs (F1-F4)	Petroleum Hydrocarbons (Fraction 1 to Fraction 4)
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
PAHs	Polycyclic Aromatic Hydrocarbons
mbgs	Metres Below Ground Surface

Pinchin File: 120309

TABLE 2
PETROLEUM HYDROCARBON AND BTEX ANALYSIS FOR SOIL
Wayne Mackelson
2445 Ferrier Street, Winnipeg, Manitoba

Parameter	CCME Guidelines		Sample Designation						
			Sample Collection Date (dd/mm/yyyy)						
			Sample Depth (mbgs)						
	Surface (<1.5 mbgs)	Subsoil (>1.5 mbgs)	EX1-2	EX1-3	EX2-3	EX2-7	EX2-8	EX2-9	EX2-11
			09/01/2017	09/01/2017	09/01/2017	09/01/2017	09/01/2017	09/01/2017	09/01/2017
			0.4	0.2	0.3	0.6	0.6	0.6	0.5
Benzene	2.8[a] 0.3[b]	2.9[c] 0.32[d]	<0.0050	0.048	<0.0050	<0.0050	<0.0050	<0.0050	0.015
Toluene	330[a] 250[b]	660[c] 500[d]	0.055	0.76	<0.020	<0.020	<0.020	<0.020	0.84
Ethylbenzene	430[a] 300[b]	860[c] 600[d]	0.098	1.1	0.090	<0.010	<0.010	<0.010	0.53
Xylenes (Total)	230[a] 350[b]	460[c] 700[d]	0.75	7.2	1.4	<0.040	0.079	<0.040	4.2
Petroleum Hydrocarbons F1 (C_6 - C_{10})	320[ef]	800[g] 320[h]	16	35	61	<10	<10	<10	49
Petroleum Hydrocarbons F2 (>C_{10} - C_{16})	260[ef]	1,000[gh]	**960**	**7,500 (1)**	**2,000**	**1,800**	**1,100**	**2,300**	**5,700 (1)**
Petroleum Hydrocarbons F3 (>C_{16} - C_{34})	2,500[e] 1,700[f]	5,000[g] 3,500[h]	990	**10,000 (1)**	**4,800**	140	340	680	**55,000 (1)**
Petroleum Hydrocarbons F4 (>C_{34} - C_{50})	6,600[e] 3,300[f]	10,000[gh]	59	130 (1)	750	59	110	89	**15,000 (1)**

Notes:

CCME	Canadian Council Ministers of the Environment
BOLD	Exceeds referenced guideline
	Confirmatory samples collected from ground surface
Units	All Units in mg/g
mbgs	Metres Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
(1)	Detection limits raised due by laboratory to dilution to bring analyte within the calibrated range

[a] Referenced from the CCME Canadian Environmental Quality Guidelines, Accessed On-Line in January, 2017
Data represents the most stringent criteria for commercial land-use, fine-grained surface soils excluding the protection of potable water, livestock watering and aquatic life
[b] Referenced from the CCME Canadian Environmental Quality Guidelines, Accessed On-Line in January, 2017
Data represents the most stringent criteria for commercial land-use, coarse-grained surface soils excluding the protection of potable water, livestock watering and aquatic life
[c] Referenced from the CCME Canadian Environmental Quality Guidelines, Accessed On-Line in January, 2017
Data represents the most stringent criteria for commercial land-use, fine-grained subsoils excluding the protection of potable water, livestock watering and aquatic life
[d] Referenced from the CCME Canadian Environmental Quality Guidelines, Accessed On-Line in January, 2017
Data represents the most stringent criteria for commercial land-use, coarse-grained subsoils excluding the protection of potable water, livestock watering and aquatic life
[e] Referenced from CCME's *Canada-wide Standards for Petroleum Hydrocarbons (PHC) in Soil* , dated January 2008.
Data represents the most stringent criteria for commercial land-use, fine-grained surface soils excluding the protection of potable water, livestock watering and aquatic life
[f] Referenced from CCME's *Canada-wide Standards for Petroleum Hydrocarbons (PHC) in Soil* , dated January 2008.
Data represents the most stringent criteria for commercial land-use, coarse-grained surface soils excluding the protection of potable water, livestock watering and aquatic life
[g] Referenced from CCME's *Canada-wide Standards for Petroleum Hydrocarbons (PHC) in Soil* , dated January 2008.
Data represents the most stringent criteria for commercial land-use, fine-grained subsoils excluding the protection of potable water, livestock watering and aquatic life
[h] Referenced from CCME's *Canada-wide Standards for Petroleum Hydrocarbons (PHC) in Soil* , dated January 2008.
Data represents the most stringent criteria for commercial land-use, coarse-grained subsoils excluding the protection of potable water, livestock watering and aquatic life

TABLE 3
POLYCYCLIC AROMATIC HYDROCARBON ANALYSIS FOR SOIL
Wayne Mackelson
2445 Ferrier Street, Winnipeg, Manitoba

Parameter	CCME Guidelines [a]	Sample Designation						
		Sample Collection Date (dd/mm/yyyy)						
		Sample Depth (mbgs)						
		EX1-2	EX1-3	EX2-3	EX2-7	EX2-8	EX2-9	EX2-11
		09/01/2017	09/01/2017	09/01/2017	09/01/2017	09/01/2017	09/01/2017	09/01/2017
		0.4	0.2	0.3	0.6	0.6	0.6	0.5
Benzo(a)Pyrene Equivalency[b]	5.3	0.006	0.030	0.35	0.015	0.042	0.155	0.534
2-Methylnaphthalene	NG	0.44	1.9 (2)	0.48	<0.0050	0.0095	0.047	1.0 (2)
Acenaphthene	NG	0.089 (1)	0.24 (2)	0.13	<0.0050	<0.0050	<0.0050	0.29 (2)
Acenaphthylene	NG	0.041	0.041 (3)	0.095	<0.0050	0.0075	0.030	0.31 (2)
Anthracene	32	0.031	0.079 (2)	0.066	<0.0040	0.0094	0.022	0.11 (2)
Benzo(a)anthracene	10	<0.0050	<0.025 (2)	0.19	0.0081	0.027	0.085	0.22 (2)
Benzo(a)pyrene	72	<0.0050	<0.025 (2)	0.20	0.009	0.028	0.098	0.31 (2)
Benzo(b&j)fluoranthene	NG	<0.0050	<0.025 (2)	0.36	0.014	0.045	0.16	0.68 (2)
Benzo(b)fluoranthene	10	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NG	0.0084	<0.025 (2)	0.27	0.0067	0.021	0.075	0.55 (2)
Benzo(k)fluoranthene	10	<0.0050	<0.025 (2)	0.093	<0.0050	0.014	0.049	0.15 (2)
Chrysene	NG	<0.0050	<0.025 (2)	0.17	<0.0050	0.024	0.072	0.42 (2)
Dibenz(a,h)anthracene	10	<0.0050	<0.025 (2)	0.061	<0.0050	<0.0050	0.018	0.072 (2)
Fluoranthene	180	0.0130	0.051 (2)	0.38	0.018	0.062	0.16	0.93 (2)
Fluorene	NG	0.12	0.46 (2)	0.15	<0.0050	<0.0050	0.009	0.37 (2)
Indeno(1,2,3-cd)pyrene	10	<0.0050	<0.025 (2)	0.22	0.0078	0.024	0.086	0.37 (2)
Naphthalene	22	0.13	0.58 (2)	0.19	<0.0050	<0.0050	0.018	0.44 (2)
Phenanthrene	50	0.082	0.21 (2)	0.23	0.0078	0.029	0.046	0.67 (2)
Pyrene	100	0.12	0.80 (2)	0.64	0.017	0.052	0.19	1.8 (2)
Low Molecular Weight PAHs	NG	1.5	4.0	2.1	<0.010	0.055	0.19	3.5
High Molecular Weight PAHs	NG	0.15	0.90	2.6	0.081	0.30	1.0	5.5
Total PAH	NG	1.6	4.9	4.7	0.088	0.35	1.2	9.0

Notes

CCME	Canadian Council of the Ministries of the Environment
<	Indicates concentration is less than the laboratory's minimum reportable detection limit
BOLD	Exceeds referenced guideline
	Confirmatory samples collected from ground surface
Units	All Units in mg/kg
mbgs	Metres Below Ground Surface
NG	No guideline
NA	Not analyzed
(1)	Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.
(2)	Detection limits raised by laboratory due to dilution as a result of sample matrix interference.
(3)	Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high. Detection limits raised due to dilution as a result of sample matrix interference.

[a] Referenced from CCME'S Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health Policyclic Aromatic Hydrocarbons, 2010

[b] Benzo(a)pyrene Total Potency Equivalents is calculated by summing the products of the detectable levels of following paramters by their respective Benzo(a)pyrene Equivalnecy Factor : Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b+j)fluoranthene (0.1), Benzo(k)fluoranthene (0.1), Benzo(g,h,i)perylene (0.01), Chrysene (0.01), Dibenz(a,h)anthracene (1) and Indeno(1,2,3-c,d)pyrene (0.1)