เอกสารแนบ 16

เอกสารอนุญาตห้องปฏิบัติการ

MM-C04

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท ตรวจวัดสิ่งแวดล้อม จำกัด เลขทะเบียน ว-๓๐๑
ที่ อก ๐๓๑๐(๑)/ ๒๖๔๓ ลงวันที่ ๓๑ มกราคม ๒๕๖๖

ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๔ รายการ

น้ำเสีย จำนวน 4 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Biochemical Oxygen Demand	5-Day BOD Test, Membrane Electrode Method
2	pH	Electrometric Method
3	Total Dissolved Solids	Dri[redacted]
4	Total Suspended Solids	Dri[redacted]

เอกสารอ้างอิง

APHA, AWWA, WEF. Standard Methods for the Examination of Water and Wastewater. 23rd ed. Washington, DC: APHA, 2017.

น.16/1

ที่ อก ๐๓๑๐(๑)/ ๒๖๔๓

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๓๑ มกราคม ๒๕๖๖

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท ตรวจวัดสิ่งแวดล้อม จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน ลงวันที่ ๘ ธันวาคม ๒๕๖๕

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน บริษัท ตรวจวัดสิ่งแวดล้อม จำกัด จำนวน ๑ แผ่น

ตามหนังสือที่อ้างถึง บริษัท ตรวจวัดสิ่งแวดล้อม จำกัด ขอต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๓๐๑ สถานที่ตั้งเลขที่ ๕/๔๕ หมู่บ้าน บ้านกลางกรุง บิซทาวน์ ซอยศรีนครินทร์ ๔๖/๑ (ปราโมทย์) แขวงหนองบอน เขตประเวศ กรุงเทพมหานคร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท ตรวจวัดสิ่งแวดล้อม จำกัด ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์
นางสาวธนัตฤนันท์ ทองบาง ทะเบียนเลขที่ ว-๓๐๑-ค-๐๐๐๑

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์
[redacted] ขที่ ว-๓๐๑-จ-๐๐๐๑
ขที่ ว-๓๐๑-จ-๐๐๐๒
ขที่ ว-๓๐๑-จ-๐๐๐๓
ขที่ ว-๓๐๑-จ-๐๐๐๔
ามสิ่งที่ส่งมาด้วย

หนังสือฉบับนี้จะหมดอายุในวันที่ ๓ มกราคม ๒๕๖๙ หากประสงค์จะต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อกรมโรงงานอุตสาหกรรม ภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ที่หน้าเว็บไซต์กรมโรงงานอุตสาหกรรม ตาม QR Code ท้ายหนังสือฉบับนี้

จึงเรียนมาเพื่อทราบ

[redacted]

ยื่นคำขอผ่านระบบอิเล็กทรอนิกส์

เรมสีเขียว”

MM-C04

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com

CLC Accredited ISO/IEC 17025

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NSC-TISI-TIS 17025 CALIBRATION 0059 CLC

REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	BALANCE
MANUFACTURER	:	METTLER TOLEDO
MODEL / TYPE	:	MS204TS/00
SERIAL NO.	:	B935191252[LA-002]
LOCATION SITE	:	LABORATORY - BALANCE ROOM
DATE OF CALIBRATION	:	27 February 2025

ENVIRONMENT CONDITIONS :

Temperature : 23 °C to 24 °C Relative Humidity : 49 % to 51 %

PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-46** based on **EURAMET cg-18 Version 4.0 (11/2015).**

The calibration was performed by Comparison with Weight Set which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

Weight Set, Mettler Toledo Class E2 S/N. 158850.

TRACEABILITY :

The measurements are traceable to International System of Units (SI), through National Institute of Metrology (Thailand).

Certificate No. MM-0165-23, Due Date 21 December 2025.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95%. It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

น.16/2

Certificate No. Q25018254

F3-011-05/12-23

@clccalibration

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
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CLC Accredited ISO/IEC 17025

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NSC-TISI-TIS 17025 CALIBRATION 0059 CLC

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	BALANCE
MANUFACTURER	:	METTLER TOLEDO
MODEL / TYPE	:	MS204TS/00
SERIAL NO.	:	B935191252[LA-002]
CLID. NO.	:	362200356
JOB CONTROL NO.	:	250215018254
CALIBRATION SERVICE	:	☐ IN-LABORATORY ☑ ON-SITE

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 15 February 2025 DATE OF ISSUED : 04 March 2025

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Chonvit Thongnat

Approved By : [redacted]

This Calibration Certificate [redacted] he units of measurement according to the International System of Units (SI)

[redacted]

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MM-C04

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com

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ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17025 CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2814

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	PRIMARY FLOW CALIBRATOR
MANUFACTURER	:	MESALABS
MODEL / TYPE	:	DEFENDER 510-M
SERIAL NO.	:	172525
CLID. NO.	:	212401789
JOB CONTROL NO.	:	241010108770
CALIBRATION SERVICE	:	☑ IN-LABORATORY ☐ ON-SITE

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 10 October 2024 DATE OF ISSUED : 15 October 2024

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Supphakit Sakuntaharn

Approved [redacted]

This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q24108770

F3-011-05/12-23

@clccalibration

น.16/3

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com

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NSC-TISI-TIS 17025 CALIBRATION 0059 CLC

CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

CALIBRATION DATA

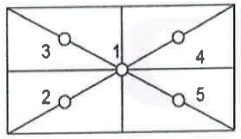
1. Error of indications

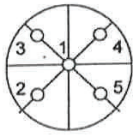
Nominal Test Value (g)	Conventional mass (g)	Display Value (g)	Error of Balance (g)	Uncertainty ± (mg)	Coverage factor *k*
Unload	0.0000	0.0000	0.0000	0.06	2,00
0.1000	0.1000	0.1000	0.0000	0.14	2,00
0.5000	0.5000	0.5000	0.0000	0.15	2,00
1.0000	1.0000	1.0001	+0.0001	0.15	2,00
2.0000	2.0000	2.0001	+0.0001	0.15	2,00
5.0000	5.0000	5.0000	0.0000	0.15	2,00
10.0000	10.0000	10.0001	+0.0001	0.15	2,00

2. Repeatability of indications

Nominal Test Value (g)	Standard Deviation of Reading (g)
200.0000	0.00004

3. Effect of eccentric application of a load on the indication

☐ 

☑ 

Nominal Test Value (g)	Display Value (g)					Maximum Difference of Center Value (g)
	Position 1	Position 2	Position 3	Position 4	Position 5	
100.0000	99.9999	100.0001	99.9999	99.9998	99.9998	0.0002

Note. The Scope of Accredited TISI Certificate No. 23-LB0092 Issue 02 Page 116 of 138

This report is valid for the above stated instrument/s only.

End of Certificate

Certificate No. Q25018254

F3-011-05/12-23

@clccalibration

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
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CLC Accredited ISO/IEC 17025

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ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17025 CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2814

MM-C04

CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of the measuring primary flow calibrator.

CALIBRATION DATA

DUC Setting (L / min)	STD Reading (L / min)	Correction (L / min)	Uncertainty ± (L/min)
0.500	0.51828	+0.01828	0.57735
1.000	1.0326	+0.0326	0.5774
2.000	2.0561	+0.0561	0.5774
5.000	5.1183	+0.1183	0.5781

Technical Note. Media of Gas : Air

Setting Temperature 23 ° C ; Pressure 101.3 kPa

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 012 Page 48 of 67

This report is valid for the above stated instrument/s only.

End of Certificate

[redacted]

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CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
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ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17025 CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2814

REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	**PRIMARY FLOW CALIBRATOR**
MANUFACTURER	:	**MESALABS**
MODEL / TYPE	:	**DEFENDER 510-M**
SERIAL NO.	:	**172525**
DATE OF CALIBRATION	:	**11 October 2024**

ENVIRONMENT CONDITIONS :

Temperature : **(23 ± 2) °C** **Relative Humidity :** **(55 ± 10) % RH**

PROCEDURE USED :

This instrument was calibrated under procedure No. **CLC-CPPF-03.** The calibration was performed by comparison with Gas Flow Meter which refers to the standard condition of 101.325 kPa and 0 °C.

REFERENCE STANDARD USED :

Gas Flow Meter, Alicat Scientific Model M-5SLPM-D-DB15 S/N. 261330.

TRACEABILITY :

The measurements are traceable to International System of Units (SI), through Chell Intrument Ltd.

Certificate No. N037064, Due Date 26 February 2025.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

[redacted]

@clccalibration

MM-C04

THAI METEOROLOGICAL DEPARTMENT

4353 Sukhumvit, Bangna, Bangkok 10260 Tel. 081-454-2804,0-2399-0469

The Result of Calibration

Certification No. 344/23

3 October, 2023

Standard	HOOK GAGE NO. 1425			TESTED ANEMOMETER	
Ultrasonic Anemometer	Pressure	Vacumm	Velocity	Velocity	Correction
m/sec	inches H2O	inches H2O	m/sec	m/sec	m/sec
1.00	-	-	-	0.95	0.05
3.02	-	-	-	2.85	0.17
5.00	-	-	-	4.95	0.05
7.00	-	-	-	6.85	0.15
9.02	-	-	-	8.95	0.07
11.01	-	-	-	10.85	0.16
13.01	-	-	-	12.99	0.02
15.01	-	-	-	15.10	-0.09
17.02	-	-	-	16.98	0.04
20.02	-	-	-	20.13	-0.11

Wind Aloft Plotting Board. US.DEPARTMENT OF COMMERCE WEATHER BUREAU	
WIND DIRETION	TESTED WIND DIRECTION
0	0
90	90
180	180
270	270

C [redacted]

น.16/5

THAI METEOROLOGICAL DEPARTMENT

4353 Sukhumvit, Bangna, Bangkok 10260 Tel. 081-454-2804,0-2399-0469

Calibration Certificate

Issued by : Calibration & Test Section : Meteorological Instruments Bureau

Date of Issue 3 October, 2023

Certification No. 344/23

Object : Wind speed and wind direction

Manufacturer : Sensor : NRG
Basic Datalogger : Symphonie

Type : Sensor : 40C Basic Datalogger : LR20

Serial No. : Sensor : 1795-00135858 Basic Datalogger : 309013229

Customer : Environmental Measurements Co.,Ltd.
5/45 Baan Klang Krung Biz Town, Soi Srinagarindra 46/1 (Pramote),
Nong Bon Sub-District, Prawet District, Bangkok 10250.

Calibration Condition : Temperature 25.1 °C Barometric Pressure 1011.3 hPa

NATIONAL STANDARD WIND TUNNEL :
: Thermal Anemometer 642 S/N 91563
: HOOK GAGE NO 1425 Pitot Tube Theodor Friedrichs Type 0800.0000 serial 9023
N.I.S.T. Test Reference Number 731/241460 : Standard Velocity at 20 - 30 m/sec
: Ultrasonic Anemometer Model DA-650-3TV (sensor TR-90AH)
Serial Number 110730029 (sensor 120629586)
JAPAN QUALITY ASSURANCE ORGANIZATION : Standard Velocity at 0 - 20 m/sec

[redacted]

MM-C04

Certificate No.: C2409-0836

Environmental conditions:	Pressure:	Temperature:	Relative humidity:
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	100.90 ± 0.01 kPa	23.2 ± 1.1 °C	58.2 ± 2.3 %RH

1. Sound pressure level

Specified sound pressure level (dB)	Measured sound pressure level (dB)	Deviated value (dB)	Tolerance limit IEC60942:2017 Class 1 (dB)
Reference microphone 40AU S/N 309231			
94.00	93.93	0.07	±0.25
114.00	114.01	0.01	±0.25

2. Frequency

Specified Frequency (Hz)	Measured Frequency (Hz)	Deviated value (%)	Tolerance limit IEC60942:2017 Class 1 (%)
Reference microphone 40AU S/N 309231			
1000.00	1000.30	0.03	±0.7
1000.00	1000.18	0.02	±0.7

3. Total distortion + Noise

Specified sound pressure level (dB)	Measured Distortion (%)	Tolerance limit IEC60942:2017 Class 1 (%)
Reference Sound Analyser Nor140 S/N 1405248		
94.00	0.50	±2.5
114.00	1.10	±2.5

Uncertainty of measurement

Parameters	Uncertainty
Sound pressure level	0.10 dB
Frequency	0.020 %
Total distortion + Noise	0.10 %

Date of calibration: 2024-09-30
Date of issue : 2024-10-02

[redacted]

น.16/6

Acoustic Laboratory (Thailand) Co., Ltd.
6/57 Soi Phoem Sin 42, Sai Mai, Sai Mai, Bangkok 10220
Tel: (+66) 02-1296780 Email: info@altbkk.com

Certificate of Calibration

Certificate No.: C2409-0836

Customer: ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 Baan Klang Krung Biz Town, Soi Srinagarindra
46/1 (Pramote), NONG BON Sub-district,
PRAWET District, BANGKOK 10250

Date of calibration: 2024-09-30
Date of issue: 2024-10-02
Instrument Calibrated: Sound Calibrator
Manufacturer: BSWA
Type: CA111
Serial no: 550482

Calibration and verification performed:
The performed tests refer to IEC 60942 (2017): Electro-acoustics - Sound Calibrators. The calibrator has been tested as described in Annex B of the same standard.

Preconditioning:
The equipment was preconditioned for more than 16 hours at the specified calibration temperature and humidity

Instruments and Program:
A complete list of instruments, hardware, and software, that has been used for this calibration is separately available from the calibration laboratory.

Equipment standards used:
-Sound Measuring Equipment Calibration Unit 483B S/N31083
-Digital Multimeter Keysight S/N HP34401A
-Ultra-low Distortion Function Generator Stanford SRS DS360 S/N123625
-Acoustic Sound Calibrator Class 0 Nor1253 S/N32941
-Reference Microphone Condenser G.R.A.S. 40AU-1 S/N309231
-Sound Analyser Nor140 S/N1405248
-Combined Pressure, Humidity and Temperature Transmitter PTU300 S/NM2520568

Traceability
The measured values are traceable to following the ISO/IEC 17025 laboratories:
Sound Pressure Level: NCL, Norway
Reference microphone: NCL, Norway
Voltage: TPA, Thailand
Frequency: TPA, Thailand
Reference Pressure, Humidity and Temperature: TPA, Thailand
Distortion Meter: EEI,Thailand

This certificate of calibration is issued by Acoustic Laboratory Thailand (ALT). It also states that the laboratory has a satisfactory quality assurance system and traceability to accredited or national calibration laboratories. This certificate may not be reproduced other than in full.

MM-C04

Acoustic Laboratory (Thailand) Co., Ltd.
6/57 Soi Phoem Sin 42, Sai Mai, Sai Mai, Bangkok 10220
Tel: (+66) 02-1296780 Email: info@altbkk.com

Certificate of Calibration

Certificate No.: S2409-0833

Customer: ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 Baan Klang Krung Biz Town, Soi Srinagarindra
46/1 (Pramote), NONG BON Sub-district,
PRAWET District, BANGKOK 10250

Date of calibration: 2024-10-01
Date of issue: 2024-10-02
Instrument Calibrated: Noise Dosimeter
Manufacturer: SOUNDTEK
Model: ST-130
Serial no: 170800130

Calibration and verification performed:
Acoustical levels are stated relative to 20μPa. Other dB levels are relative values.
The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k, which with the reported effective degree of freedom corresponds to coverage probability of approximately 95%.
The sound level meter instrument submitted for periodic testing following the periodic tests of IEC 61672-3 : 2013.

Preconditioning:
The equipment was preconditioned for more than 16 hours at the specified calibration temperature and humidity.

Instruments and Program:
A complete list of instruments, hardware, and software, that has been used for this calibration is separately available from the calibration laboratory.

Equipment standards used:
- Sound measuring equipment calibration unit Nor140 S/N1405248
- Acoustic sound calibrator class 1 Nor1256 S/N125626542
- Combined Pressure, Humidity and Temperature Transmitter PTU300 S/NM2520568

Traceability
The measured values are traceable to following the ISO/IEC 17025 laboratories:
Sound Pressure Level: EEI, Thailand
Reference Pressure, Humidity and Temperature: TPA, Thailand

This certificate of calibration is issued by Acoustic Laboratory Thailand (ALT). It also states that the laboratory has a satisfactory quality assurance system and traceability to accredited or national calibration laboratories. This certificate may not be reproduced other than in full.

The reported expanded uncertainty is based upon a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%

[redacted]

-------- **End of Calibration Certificate** -------

[redacted]

MM-C04

ALT
Acoustic Laboratory Thailand

Certificate No.: S2409-0833

C-Weighting acoustic frequency response meter free-field acoustic response at a level of 80.0 dB

Frequency Weighting (Hz)	Deviation from various frequency weighting response curve		
	C-Weighting (dB)	Uncertainty (dB)	Acceptance limit (dB)
125	0.4	0.20	±1.5
1000	0.0	0.20	±1.0
8000	1.3	0.20	±5.0

Note: Acoustical signal test of frequency weightings are not accredited

The reported expanded uncertainty is based upon a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%

Calil [redacted]

Date of
Date of

-------- End of Calibration Certificate -------

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ALT
Acoustic Laboratory Thailand

Certificate No.: S2409-0833

Environmental conditions:	Pressure:	Temperature:	Relative humidity:
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	100.78 ± 0.10 kPa	22.9 ± 0.5 °C	52.5 ± 5.0 %RH

1. Indication at the calibration check frequency

Reference Acoustic Signal (dB)	Measured value (dB)		Deviated value (dB)	Uncertainty (dB)	Acceptant limit (dB)
	Before adjust	After adjust			
93.9	94.1	93.9	0.0	0.12	±1.0

Note: Indication at the checked calibration frequency was adjusted to 93.9 dB by the sound calibrator BSWA model:CA111 S/N:550482

2. Frequency Weighting at 1 kHz

Frequency Weighting	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
A-Weighting	94.0	0.0	0.20	±0.3
C-Weighting	94.0	0.0	0.20	±0.3

Note: Frequency weighting at 1 kHz are not accredited

3. Time Weighting at 1 kHz

Time Weighting	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
Fast	94.0	0.0	0.20	±0.3
Slow	94.0	0.0	0.20	±0.3

Note: Time Weighting at 1 kHz are not accredited

4. Acoustical signal test of frequency weightings

A-Weighting acoustic frequency response meter free-field acoustic response at a level of 80.0 dB

Frequency Weighting (Hz)	Deviation from various frequency weighting response curve		
	A-Weighting (dB)	Uncertainty (dB)	Acceptance limit (dB)
125	0.2	0.20	±1.5
1000	0.0	0.20	±1.0
8000	0.6	0.20	±5.0

Note: Acoustical signal test of frequency weightings are not accredited

Date of calibration : 2024-10-01
Date of issue : 2024-10-02

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Acoustic Laboratory Thailand

Certificate No.: S2409-0834

Environmental conditions:	Pressure:	Temperature:	Relative humidity:
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	100.38 ± 0.50 kPa	23.0 ± 0.5 °C	53.4 ± 5.0 %RH

1. Indication at the calibration check frequency

Reference Acoustic Signal (dB)	Measured value (dB)		Deviated value (dB)	Uncertainty (dB)	Acceptant limit (dB)
	Before adjust	After adjust			
93.9	94.1	93.9	0.0	0.12	±1.0

Note: Indication at the checked calibration frequency was adjusted to 93.9 dB by the sound calibrator BSWA model:CA111 S/N:550482

2. Frequency Weighting at 1 kHz

Frequency Weighting	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
A-Weighting	94.0	0.0	0.20	±0.3
C-Weighting	93.9	0.0	0.20	±0.3

Note: Frequency weighting at 1 kHz are not accredited

3. Time Weighting at 1 kHz

Time Weighting	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
Fast	94.0	0.0	0.20	±0.3
Slow	94.0	0.0	0.20	±0.3

Note: Time Weighting at 1 kHz are not accredited

4. Acoustical signal test of frequency weightings

A-Weighting acoustic frequency response meter free-field acoustic response at a level of 80.0 dB

Frequency Weighting (Hz)	Deviation from various frequency weighting response curve		
	A-Weighting (dB)	Uncertainty (dB)	Acceptance limit (dB)
125	0.1	0.20	±1.5
1000	0.0	0.20	±1.0
8000	1.9	0.20	±5.0

Note: Acoustical signal test of frequency weightings are not accredited

Date of calibration : 2024-10-01
Date of Issue : 2024-10-02

[redacted]

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Acoustic Laboratory Thailand

Acoustic Laboratory (Thailand) Co., Ltd.
6/57 Soi Phoem Sin 42, Sai Mai, Sai Mai, Bangkok 10220
Tel: (+66) 02-1296780 Email: info@altbkk.com

Certificate of Calibration

Certificate No.: S2409-0834

Customer: ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 Baan Klang Krung Biz Town, Soi Srinagarindra
46/1 (Pramote), NONG BON Sub-district,
PRAWET District, BANGKOK 10250

Date of calibration: 2024-10-01
Date of issue: 2024-10-02
Instrument Calibrated: Noise Dosimeter
Manufacturer: SOUNDTEK
Model: ST-130
Serial no: 170800167

Calibration and verification performed:
Acoustical levels are stated relative to 20μPa. Other dB levels are relative values.
The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k, which with the reported effective degree of freedom corresponds to coverage probability of approximately 95%.
The sound level meter instrument submitted for periodic testing following the periodic tests of IEC 61672-3 : 2013.

Preconditioning:
The equipment was preconditioned for more than 16 hours at the specified calibration temperature and humidity.

Instruments and Program:
A complete list of instruments, hardware, and software, that has been used for this calibration is separately available from the calibration laboratory.

Equipment standards used:
- Sound measuring equipment calibration unit Nor140 S/N1405248
- Acoustic sound calibrator class 1 Nor1256 S/N125626542
- Combined Pressure, Humidity and Temperature Transmitter PTU300 S/NM2520568

Traceability
The measured values are traceable to following the ISO/IEC 17025 laboratories:
Sound Pressure Level: EEI, Thailand
Reference Pressure, Humidity and Temperature: TPA, Thailand

This certificate of calibration is issued by Acoustic Laboratory Thailand (ALT). It also states that the laboratory has a satisfactory quality assurance system and traceability to accredited or national calibration laboratories. This certificate may not be reproduced other than in full.

MM-C04

Acoustic Laboratory (Thailand) Co., Ltd.
6/57 Soi Phoem Sin 42, Sai Mai, Sai Mai, Bangkok 10220
Tel: (+66) 02-1296780 Email: info@altbkk.com

Certificate of Calibration

Certificate No.: S2409-0835

Customer: ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 Baan Klang Krung Biz Town, Soi Srinagarindra
46/1 (Pramote), NONG BON Sub-district,
PRAWET District, BANGKOK 10250

Date of calibration: 2024-10-01
Date of issue: 2024-10-02
Instrument Calibrated: Noise Dosimeter
Manufacturer: SOUNDTEK
Model: ST-130
Serial no: 170800266

Calibration and verification performed:
Acoustical levels are stated relative to 20μPa. Other dB levels are relative values.
The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k, which with the reported effective degree of freedom corresponds to coverage probability of approximately 95%.
The sound level meter instrument submitted for periodic testing following the periodic tests of IEC 61672-3 : 2013.

Preconditioning:
The equipment was preconditioned for more than 16 hours at the specified calibration temperature and humidity.

Instruments and Program:
A complete list of instruments, hardware, and software, that has been used for this calibration is separately available from the calibration laboratory.

Equipment standards used:
- Sound measuring equipment calibration unit Nor140 S/N1405248
- Acoustic sound calibrator class 1 Nor1256 S/N125626542
- Combined Pressure, Humidity and Temperature Transmitter PTU300 S/NM2520568

Traceability
The measured values are traceable to following the ISO/IEC 17025 laboratories:
Sound Pressure Level: EEI, Thailand
Reference Pressure, Humidity and Temperature: TPA, Thailand

This certificate of calibration is issued by Acoustic Laboratory Thailand (ALT). It also states that the laboratory has a satisfactory quality assurance system and traceability to accredited or national calibration laboratories. This certificate may not be reproduced other than in full.

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Certificate No.: S2409-0834

C-Weighting acoustic frequency response meter free-field acoustic response at a level of 80.0 dB

Frequency Weighting (Hz)	Deviation from various frequency weighting response curve		
	C-Weighting (dB)	Uncertainty (dB)	Acceptance limit (dB)
125	1.0	0.20	±1.5
1000	-0.1	0.20	±1.0
8000	2.5	0.20	±5.0

Note: Acoustical signal test of frequency weightings are not accredited

The reported expanded uncertainty is based upon a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%

[redacted]

Date of calibration : 2024-10-01
Date of issue : 2024-10-02

------- End of Calibration Certificate -------

[redacted]

MM-C04

ALT Acoustic Laboratory Thailand

Certificate No.: S2409-0835

Environmental conditions:	Pressure:	Temperature:	Relative humidity:
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	100.38 ± 0.50 kPa	23.0 ± 0.5 °C	53.4 ± 5.0 %RH

1. Indication at the calibration check frequency

Reference Acoustic Signal (dB)	Measured value (dB)		Deviated value (dB)	Uncertainty (dB)	Acceptant limit (dB)
	Before adjust	After adjust			
93.9	94.1	93.9	0.0	0.12	±1.0

Note: Indication at the checked calibration frequency was adjusted to 93.9 dB by the sound calibrator BSWA model:CA111 S/N:550482

2. Frequency Weighting at 1 kHz

Frequency Weighting	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
A-Weighting	94.0	0.0	0.20	±0.3
C-Weighting	94.1	0.0	0.20	±0.3

Note: Frequency weighting at 1 kHz are not accredited

3. Time Weighting at 1 kHz

Time Weighting	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
Fast	94.0	0.0	0.20	±0.3
Slow	94.0	0.0	0.20	±0.3

Note: Time Weighting at 1 kHz are not accredited

4. Acoustical signal test of frequency weightings

A-Weighting acoustic frequency response meter free-field acoustic response at a level of 80.0 dB

Frequency Weighting (Hz)	Deviation from various frequency weighting response curve		
	A-Weighting (dB)	Uncertainty (dB)	Acceptance limit (dB)
125	0.9	0.20	±1.5
1000	0.2	0.20	±1.0
8000	3.3	0.20	±5.0

Note: Acoustical signal test of frequency weightings are not accredited

Date of calibration : 2024-10-01
Date of issue : 2024-10-02

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ALT Acoustic Laboratory Thailand

Certificate No.: S2409-0835

C-Weighting acoustic frequency response meter free-field acoustic response at a level of 80.0 dB

Frequency Weighting (Hz)	Deviation from various frequency weighting response curve		
	C-Weighting (dB)	Uncertainty (dB)	Acceptance limit (dB)
125	0.5	0.20	±1.5
1000	0.3	0.20	±1.0
8000	4.5	0.20	±5.0

Note: Acoustical signal test of frequency weightings are not accredited

The reported expanded uncertainty is based upon a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%

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Date of calibration : 2024-10-01
Date of issue : 2024-10-02

-------- End of Calibration Certificate -------

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ALT Acoustic Laboratory Thailand

Certificate No.: S2409-0831

Environmental conditions:	Pressure:	Temperature:	Relative humidity:
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	100.38 ± 0.50 kPa	23.0 ± 0.5 °C	53.4 ± 5.0 %RH

1. Indication at the calibration check frequency

Reference Acoustic Signal (dB)	Measured value (dB)		Deviated value (dB)	Uncertainty (dB)	Acceptant limit (dB)
	Before adjust	After adjust			
93.9	93.8	93.9	0.0	0.12	±1.0

Note: Indication at the checked calibration frequency was adjusted to 93.9 dB by the sound calibrator BSWA model:CA111 S/N:550482

2. Frequency Weighting at 1 kHz

Frequency Weighting	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
A-Weighting	94.0	0.0	0.20	±0.3
C-Weighting	94.0	0.0	0.20	±0.3

Note: Frequency weighting at 1 kHz are not accredited

3. Time Weighting at 1 kHz

Time Weighting	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
Fast	94.0	0.0	0.20	±0.3
Slow	94.0	0.0	0.20	±0.3

Note: Time Weighting at 1 kHz are not accredited

4. Acoustical signal test of frequency weightings

A-Weighting acoustic frequency response meter free-field acoustic response at a level of 80.0 dB

Frequency Weighting (Hz)	Deviation from various frequency weighting response curve		
	A-Weighting (dB)	Uncertainty (dB)	Acceptance limit (dB)
125	-0.7	0.20	±1.5
1000	0.0	0.20	±1.0
8000	-0.4	0.20	±5.0

Note: Acoustical signal test of frequency weightings are not accredited

Date of calibration : 2024-10-02
Date of issue : 2024-10-03

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ALT Acoustic Laboratory Thailand

Acoustic Laboratory (Thailand) Co., Ltd.
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Tel: (+66) 02-1296780 Email: info@altbkk.com

ilac-MRA NSC-TISI-TIS 17025 CALIBRATION 0468

Certificate of Calibration

Certificate No.: S2409-0831

Customer: ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 Baan Klang Krung Biz Town, Soi Srinagarindra
46/1 (Pramote), NONG BON Sub-district,
PRAWET District, BANGKOK 10250

Date of calibration: 2024-10-02
Date of issue: 2024-10-03
Instrument Calibrated: Noise Dosimeter
Manufacturer: SOUNDTEK
Model: ST-130
Serial no: 170800271

Calibration and verification performed:
Acoustical levels are stated relative to 20μPa. Other dB levels are relative values.
The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k, which with the reported effective degree of freedom corresponds to coverage probability of approximately 95%.
The sound level meter instrument submitted for periodic testing following the periodic tests of IEC 61672-3 : 2013.

Preconditioning:
The equipment was preconditioned for more than 16 hours at the specified calibration temperature and humidity.

Instruments and Program:
A complete list of instruments, hardware, and software, that has been used for this calibration is separately available from the calibration laboratory.

Equipment standards used:
- Sound measuring equipment calibration unit Nor140 S/N1405248
- Acoustic sound calibrator class 1 Nor1256 S/N125626542
- Combined Pressure, Humidity and Temperature Transmitter PTU300 S/NM2520568

Traceability
The measured values are traceable to following the ISO/IEC 17025 laboratories:
Sound Pressure Level: EEI, Thailand
Reference Pressure, Humidity and Temperature: TPA, Thailand

This certificate of calibration is issued by Acoustic Laboratory Thailand (ALT). It also states that the laboratory has a satisfactory quality assurance system and traceability to accredited or national calibration laboratories. This certificate may not be reproduced other than in full.

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Acoustic Laboratory (Thailand) Co., Ltd.
6/57 Soi Phoem Sin 42, Sai Mai, Sai Mai, Bangkok 10220
Tel: (+66) 02-1296780 Email: info@altbkk.com

Certificate of Calibration

Certificate No.: S2409-0832

Customer: ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 Baan Klang Krung Biz Town, Soi Srinagarindra
46/1 (Pramote), NONG BON Sub-district,
PRAWET District, BANGKOK 10250

Date of calibration: 2024-10-01
Date of issue: 2024-10-02
Instrument Calibrated: Noise Dosimeter
Manufacturer: SOUNDTEK
Model: ST-130
Serial no: 170800288

Calibration and verification performed:
Acoustical levels are stated relative to 20μPa. Other dB levels are relative values.
The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k, which with the reported effective degree of freedom corresponds to coverage probability of approximately 95%.
The sound level meter instrument submitted for periodic testing following the periodic tests of IEC 61672-3 : 2013.

Preconditioning:
The equipment was preconditioned for more than 16 hours at the specified calibration temperature and humidity.

Instruments and Program:
A complete list of instruments, hardware, and software, that has been used for this calibration is separately available from the calibration laboratory.

Equipment standards used:
- Sound measuring equipment calibration unit Nor140 S/N1405248
- Acoustic sound calibrator class 1 Nor1256 S/N125626542
- Combined Pressure, Humidity and Temperature Transmitter PTU300 S/NM2520568

Traceability
The measured values are traceable to following the ISO/IEC 17025 laboratories:
Sound Pressure Level: EEI, Thailand
Reference Pressure, Humidity and Temperature: TPA, Thailand

This certificate of calibration is issued by Acoustic Laboratory Thailand (ALT). It also states that the laboratory has a satisfactory quality assurance system and traceability to accredited or national calibration laboratories. This certificate may not be reproduced other than in full.

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Certificate No.: S2409-0831

C-Weighting acoustic frequency response meter free-field acoustic response at a level of 80.0 dB

Frequency Weighting (Hz)	Deviation from various frequency weighting response curve		
	C-Weighting (dB)	Uncertainty (dB)	Acceptance limit (dB)
125	-0.1	0.20	±1.5
1000	0.0	0.20	±1.0
8000	-0.3	0.20	±5.0

Note: Acoustical signal test of frequency weightings are not accredited

The reported expanded uncertainty is based upon a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%

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Date of
Date of

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------- End of Calibration Certificate -------

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C-Weighting acoustic frequency response meter free-field acoustic response at a level of 80.0 dB

Frequency Weighting (Hz)	Deviation from various frequency weighting response curve		
	C-Weighting (dB)	Uncertainty (dB)	Acceptance limit (dB)
125	0.1	0.20	±1.5
1000	0.1	0.20	±1.0
8000	3.0	0.20	±5.0

Note: Acoustical signal test of frequency weightings are not accredited

The reported expanded uncertainty is based upon a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%

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-------- End of Calibration Certificate -------

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Environmental conditions:	Pressure:	Temperature:	Relative humidity:
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	100.38 ± 0.50 kPa	23.0 ± 0.5 °C	53.4 ± 5.0 %RH

1. Indication at the calibration check frequency

Reference Acoustic Signal (dB)	Measured value (dB)		Deviated value (dB)	Uncertainty (dB)	Acceptant limit (dB)
	Before adjust	After adjust			
93.9	93.6	93.9	0.0	0.12	±1.0

Note: Indication at the checked calibration frequency was adjusted to 93.9 dB by the sound calibrator BSWA model:CA111 S/N:550482

2. Frequency Weighting at 1 kHz

Frequency Weighting	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
A-Weighting	94.0	0.0	0.20	±0.3
C-Weighting	94.1	0.0	0.20	±0.3

Note: Frequency weighting at 1 kHz are not accredited

3. Time Weighting at 1 kHz

Time Weighting	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
Fast	94.0	0.0	0.20	±0.3
Slow	94.1	0.1	0.20	±0.3

Note: Time Weighting at 1 kHz are not accredited

4. Acoustical signal test of frequency weightings

A-Weighting acoustic frequency response meter free-field acoustic response at a level of 80.0 dB

Frequency Weighting (Hz)	Deviation from various frequency weighting response curve		
	A-Weighting (dB)	Uncertainty (dB)	Acceptance limit (dB)
125	0.0	0.20	±1.5
1000	-0.2	0.20	±1.0
8000	2.2	0.20	±5.0

Note: Acoustical signal test of frequency weightings are not accredited

Date of calibration : 2024-10-01
Date of Issue : 2024-10-02

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MM-C04

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com

CLC Accredited ISO/IEC 17025

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NSC-TISI-TIS 17025 CALIBRATION 0059 CLC

REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	pH METER
MANUFACTURER	:	APERA
MODEL / TYPE	:	PH700/201T-F
SERIAL NO.	:	PH700X1019061009/N/A [LA-008/PH-02]
DATE OF CALIBRATION	:	11 April 2025

ENVIRONMENT CONDITIONS :

Temperature : (25 ± 2.5) °C Relative Humidity : (50 ± 15) % RH

PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-128, 238.** The calibration was performed by direct measurement with Certified Reference Material (CRM) and comparison with Calibration Bath, Precision Thermometer and IPRT which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

1. pH Standard Solution, NIMT TRM CODE TRM-S-2003, TRM CODE TRM-S-2007.
2. pH Standard Solution, Control Company Catalog Number 06664260,11754256, Lot Number CC787362.
3. Calibration Bath, Kambic Model OB-22/2 ULT S/N. 17115653.
4. Precision Thermometer, ASL Model F250 S/N. 1334023800.
5. IPRT, Wika Model CTP5000-250-D S/N. PO00043543-1-10-1.

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CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com

CLC Accredited ISO/IEC 17025

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NSC-TISI-TIS 17025 CALIBRATION 0059 CLC

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	pH METER
MANUFACTURER	:	APERA
MODEL / TYPE	:	PH700/201T-F
SERIAL NO.	:	PH700X1019061009/N/A [LA-008/PH-02]
CLID. NO.	:	272401000
JOB CONTROL NO.	:	250410042961
CALIBRATION SERVICE	:	☑ IN-LABORATORY ☐ ON-SITE

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 10 April 2025 DATE OF ISSUED : 18 April 2025

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Sukgasem Seehanart
Wenick Inchaisri

Ap[redacted]

This C[redacted]ding to the International System of Units (SI)

Certificate No. Q25042961
F3-011-05/12-23

@clccalibration

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com
CLC Accredited ISO/IEC 17025
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NSC-TISI-TIS 17025 CALIBRATION 0059 CLC

CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of pH meter.

CALIBRATION DATA

1. pH METER RESULT @ 25 °C

Standard pH Buffer Solution (pH)	pH Meter Reading (pH)	pH Meter Reading (mV)	Correction (pH)	Uncertainty of Measurement (± pH)	*k* Factor
4.003	4.01	134	-0.007	0.014	2,00
7.005	7.00	-43	+0.005	0.014	2,00
10.015	10.01	-208	+0.005	0.100	2,05

Technical Note. Setting function CAL 3 point (4,7,10).

Note. The Scope of Accredited TISI Certificate No. 23-LB0092 Issue 02 Page 91 of 138

***2. TEMPERATURE RESULT**

Immersion depth (mm)	Actual Temperature (°C)	DUC Reading (°C)	Correction (°C)	Uncertainty ± (°C)
100	25.01	24.9	+0.11	0.07

Technical Note. Type of sensor : pH Probe

Probe ∅ 12 mm

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor of $k = 2,00$.

Note. * means Calibrations marked " Not TISI Accredited " in this Certificate have been included for completeness.

This report is valid for the above stated instrument/s only.

End of Certificate

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com
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NSC-TISI-TIS 17025 CALIBRATION 0059 CLC

TRACEABILITY :

1. The measurements are traceable to International System of Units (SI) , through National Institute of Metrology (Thailand). Lot Number. 080124 , 120124. Due Date 23 January 2026.
2. The measurements are traceable to International System of Units (SI) , through Control Company. Certificate No. 4281-14495731 , Due Date 27 September 2025.
3. The measurements are traceable to International System of Units (SI) , through Calibration Laboratory Co., Ltd. Certificate No. Q24120999, Due Date 26 November 2025.
4. The measurements are traceable to International System of Units (SI) , through Thailand Institute of Scientific and Technological Research (TISTR). Certificate No. PSL-T 1042/67, Due Date 16 October 2025.
5. The measurements are traceable to International System of Units (SI) , through National Institute of Metrology (Thailand). Certificate No. TT-0146-24, Due Date 28 October 2025.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

MM-C04

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
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ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17025 CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2814

REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	DO METER
MANUFACTURER	:	YSI
MODEL / TYPE	:	5000-230V/5010
SERIAL NO.	:	16D101626/19D100367[DOM-01]
DATE OF CALIBRATION	:	11 April 2025

ENVIRONMENT CONDITIONS :

Temperature : (25 ± 2.5) °C Relative Humidity : (50 ± 15) %RH

PROCEDURE USED :

This instrument was calibrated under procedure No. **CLC-CPCH-06.** The calibration was performed by direct measurement with Certified Reference Material (CRM).

REFERENCE STANDARD USED :

Dissolved Oxygen, Sigma-Alorich Product ID QC3077-500ML.

TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Merck Co., Ltd.

Lot LRAD8571, Due Date April 2026.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2{,}00$ which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

[redacted]

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ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17025 CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2814

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	DO METER
MANUFACTURER	:	YSI
MODEL / TYPE	:	5000-230V/5010
SERIAL NO.	:	16D10162
CLID. NO.	:	272100329
JOB CONTROL NO.	:	250410042960
CALIBRATION SERVICE	:	☑ IN-LABORATORY ☐ ON-SITE

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 10 April 2025 DATE OF ISSUED : 18 April 2025

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Calibrated By : Sukgasem Seehanart

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ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17025 CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2814

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	DIGITAL THERMOMETER WITH PROBE
MANUFACTURER	:	LUTRON
MODEL / TYPE	:	MTM-380SD
SERIAL NO.	:	I.570147/N/A[LA-0013/LA-0013/A]
CLID. NO.	:	232204019
JOB CONTROL NO.	:	250408041416
CALIBRATION SERVICE	:	☑ IN-LABORATORY ☐ ON-SITE

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 08 April 2025 DATE OF ISSUED : 11 April 2025

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Calibrated By : Pimsiri Hemtanon

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ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17025 CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2814

CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of Do Meter.

CALIBRATION DATA

DO METER RESULT @ 20 °C

Nominal Value (mg/L)	DUC Reading (mg/L)	Correction (mg/L)	Uncertainty (mg/L)
8.18	8.2	-0.02	± 0.38

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 015 Page 5 of 68

This report is valid for the above stated instrument/s only.

End of Certificate

Certificate No. Q25042960

F3-011-05/12-23

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CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

The DUC Reading were recorded and the means value were reported of five times measurement in the table below.

CALIBRATION DATA

CORRECTION OF TEMPERATURE : T1

Immersion depth (mm)	Actual Temperature (°C)	DUC Reading (°C)	Correction (°C)	Uncertainty ± (°C)
200	4.00	4.0	0.00	0.52
	20.02	20.1	-0.08	
	95.02	96.1	-1.08	
	104.02	105.1	-1.08	
	180.00	181.6	-1.60	

Technical Note. Type of sensor : Thermocouple Type K

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 015 Page 57 of 68

This report is valid for the above stated instrument/s only.

End of Certificate

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ANAB ANSI National Accreditation Board ACCREDITED ACCREDITED CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2814

REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	**DIGITAL THERMOMETER WITH PROBE**
MANUFACTURER	:	**LUTRON**
MODEL / TYPE	:	**MTM-380SD**
SERIAL NO.	:	**I.570147/N/A[LA-0013/LA-0013/A]**
DATE OF CALIBRATION	:	**10 April 2025**

ENVIRONMENT CONDITIONS :

Temperature : **(23 ± 2) °C** **Relative Humidity :** **(55 ± 10) % RH**

PROCEDURE USED :

This instrument was calibrated under procedure No. **CLC-CPTH-06** based on **ASTM E 220-86** as calibration guidelines. The calibration was performed by using Calibration Bath, Precision Thermometer and IPRT which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

1. Calibration Bath, Kambic Model OB-22/2 ULT, OB-22/2 S/N. 17115653, 17115654.
2. Precision Thermometer, ASL Model F250 S/N. 1334023800.
3. IPRT, Wika, ASL Model CTP5000-450-D, T100-250-1D S/N. PO00036374-1-10-12, PO106346-1-18.

TRACEABILITY :

1. The measurements are traceable to International System of Units (SI) , through Calibration Laboratory Co., Ltd. Certificate No. Q24120999, Q24112862. Due Date 26 November 2025, 12 November 2025.
2. The measurements are traceable to International System of Units (SI) , through Thailand Institute of Scientific and Technological Research (TISTR). Certificate No. PSL-T 1042/67, Due Date 16 October 2025.
3. The measurements are traceable to International System of Units (SI) , through National Institute of Metrology (Thailand). Certificate No. TT-0147-24, TT-0110-24. Due Date 28 October 2025, 06 August 2025.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2{,}00$ which for a normal distribution corresponds to a coverage probability of approximately 95 %. It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

Certificate No. Q25041416

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ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17025 CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2814

REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	DIGITAL THERMOHYGRO METER
MANUFACTURER	:	DIGICON
MODEL / TYPE	:	TH-02A
SERIAL NO.	:	1919E0284991[DTH-01]
DATE OF CALIBRATION	:	10 April 2025

ENVIRONMENT CONDITIONS :

Temperature : (23 ± 2) °C Relative Humidity : (55 ± 10) %RH

PROCEDURE USED :

This instrument was calibrated under procedure No. **CLC-CPTH-11.** The calibration was performed by using Chilled Mirror Hygrometer which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

Chilled Mirror Hygrometer, Edgetech Model Dew Master S/N. 44602.

Temperature & Humidity Chamber, PGC Model 9141-5116 S/N. 1304261.

TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Thunder Scientific Corporation.

Certificate No. 22724, Due Date 03 October 2025.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2{,}00$ which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

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CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	DIGITAL THERMOHYGRO METER
MANUFACTURER	:	DIGICON
MODEL / TYPE	:	TH-02A
SERIAL NO.	:	1919E0284991[DTH-01]
CLID. NO.	:	232100200
JOB CONTROL NO.	:	250408041414
CALIBRATION SERVICE	:	☑ IN-LABORATORY ☐ ON-SITE

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 08 April 2025 DATE OF ISSUED : 11 April 2025

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Calibrated By : Oranut Kamchatphai

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CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	DIGITAL THERMOHYGRO METER
MANUFACTURER	:	DIGICON
MODEL / TYPE	:	TH-02A
SERIAL NO.	:	1919E0284980[DTH-02]
CLID. NO.	:	232100201
JOB CONTROL NO.	:	250408041415
CALIBRATION SERVICE	:	☑ IN-LABORATORY ☐ ON-SITE

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 08 April 2025 DATE OF ISSUED : 11 April 2025

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Calibrated By : Oranut Kamchatphai

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ANAB ANSI National Accreditation Board ACCREDITED Scope of Accreditation CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2814

CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of the measuring digital thermohygro meter.

CALIBRATION DATA

1. CORRECTION OF TEMPERATURE

Test point (°C)	Actual Temperature (°C)	DUC Reading (°C)	Correction (°C)	Uncertainty ±(°C)
20.0	20.00	19.6	+0.40	0.27
25.0	25.00	24.5	+0.50	
30.0	30.00	29.5	+0.50	

2. CORRECTION OF HUMIDITY

STD Temperature (°C)	STD Reading (%RH)	DUC Reading (%RH)	Correction (%RH)	Uncertainty ± (%RH)
25	40.0	30	+10.0	0.8
25	60.0	50	+10.0	0.8

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 015 Page 60 of 68

This report is valid for the above stated instrument/s only.

End of Certificate

Certificate No. Q25041414

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ANAB ANSI National Accreditation Board ACCREDITED CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2814

CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of the measuring digital thermohygro meter.

CALIBRATION DATA

1. CORRECTION OF TEMPERATURE

Test point (°C)	Actual Temperature (°C)	DUC Reading (°C)	Correction (°C)	Uncertainty ±(°C)
20.0	20.00	19.7	+0.30	0.27
25.0	25.00	24.6	+0.40	
30.0	30.00	29.5	+0.50	

2. CORRECTION OF HUMIDITY

STD Temperature (°C)	STD Reading (%RH)	DUC Reading (%RH)	Correction (%RH)	Uncertainty ± (%RH)
25	40.0	33	+7.0	0.8
25	60.0	53	+7.0	0.8

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 015 Page 60 of 68

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End of Certificate

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REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	DIGITAL THERMOHYGRO METER
MANUFACTURER	:	DIGICON
MODEL / TYPE	:	TH-02A
SERIAL NO.	:	1919E0284980[DTH-02]
DATE OF CALIBRATION	:	10 April 2025

ENVIRONMENT CONDITIONS :

Temperature : (23 ± 2) °C **Relative Humidity :** (55 ± 10) %RH

PROCEDURE USED :

This instrument was calibrated under procedure No. **CLC-CPTH-11.** The calibration was performed by using Chilled Mirror Hygrometer which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

Chilled Mirror Hygrometer, Edgetech Model Dew Master S/N. 44602.

Temperature & Humidity Chamber, PGC Model 9141-5116 S/N. 1304261.

TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Thunder Scientific Corporation. Certificate No. 22724, Due Date 03 October 2025.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2{,}00$ which for a normal distribution corresponds to a coverage probability of approximately 95 %. It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

Certificate No. Q25041415

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NSC-TISI-TIS 17025 CALIBRATION 0059 CLC

REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	WATER BATH
MANUFACTURER	:	M-LAB
MODEL / TYPE	:	WBN 15
SERIAL NO.	:	0335[LA-007]
LOCATION SITE	:	LABORATORY - HOT ZONE
DATE OF CALIBRATION	:	27 February 2025

ENVIRONMENT CONDITIONS :

Temperature : 24 °C to 25 °C **Relative Humidity : 49% to 51%**

PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-135** based on **ASTM E 715-80:2016** as calibration guidelines.

The calibration was performed by using Hydra Data Logger which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

Hydra Data Logger, Fluke Model 2620 S/N. 5592550.

TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Calibration Laboratory Co., Ltd.

Certificate No. Q24120965, Due Date 13 May 2025.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2,00 which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

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NSC-TISI-TIS 17025 CALIBRATION 0059 CLC

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	WATER BATH
MANUFACTURER	:	M-LAB
MODEL / TYPE	:	WBN 15
SERIAL NO.	:	0335[LA-007]
CLID. NO.	:	332300657
JOB CONTROL NO.	:	250215018258
CALIBRATION SERVICE	:	☐ IN-LABORATORY ☑ ON-SITE

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.

5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE), NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 15 February 2025 DATE OF ISSUED : 04 March 2025

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Calibrated By : Wenick Inchaisri

Calibration Engineer

[redacted]

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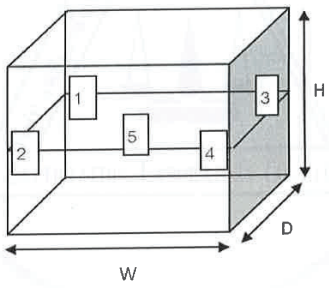
CALIBRATION DATA

2. TEMPERATURE DISTRIBUTION

Test Point (°C)	DUC Reading (°C)	STD Reading (°C)					Uncertainty ±(°C)
		Probe No. 1	Probe No. 2	Probe No. 3	Probe No. 4	Probe No. 5	
85.0	85.0	85.15	84.79	84.96	84.89	85.06	0.58

Technical Note : W = 35 cm, D = 30 cm, H = 15 cm.

The Scope of Accredited TISI Certificate No. 23-LB0092 Issue 02 Page 128 of 138



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End of Certificate

Certificate No. Q25018258

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CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of the measuring water bath.

CALIBRATION DATA

1. WATER BATH PERFORMANCE

Test Point (°C)	DUC Reading (°C)	Uniformity (°C)	Stability (°C)
85.0	85.0	0.40	0.28

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NSC-TISI-TIS 17025 CALIBRATION 0059 CLC

REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	WATER BATH
MANUFACTURER	:	MEMMERT
MODEL / TYPE	:	WNB14
SERIAL NO.	:	L418.0758[LA-004]
LOCATION SITE	:	LABORATORY - HOT ZONE
DATE OF CALIBRATION	:	27 February 2025

ENVIRONMENT CONDITIONS :

Temperature : 24 °C to 25 °C **Relative Humidity : 49% to 51%**

PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-135** based on **ASTM E 715-80:2016** as calibration guidelines.

The calibration was performed by using Hydra Data Logger which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

Hydra Data Logger, Fluke Model 2620 S/N. 5592550.

TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Calibration Laboratory Co., Ltd.

Certificate No. Q24120965, Due Date 13 May 2025.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2,00 which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

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NSC-TISI-TIS 17025 CALIBRATION 0059 CLC

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	WATER BATH
MANUFACTURER	:	MEMMERT
MODEL / TYPE	:	WNB14
SERIAL NO.	:	L418.0758[LA-004]
CLID. NO.	:	332100157
JOB CONTROL NO.	:	250215018257
CALIBRATION SERVICE	:	☐ IN-LABORATORY ☑ ON-SITE

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 15 February 2025 **DATE OF ISSUED : 04 March 2025**

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Wenick Inchaisri

[redacted]

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NSC-TISI-TIS 17025 CALIBRATION 0059 CLC

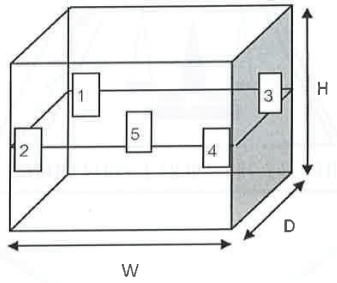
CALIBRATION DATA

2. TEMPERATURE DISTRIBUTION

Test Point (°C)	DUC Reading (°C)	STD Reading (°C)					Uncertainty ±(°C)
		Probe No. 1	Probe No. 2	Probe No. 3	Probe No. 4	Probe No. 5	
95.0	95.0	96.45	96.30	96.22	96.04	96.26	0.51

Technical Note : W = 35 cm, D = 29 cm, H = 14 cm.

The Scope of Accredited TISI Certificate No. 23-LB0092 Issue 02 Page 128 of 138



This report is valid for the above stated instrument/s only.

End of Certificate

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CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of the measuring water bath.

CALIBRATION DATA

1. WATER BATH PERFORMANCE

Test Point (°C)	DUC Reading (°C)	Uniformity (°C)	Stability (°C)
95.0	95.0	0.39	0.17

Calibration Report

Certificate Number : SPR25050011-3

Reference Standards

Equipment Name	Model	Serial No.	Certificate No.	Due. Date
Data Acquisition/Switch Unit	34970A	MY44074688	SPR24080102-24	07 Sep 2025

Traceability

This certification is traceable to the International System of Unit maintained at :
SP Metrology - SP Metrology system (Thailand) Co.Ltd.

69/29 Moo 1 Klongsi Klongluang Pathumthani 12120 Tel: (662) 193-2217-20 www.spmetrology.co.th www.สอบเทียบเครื่องมือวัด.com

น.16/27

METROLOGY SYSTEM (THAILAND) CO.,LTD.
A Trescal company
ID LINE : IEC17025

Certificate of Calibration

Certificate Number : SPR25050011-3

Customer : ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 Baan Klang Krung Biz Town, Soi Srinagarindra 46/1 (Pramote),
Nongbon Sub-district, Prawet District, Bangkok 10250

Equipment Name : Refrigerator
Manufacturer : Medicool
Model : BB-117
Serial Number : BB117-190725001
ID. Number : LA-003

Environmental Conditions

Ambient Temperature	: 25 °C ± 10 °C	Received Date	: 02 May 2025
Relative Humidity	: 60 % ± 20 %	Calibration Date	: 06 May 2025
Location of Calibration	: On-Site	Recommend Due Date	: N/A
Calibration Procedure	: SP-CPT-04-01	Date of Issue	: 07 May 2025

Method of Calibration

This certifies that the above instrument was calibrated in compliance with the calibration system requirement of ISO/IEC 17025:2017 in accordance with reference procedure. Standards used to perform this calibration are certified by to NIST or equivalent, National metrology institute, Natural physical constants, consensus standards. The result reported herein apply only to the calibration of the item described above as received.Our decision rule is to contact the customer if the item pass and fail calibration when the results include the uncertainties and the customer must determine if the results meets their needs.

The calibration certificate shall not be reproduced except in full,without written approval of SP Metrology

[redacted]

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MM-C04

CALIBRATION LABORATORY CO., LTD.
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CLC Accredited ISO/IEC 17025

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NSC-TISI-TIS 17025 CALIBRATION 0059 CLC

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	INCUBATOR
MANUFACTURER	:	ACCUPLUS
MODEL / TYPE	:	SMART i250
SERIAL NO.	:	2059-0718-0010[LA-002]
CLID. NO.	:	332100155
JOB CONTROL NO.	:	250215018255
CALIBRATION SERVICE	:	☐ IN-LABORATORY ☑ ON-SITE

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 15 February 2025 DATE OF ISSUED : 04 March 2025

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[redacted]

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น.16/28

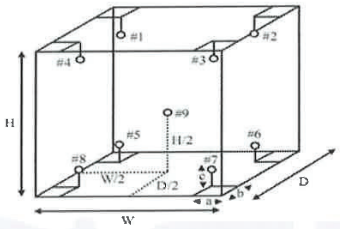
SP METROLOGY SYSTEM (THAILAND) CO.,LTD.
A Trescal company

ilac-MRA ANAB ACCREDITED CALIBRATION AND DIMENSIONAL MEASUREMENT

ID LINE : IEC17025

Result of Calibration

Certificate Number : SPR25050011-3



Temperature Accuracy in the Measurement Zone. Unit : °C

UUC Setting	Measured Temperature (°C) @ Probe No. (Probe No. 9 is REF.)									Uncertainty (±)
	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	
4.0	3.37	4.12	4.25	4.13	3.93	3.98	3.95	4.23	4.16	0.60

Temperature Uniformity, Stability,Overall Variation Unit : °C

UUC Setting	UUC Reading	Temperature Stability	Temperature Uniformity	Overall Variation
4.0	4.0	0.09	0.94	1.07

Note :
The result of calibration was found accurate as show on date and place of calibration only.
This Certificate is not certified for any commercial transaction.

Measurement Uncertainty
The reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor k = 2, providing a level of confidence approximately 95 %

- End of Certificate -

69/29 Moo 1 Klongsi Klongluang Pathumthani 12120 Tel: (662) 193-2217-20 www.spmetrology.co.th www.สอบเทียบเครื่องมือวัด.com

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CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of the measuring incubator.

CALIBRATION DATA

1. INCUBATOR PERFORMANCE

DUC		Measured Uniformity	Measured Stability	Measured Overall
Setting (°C)	Indicating (°C)	(°C)	(°C)	Variation (°C)
20.0	20.0	0.43	0.34	0.98

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REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	INCUBATOR
MANUFACTURER	:	ACCUPLUS
MODEL / TYPE	:	SMART i250
SERIAL NO.	:	2059-0718-0010[LA-002]
LOCATION SITE	:	LABORATORY
DATE OF CALIBRATION	:	27 February 2025

ENVIRONMENT CONDITIONS :

Temperature : 24 °C to 25 °C **Relative Humidity : 49 % to 51 %**

PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-165** based on **TLAS G-20-1/02-08** as calibration guidelines.

The calibration was performed by using Hydra Series II which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

Hydra Series II, Fluke Model 2635A S/N. 8209003.

TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Calibration Laboratory Co., Ltd.

Certificate No. Q24052151, Due Date 27 May 2025.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

[redacted]

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NSC-TISI-TIS 17025 CALIBRATION 0059 CLC

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	BALANCE
MANUFACTURER	:	SHIMADZU
MODEL / TYPE	:	AP225WD
SERIAL NO.	:	D316300692[LA-001]
CLID. NO.	:	362100172
JOB CONTROL NO.	:	250215018253
CALIBRATION SERVICE	:	☐ IN-LABORATORY ☑ ON-SITE

CUSTOMER : ENVIRONMENTAL MEASUREMENTS CO., LTD.
5/45 BAAN KLANG KRUNG BIZ TOWN, SOI SRINAGARINDRA 46/1 (PRAMOTE),
NONG BON SUB-DISTRICT, PRAWET DISTRICT, BANGKOK 10250

DATE OF RECEIVED : 15 February 2025 DATE OF ISSUED : 04 March 2025

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

[redacted]

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NSC-TISI-TIS 17025 CALIBRATION 0059 CLC

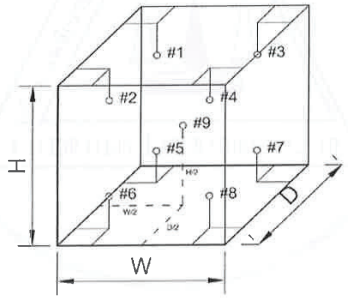
CALIBRATION DATA

2. TEMPERATURE DISTRIBUTION

DUC		Measured Temperature (°C)@Probe No.9 is Ref.									Uncertainty ±(°C)	Coverage factor *k*
Setting (°C)	Indicating (°C)	1	2	3	4	5	6	7	8	9		
20.0	20.0	20.55	20.53	20.57	20.51	20.59	20.52	20.40	20.47	20.27	0.58	2,00

Technical Note : W = 50 cm, D = 48 cm, H = 110 cm.

The Scope of Accredited TISI Certificate No. 23-LB0092 Issue 02 Page 129 of 138



This report is valid for the above stated instrument/s only.

End of Certificate

Certificate No. Q25018255

F3-011-05/12-23

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CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

CALIBRATION DATA

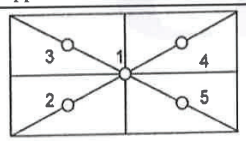
1. Error of indications

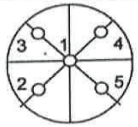
Nominal Test Value (g)	Conventional mass (g)	Display Value (g)	Error of Balance (g)	Uncertainty ± (mg)	Coverage factor *k*
Unload	0.0000	0.0000	0.0000	0.07	2,00
5.0000	5.0000	5.0001	+0.0001	0.11	2,00
10.0000	10.0000	10.0000	0.0000	0.11	2,00
20.0000	20.0000	20.0000	0.0000	0.12	2,00
40.0000	40.0000	39.9999	-0.0001	0.14	2,00
60.0000	59.9999	59.9999	0.0000	0.15	2,00
80.0000	79.9999	80.0000	+0.0001	0.19	2,00
100.0000	99.9999	100.0000	+0.0001	0.17	2,00
120.0000	119.9999	120.0000	+0.0001	0.21	2,00
140.0000	139.9999	139.9999	0.0000	0.25	2,00
160.0000	159.9998	159.9998	0.0000	0.26	2,00
180.0000	179.9998	179.9998	0.0000	0.30	2,00
200.0000	199.9997	199.9996	-0.0001	0.26	2,00

2. Repeatability of indications

Nominal Test Value (g)	Standard Deviation of Reading (g)
200.0000	0.00006

3. Effect of eccentric application of a load on the indication

☐ 

☑ 

Nominal Test Value (g)	Display Value (g)					Maximum Difference of Center Value (g)
	Position 1	Position 2	Position 3	Position 4	Position 5	
100.0000	100.0000	99.9999	100.0000	100.0001	100.0000	0.0001

Note. The Scope of Accredited TISI Certificate No. 23-LB0092 Issue 02 Page 116,117 of 138

This report is valid for the above stated instrument/s only.

End of Certificate

Certificate No. Q25018253

F3-011-05/12-23

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REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	**BALANCE**
MANUFACTURER	:	**SHIMADZU**
MODEL / TYPE	:	**AP225WD**
SERIAL NO.	:	**D316300692[LA-001]**
LOCATION SITE	:	**LABORATORY-BALANCE ROOM**
DATE OF CALIBRATION	:	**27 February 2025**

ENVIRONMENT CONDITIONS :

Temperature : 23 °C to 24 °C **Relative Humidity : 49 % to 51 %**

PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-46** based on **EURAMET/cg-18/Version 4.0 (11/2015).**

The calibration was performed by Comparison with Weight Set which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

Weight Set, Mettler Toledo Class E2 S/N. 158850.

TRACEABILITY :

The measurements are traceable to International System of Units (SI), through National Institute of Metrology (Thailand).

Certificate No. MM-0165-23, Due Date 21 December 2025.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95%. It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

[redacted]

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MM-C04

Request No. : 22-68 / 0059

MTC No. : PSL-P 0019 / 68

Serial No. : A.067438

Results :

UUC Range (lux)	Standard (lux)	*UUC Reading Before Adj.(lux)	UUC Reading After Adj.(lux)	Uncertainty of Measurement ± (lux)
2000	100	103	104	2.0
	500	502	505	10
	1000	992	1000	20
	1500	1486	1497	30
	2000	1972	1994	40
20000 (×10)	2000	197	200	40
	3000	296	300	60
	4000	391	397	80
	5000	490	497	100

Note : *UUC = Unit Under Calibration.

...end of certificate...

[redacted]

Request No. : 22-68 / 0059

MTC No. : PSL-P 0019 / 68

CERTIFICATE OF CALIBRATION

Nomenclature : Digital Lux Meter

Serial No. : A.067438

Maker : EXTECH Instruments

Model : 407026

Customer : **ENVIRONMENTAL MEASUREMENTS CO., LTD.**

Address : 5/45 Baan Klang Krung Biz Town, Soi Srinagarindra 46/1 (Pramote), Nong Bon Sub-District Prawet District, Bangkok 10250

Date of receipt : 28 October 2024

Date of calibration : 4 November 2024

Place of calibration : Photometry and Temperature Standards Laboratory, MTC. (Bangpoo)

Basis of calibration : calibration at 0 ~ 5000 lux.

Condition of calibration : - Ambient temperature : (25 ± 2) °C

- Relative humidity : (60 ± 20) %

Reference Standard : Working Standard Luminous Intensity Lamp, Serial No.: FEL003 and 3501, can be traceable to international system of units (SI), through calibration certificate MTC No. PSL-P 0151/67 and PSL-P 0152/67, date of calibration 10 May 2024.

Traceability : This certificate is traceable to SI units through the National Institute of Metrology (Thailand) calibration certificate No. TP-1010-23, TP-1011-23 and TP-1012-23

Support Equipment :
1. Photometric bench , 3.0 meter long
2. DC power supply, Serial No.: BC - 341006035007/2
3. Digital Multimeter , Model : R 6551 , S/N : 92041186 and 92041192

Calibration Procedure : The measurement was done in accordance with WI.CP.10.
The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor $k = 2$, providing a level of confidence of approximately 95 %.

R.P.

The results relate only to the items tested/calibrated or value assigned.
Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev.5

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(66) 08 3219 9440
E-mail : mtc@tistr.or.th Website : www.tistr.or.th

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196 Phahonyothin Road, Ladyao, Chatuchak, Bangkok 10900, Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
(66) 08 1889 6827

ที่ อก ๐๓๑๐(๑)/ ๑๐๘๙

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๐๗ กุมภาพันธ์ ๒๕๖๘

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท ยูไนเต็ด แอนนาลิสต์ แอนด์ เอ็นจิเนียริ่ง คอนซัลแตนท์ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน ลงวันที่ ๓ ธันวาคม ๒๕๖๗

สิ่งที่ส่งมาด้วย ๑. รายชื่อผู้ควบคุมห้องปฏิบัติการวิเคราะห์เอกชน จำนวน ๔๐ ราย
๒. รายชื่อเจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน จำนวน ๑๔๑ ราย
๓. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม

ตามคำขอที่อ้างถึง บริษัท ยูไนเต็ด แอนนาลิสต์ แอนด์ เอ็นจิเนียริ่ง คอนซัลแตนท์ จำกัด ขอต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๑๔๕ สถานที่ตั้งเลขที่ ๓ ซอยอุดมสุข ๔๑ ถนนสุขุมวิท แขวงบางจาก เขตพระโขนง กรุงเทพมหานคร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท ยูไนเต็ด แอนนาลิสต์ แอนด์ เอ็นจิเนียริ่ง คอนซัลแตนท์ จำกัด ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมห้องปฏิบัติการวิเคราะห์เอกชน จำนวน ๔๐ ราย ตามสิ่งที่ส่งมาด้วย ๑

ข. เจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน จำนวน ๑๔๑ ราย ตามสิ่งที่ส่งมาด้วย ๒

ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำ/น้ำเสีย น้ำใต้ดิน อากาศเสีย สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว และดิน ตามสิ่งที่ส่งมาด้วย ๓

หนังสือฉบับนี้จะหมดอายุในวันที่ ๒ กุมภาพันธ์ ๒๕๗๒ หากประสงค์จะต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อกรมโรงงานอุตสาหกรรมภายใน ๖๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

จึงเรียนมาเพื่อทราบ

[redacted]

ที่ อก ๐๓๑๐(๑)/ ๑๔๙๑

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒๔ กุมภาพันธ์ ๒๕๖๘

เรื่อง ยกเลิกบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท ยูไนเต็ด แอนนาลิสต์ แอนด์ เอ็นจิเนียริ่ง คอนซัลแตนท์ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน ลงวันที่ ๑๘ กุมภาพันธ์ ๒๕๖๘

ตามคำขอที่อ้างถึง บริษัท ยูไนเต็ด แอนนาลิสต์ แอนด์ เอ็นจิเนียริ่ง คอนซัลแตนท์ จำกัด ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๑๔๕ สถานที่ตั้งเลขที่ ๓ ซอยอุดมสุข ๔๑ ถนนสุขุมวิท แขวงบางจาก เขตพระโขนง กรุงเทพมหานคร ขอยกเลิกบุคลากร ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้ยกเลิกเจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน จำนวน ๓ ราย ได้แก่

[redacted] ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๕๘
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๗๐
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๙๘

[redacted]

[redacted]

ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๔๐
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๔๑
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๔๒
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๔๓
ทะเบียนเลขที่ [redacted]

[redacted]

เอกสารแนบท้ายหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท ยูไนเต็ด แอนนาลิสต์ แอนด์ เอ็นจิเนียริ่ง คอนซัลแตนท์ จำกัด เลขทะเบียน ว-๑๔๕
ที่ อก ๐๓๑๐(๑)/ ๑ ๐ ๘ ๙ ลงวันที่ ๐๗ กุมภาพันธ์ ๒๕๖๘

๑. ห้องปฏิบัติการวิเคราะห์เอกชน จำนวน ๔๐ ราย

[redacted]

ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๐๑
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๐๒
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๐๓
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๐๔
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๐๖
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๐๗
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๐๘
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๐๙
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๑๐
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๑๑
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๑๒
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๑๔
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๑๕
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๑๖
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๑๗
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๑๘
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๑๙
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๒๐
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๒๑
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๒๒
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๒๓
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๒๔
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๒๕
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๒๖
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๒๗
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๒๘
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๒๙
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๓๐
ทะเบียนเลขที่ ว-๑๔๕-ค-๐๐๓๓

[redacted]

๓๖) นายนาเคนทร...

๓๖) นางสาวนิภาพร จันทเขตต์	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๔๗
๓๗) นายรณภพ ภู่ตระกูลพัฒนา	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๔๙
๓๘) นายสมพงศ์ สกุลไทย	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๕๑
๓๙) นายสุริยัน นิธิเชิดชูวงศ์	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๕๒
๔๐) นายอัษฎาวุธ ยนศิริ	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๕๓
๔๑) นายเอกวุฒิ เสนอใจ	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๕๔
๔๒) นายสุขสันต์ บุญเลี้ยง	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๕๕
๔๓) นายธนเดช หวานเสนาะ	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๕๖
๔๔) นายอภิสิทธิ์ ศรีคงแก้ว	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๕๘
๔๕) ว่าที่ร้อยตรีอุทัย แก้วรากมุข	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๖๐
๔๖) นางสาววนารินทร์ สานนท์	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๖๑
๔๗) นายศุภกร รินวงศ์	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๖๒
๔๘) นางสาวจินตสุภา เปลี่ยนศรี	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๖๕
๔๙) นางสาวเนตรนภา กมลบูรณ์	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๖๖
๕๐) นางสาวอารียา ทรารมย์	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๖๗
๕๑) นายจิรวัฒน์ สุขเกษม	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๖๘
๕๒) นายกิติพงษ์ สอนชัยภูมิ	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๖๙
๕๓) นายจุมพล สวนเพชร	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๗๐
๕๔) นางสาวพัชราภรณ์ แสงฟ้า	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๗๑
๕๕) นายรัตนชัย เหล่ามา	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๗๒
๕๖) นายอิทธิพงษ์ ศรวิเศษ	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๗๓
๕๗) นางสาวกรรณิการ์ สำลีทา	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๗๔
๕๘) นางสาวณัฐชา พรหมคีรี	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๗๙
๕๙) นายนภสิทธิ์ ศรีพิมพ์	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๘๕
๖๐) นางสาวลักษิกา จันทรสุข	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๘๖
๖๑) นายศักดิ์ศิธนต์ นุ่มนิ่ม	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๘๙
๖๒) นายวรพงษ์ นนทจันทร์	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๙๐
๖๓) นางสาวชนาภา มาคะมาตร	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๙๑
๖๔) นายณัฏฐชัย พรหมอารักษ์	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๙๖
๖๕) นายชนินทร์ พานแก้ว	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๙๗
๖๖) นายปรัชชาพล โสภา	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๙๘
๖๗) นายวัชรินทร์ แส	[redacted]
๖๘) นายอาทิตย์ อุดม	
๖๙) นายอิทธิเดช ใจ	
๗๐) นายคณิติน พงษ์	
๗๑) นายเสฏฐวุฒิ เอ	
๗๒) นางสาวนาตาชา	
๗๓) นางสาวพิมลวรร	

เอกสารแนบท้ายหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท ยูไนเต็ด แอนนาลิสต์ แอนด์ เอ็นจิเนียริ่ง คอนซัลแตนท์ จำกัด เลขทะเบียน ว-๑๔๕
ที่ อก ๐๓๑๐(๑)/ ๑๐๘๙ ลงวันที่ ๐๗ กุมภาพันธ์ ๒๕๖๘

ข. เจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน จำนวน ๑๔๑ ราย

[redacted]	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๐๑
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๐๓
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๐๔
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๐๕
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๐๖
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๐๗
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๑๐
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๑๑
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๑๒
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๑๓
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๑๔
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๑๕
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๑๗
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๑๘
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๑๙
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๒๐
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๒๑
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๒๒
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๒๓
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๒๔
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๒๕
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๒๖
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๒๗
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๒๘
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๓๒
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๓๔
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๓๖
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๓๗
	[redacted]
	ทะเบียนเลขที่ ว-๑๔๕-จ-๐๐๔๖
	[redacted]

[redacted]

ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๑๑
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๑๒
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๑๓
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๑๔
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๑๕
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๑๖
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๑๗
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๑๘
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๑๙
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๒๓
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๒๔
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๒๕
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๒๖
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๒๗
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๒๘
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๓๐
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๓๑
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๓๒
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๓๓
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๓๔
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๓๕
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๓๖
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๓๘
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๓๙
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๔๐
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๔๑
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๔๒
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๔๕
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๔๖
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๔๗
[redacted]
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๕๖
[redacted]

[redacted]

ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๖๐
ทะเบียนเลขที่ ว-๑๔๕-จ-๐๑๖๑
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[redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
25	Endrin aldehyde	Liquid-Liquid Extraction, Gas Chromatographic Method[4]
26	Formaldehyde	Distillation, Colorimetric Method[2]
27	Free Chlorine	1) Iodometric Method[4] 2) DPD Ferrous Titrimetric Method[4]
28	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic Method[4]
29	Heptachlor Epoxide	Liquid-Liquid Extraction, Gas Chromatographic Method[4]
30	Hexavalent Chromium	Colorimetric Method[4]
31	Lead	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
32	Manganese	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
33	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method[4]
34	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic Method[4]
35	Nickel	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
36	Oil & Grease	1) Liquid-Liquid, Partition-Gravimetric Method[4] 2) Soxhlet Extraction Method[4]
37	pH	Electrometric Method[4]
38	Phenols	1) Distillation, Chloroform Extraction Method[4] 2) Distillation, Direct Photometric Method[4]
39	Selenium	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
40	Sulfide	1) Iodometric Method[4] 2) Methylene Blue Method[4]
41	Temperature	Laboratory and Field Methods[4]
42	Total Dissolved Solids	Dried at 180 °C[4]
43	Total Kjeldahl Nitrogen	Semi-Micro-Kieldahl Method[4]
44	Total Suspended Solids	[redacted]
45	Trivalent Chromium	
46	Zinc	2) Digestion, Inductively Coupled Plasma Method[4]

น้ำใต้ดิน...

เอกสารแนบท้ายหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท ยูไนเต็ด แอนนาลิสต์ แอนด์ เอ็นจิเนียริ่ง คอนซัลแตนท์ จำกัด เลขทะเบียน ว-๑๔๕
ที่ อก ๐๓๑๐(๑)/ ๑๐๘๙ ลงวันที่ ๐๗ กุมภาพันธ์ ๒๕๖๘

ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๕๗ รายการ

น้ำ/น้ำเสีย จำนวน 46 รายการ

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic Method[4]
2	Arsenic	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
3	Barium	Digestion, Inductively Coupled Plasma Method[4]
4	α-BHC	Liquid-Liquid Extraction, Gas Chromatographic Method[4]
5	β-BHC	Liquid-Liquid Extraction, Gas Chromatographic Method[4]
6	δ-BHC	Liquid-Liquid Extraction, Gas Chromatographic Method[4]
7	γ-BHC	Liquid-Liquid Extraction, Gas Chromatographic Method[4]
8	Biochemical Oxygen Demand	1) 5-Day BOD Test, Azide Modification Method[4] 2) 5-Day BOD Test, Membrane Electrode Method[4]
9	Cadmium	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
10	Chemical Oxygen Demand	1) Closed Reflux, Titrimetric Method[4] 2) Closed Reflux, Colorimetric Method[4] 3) Open Reflux, Titrimetric Method[4]
11	Chlordane	Liquid-Liquid Extraction, Gas Chromatographic Method[4]
12	Chromium	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
13	Color	ADMI Weighted-Ordinate Spectrophotometric Method[4]
14	Copper	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
15	Cyanide	1) Distillation, Colorimetric Method[4] 2) Total Cyanide after Distillation, by Flow Injection Analysis Method[4]
16	o,p'-DDT	Liquid-Liquid Extraction, Gas Chromatographic Method[4]
17	4,4'-DDD	Liquid-Liquid Extraction, Gas Chromatographic Method[4]
18	4,4'-DDE	Liquid-Liquid Extraction, Gas [redacted]
19	4,4'-DDT	Liquid-Liquid Extraction, Gas
20	Dieldrin	Liquid-Liquid Extraction, Gas
21	Endosulfan I	Liquid-Liquid Extraction, Gas
22	Endosulfan II	Liquid-Liquid Extraction, Gas
23	Endosulfan sulfate	Liquid-Liquid Extraction, Gas
24	Endrin	Liquid-Liquid Extraction, Gas Chromatographic Method[4]

25 Endrin aldehyde...

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
14	Benzo(a)pyrene	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
15	Benzo(g,h,i)perylene	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
16	Beryllium	Digestion, Inductively Coupled Plasma Method[4]
17	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
18	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
19	Bromodichloromethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
20	Bromoform	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
21	Butanol	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
22	Butyl benzyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
23	Cadmium	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method[4] 3) Digestion, Inductively Coupled Plasma Method[4]
24	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
25	Carbon disulfide	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
26	Carbon tetrachloride	Pu[redacted]
27	Chlordane	1)[redacted]
28	p-Chloroaniline	Liq[redacted]

น้ำใต้ดิน จำนวน 126 รายการ

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
2	Acetone	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
3	Aldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
4	Anthracene	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
5	Antimony	Digestion, Inductively Coupled Plasma Method[4]
6	Arsenic	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
7	Atrazine	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
8	Barium	Digestion, Inductively Coupled Plasma Method[4]
9	Benz(a)anthracene	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
10	Benzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
11	Benzo(b)fluoranthene	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
12	Benzo(k)fluoranthene	1) Liquid-[redacted]
13	Benzoic acid	Liquid-Liq[redacted] Spectrometric Method[4]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
29	Chlorobenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
30	Chlorodibromomethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
31	Chloroform	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
32	2-Chlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
33	Chromium	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
34	Chromium (III)	1) Digestion, Direct Air-Acetylene Flame Method; Colorimetric Method; Calculation[4] 2) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation[4]
35	Chromium (VI)	Colorimetric Method[4]
36	Chrysene	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
37	Cyanide	Distillation, Colorimetric Method[4]
38	2,4-D	Liquid-Liquid Extraction, Gas Chromatographic Method[4]
39	DDD	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
40	DDE	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
41	DDT	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
42	Dibenz(a,h)anthracene	1) Liq[redacted] Metho[redacted] 2) Liqu[redacted] Spectr[redacted]

43 Di-n-butyl phthalate...

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
43	Di-n-butyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
44	1,2-Dichlorobenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
45	1,3-Dichlorobenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
46	1,4-Dichlorobenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
47	3,3′-Dichlorobenzidine	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
48	1,1-Dichloroethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
49	1,2-Dichloroethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
50	1,1-Dichloroethylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
51	cis-1,2-Dichloroethylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
52	trans-1,2-Dichloroethylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
53	2,4-Dichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
54	1,2-Dichloropropane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
55	1,3-Dichloropropane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
56	1,3-Dichloropropene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
57	Dieldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2[redacted]
58	Diethyl phthalate	Li[redacted]
59	2,4-Dimethylphenol	Li[redacted]
60	2,4-Dinitrophenol	Li[redacted] Spectrometric Method[redacted]

61 2,4-Dinitrotoluene...

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
61	2,4-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
62	2,6-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
63	Di-n-Octyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
64	Endosulfan	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
65	Endrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
66	Ethylbenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
67	Fluoranthene	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
68	Fluorene	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
69	Heptachlor	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
70	Heptachlor epoxide	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4]
71	Hexachlorobenzene	[redacted]
72	Hexachloro-1,3-butadiene	
73	n-Hexane	

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
74	α-HCH	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
75	β-HCH	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
76	γ-HCH	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
77	Hexachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
78	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
79	Indeno(1,2,3-cd)pyrene	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
80	Isophorone	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
81	Lead	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method[4] 3) Digestion, Inductively Coupled Plasma Method[4]
82	Manganese	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
83	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method[4]
84	Methanol	Purge a Spectr
85	Methoxychlor	1) Liqu Metho 2) Liqu Spectr
86	Methyl bromide	Purge a Spectr

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
100	Phenol	1) Distillation, Chloroform Extraction Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
101	Pyrene	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
102	Selenium	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
103	Silver	Digestion, Inductively Coupled Plasma Method[4]
104	Styrene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
105	1,1,2,2-Tetrachloroethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
106	Tetrachloroethylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
107	Toluene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
108	Toxaphene	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
109	TPH (C_5 - C_8)	1) Purge and Trap, Gas Chromatographic Method[12,22] 2) Purge and Trap, Gas Chromatographic/Mass spectrometric Method[12,27]
110	TPH ($C_{>8}$ – C_{16})	Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method[9,22]
111	TPH ($C_{>16}$ – C_{35})	Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method[9,22]
112	1,2,4-Trichlorobenzene	Purge an Spectron
113	1,1,1-Trichloroethane	Purge an Spectron
114	1,1,2-Trichloroethane	Purge an Spectron
115	Trichloroethylene	Purge an Spectron

[redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
87	Methylene chloride	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
88	2-Methylphenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
89	2-Methylnaphthalene	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
90	Methyl tert-butyl ether	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
91	Naphthalene	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
92	Nickel	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
93	Nitrobenzene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
94	N-Nitrosodiphenylamine	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
95	N-Nitrosodi-n-propylamine	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
96	Polychlorinated Biphenyls - PCB 1016 - PCB 1221 - PCB 1232 - PCB-1242 - PCB-1248 - PCB-1254 - PCB-1260	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
97	Pentachlorophenol	Liquid Spect
98	pH	Electr
99	Phenanthrene	1) Liq Meth 2) Liq Spect

[redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
116	2,4,5-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
117	2,4,6-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
118	1,3,5-Trimethylbenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
119	Vanadium	Digestion, Inductively Coupled Plasma Method[4]
120	Vinyl acetate	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
121	Vinyl chloride	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
122	m-Xylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
123	o-Xylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
124	p-Xylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
125	Xylene (Total)	Purge and Trap Gas Chromatographic/Mass Spectrometric Method[4]
126	Zinc	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]

<u>อากาศเสีย (ปล่องระบาย) จำนวน 25 รายการ</u>

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
1	Antimony	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
2	Arsenic	1) Isokinetic Sampling, Digestion, Hydride Generation/ Atomic Absorption Spectrometric Method[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
3	Cadmium	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Metho[redacted]
4	Carbon Monoxide	Instrumental[redacted]
5	Chlorine	Isokinetic Sa[redacted]
6	Chromium	1) Isokinetic [redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
6	Chromium (ต่อ)	2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
7	Cobalt	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
8	Copper	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
9	Cresol	Absorption Sampling, Gas Chromatographic Method[5]
10	Dioxins/Furans	Isokinetic Sampling[5]
11	Hydrogen Chloride	Isokinetic Sampling, Ion Chromatographic Method[5]
12	Hydrogen Fluoride	Isokinetic Sampling, Ion Chromatographic Method[5]
13	Hydrogen Sulfide	Absorption Sampling, Iodometric Method[5]
14	Lead	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
15	Manganese	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
16	Mercury	Isokinetic Sampling, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method[5]
17	Nickel	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
18	Opacity	Ringelmann's Method[1]
19	Oxides of Nitrogen	1) Absorption Sampling, Phenoldisulfonic acid Method[5] 2) Instrumental Analyzer Method[5]
20	Selenium	1) Isokinetic Sampling, Digestion, Hydride Generation/ Atomic [redacted]
21	Sulfur Dioxide	1) Absor[redacted]
22	Sulfuric Acid	Isokineti[redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
8	Chromium	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method[3,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method[3,6,14] 3) Digestion, Flame Atomic Absorption Spectrometric Method[7,15] 4) Digestion, Inductively Coupled Plasma Method[7,14]
9	Chromium (III)	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method; Waste Extraction, Colorimetric Method; Calculation[3,6,15,17] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method; Waste Extraction, Colorimetric Method; Calculation[3,6,14,17] 3) Digestion, Flame Atomic Absorption Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation[7,8,15,17] 4) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation[7,8,14,17]
10	Chromium (VI)	1) Waste Extraction, Colorimetric Method[3,17] 2) Alkaline Digestion, Colorimetric Method[8,17]
11	Cobalt	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[3,6,14] 2) Digestion, Inductively Coupled Plasma Method[7,14]
12	Copper	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method[3,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method[3,6,14] 3) Digestion, Flame Atomic Absorption Spectrometric Method[7,15] 4) Digestion, Inductively Coupled Plasma Method[7,14]
13	2,4-D	[redacted]
14	DDD	[redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
23	Total Suspended Particulate	Isokinetic Sampling, Gravimetric Method[5]
24	Vanadium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
25	Xylene	1) Bag Sampling, Gas Chromatographic Method[5] 2) Adsorption Sampling, Gas Chromatographic Method[5]

<u>สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน 35 รายการ</u>

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method[3,9,23] 2) Ultrasonic Extraction, Gas Chromatographic Method[10,23]
2	Antimony	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[3,6,14] 2) Digestion, Inductively Coupled Plasma Method[7,14]
3	Arsenic	1) Waste Extraction, Digestion, Hydride Generation/ Atomic Absorption Spectrometric Method[3,6,16] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method[3,6,14] 3) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method[7,16] 4) Digestion, Inductively Coupled Plasma Method[7,14]
4	Barium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[3,6,14] 2) Digestion, Inductively Coupled Plasma Method[7,14]
5	Beryllium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[3,6,14] 2) Digestion, Inductively Coupled Plasma Method[7,14]
6	Cadmium	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method[3,6,15] 2) Waste E[redacted] Plasma Me[redacted] 3) Digestio[redacted] Method[7,1[redacted] 4) Digestio[redacted]
7	Chlordane	1) Waste E[redacted] Extraction,[redacted] 2) Ultrasor[redacted] Method[10,[redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
22	Mercury (ต่อ)	5) Thermal Decomposition Amalgamation and Atomic Absorption Spectrometric Method[20]
23	Methoxychlor	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method[3,9,23] 2) Ultrasonic Extraction, Gas Chromatographic Method[10,23]
24	Molybdenum	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[3,6,14] 2) Digestion, Inductively Coupled Plasma Method[7,14]
25	Nickel	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method[3,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method[3,6,14] 3) Digestion, Flame Atomic Absorption Spectrometric Method[7,15] 4) Digestion, Inductively Coupled Plasma Method[7,14]
26	Polychlorinated Biphenyls - Aroclor 1016 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260 - 2-Chlorobiphenyl - 2,3-Dichlorobiphenyl - 2,2',5-Trichlorobiphenyl - 2,4',5-Trichlorobiphenyl - 2,2',3,5'-Tetrachlorobiphenyl - 2,2',5,5'-Tetrachlorobiphenyl - 2,3',4,4'-Tetrachlorobiphenyl - 2,2',3,4,5'-Pentachlorobiphenyl - 2,2',4,5,5'-Pentachlorobiphenyl - 2,3,3',4',6-Pentachlorobiphenyl	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method[3,9,24] 2) Ultrasonic Extraction, Gas Chromatographic Method[10,24]

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ลำดับ	สารมลพิษ	วิธีวิเคราะห์
15	DDE	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method[3,9,23] 2) Ultrasonic Extraction, Gas Chromatographic Method[10,23]
16	DDT	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method[3,9,23] 2) Ultrasonic Extraction, Gas Chromatographic Method[10,23]
17	Dieldrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method[3,9,23] 2) Ultrasonic Extraction, Gas Chromatographic Method[10,23]
18	Endrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method[3,9,23] 2) Ultrasonic Extraction, Gas Chromatographic Method[10,23]
19	Heptachlor	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method[3,9,23] 2) Ultrasonic Extraction, Gas Chromatographic Method[10,23]
20	Lead	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method[3,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method[3,6,14] 3) Digestion, Flame Atomic Absorption Spectrometric Method[7,15] 4) Digestion, Inductively Coupled Plasma Method[7,14]
21	Lindane	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method[3,9,23] 2) Ultrasonic Extraction, Gas Chromatographic Method[10,23]
22	Mercury	1) Waste Absorptic 2) Waste Plasma N 3) Digesti Spectrom 4) Digesti

[redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
32	Toxaphene	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method[3,9,23] 2) Ultrasonic Extraction, Gas Chromatographic Method[10,23]
33	Trichloroethylene	1) Waste Extraction, Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[3,12,27] 2) Waste Extraction, Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method[3,11,27] 3) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 4) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method[11,27]
34	Vanadium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[3,6,14] 2) Digestion, Inductively Coupled Plasma Method[7,14]
35	Zinc	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method[3,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method[3,6,14] 3) Digestion, Flame Atomic Absorption Spectrometric Method[7,15] 4) Digestion, Inductively Coupled Plasma Method[7,14]

<u>ดิน จำนวน 125 รายการ</u>

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	1) Ultrasonic Extraction, Gas Chromatographic Method[10,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometr[redacted]
3	Aldrin	1) Ultrasonic [redacted] 2) Ultrasonic [redacted]
4	Anthracene	1) Ultrasonic [redacted]

Anthracene (ต่อ)...

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
	Polychlorinated Biphenyls(ต่อ) - 2,2',3,4,4',5'-Hexachlorobiphenyl - 2,2',3,4,5,5'-Hexachlorobiphenyl - 2,2',3,5,5',6-Hexachlorobiphenyl - 2,2',4,4',5,5'-Hexachlorobiphenyl - 2,2',3,3',4,4',5-Heptachlorobiphenyl - 2,2',3,4,4',5,5'-Heptachlorobiphenyl - 2,2',3,4,4',5',6-Heptachlorobiphenyl - 2,2',3,4',5,5',6-Heptachlorobiphenyl - 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	
27	Pentachlorophenol	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[3,9,28] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
28	pH	Electrometric Method[31,32]
29	Selenium	1) Waste Extraction, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method[3,6,21] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method[3,6,14] 3) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method[7,21] 4) Digestion, Inductively Coupled Plasma Method[7,14]
30	Silver	1) Waste E[redacted] Plasma Me[redacted] 2) Digestion[redacted]
31	Thallium	1) Waste E[redacted] Plasma Me[redacted] 2) Digestion[redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
4	Anthracene (ต่อ)	2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
5	Antimony	Digestion, Inductively Coupled Plasma Method[7,14]
6	Arsenic	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method[7,16] 2) Digestion, Inductively Coupled Plasma Method[7,14]
7	Atrazine	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
8	Barium	Digestion, Inductively Coupled Plasma Method[7,14]
9	Benz(a)anthracene	1) Ultrasonic Extraction, Gas Chromatographic Method[10,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
10	Benzene	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method [11,27]
11	Benzo(b)fluoranthene	1) Ultrasonic Extraction, Gas Chromatographic Method[10,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
12	Benzo(k)fluoranthene	1) Ultrasonic Extraction, Gas Chromatographic Method[10,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
13	Benzoic acid	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
14	Benzo(a)pyrene	1) Ultrasonic Extraction, Gas Chromatographic Method[10,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectro[redacted]
15	Benzo(g,h,i)perylene	1) Ultras[redacted] Method[redacted] 2) Ultras[redacted] Spectro[redacted]
16	Beryllium	Digestio[redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
17	Bis(2-chloroethyl)ether	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
18	Bis(2-ethylhexyl)phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
19	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
20	Bromoform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
21	Butanol	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
22	Butyl benzyl phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
23	Cadmium	1) Digestion, Flame Atomic Absorption Spectrometric Method[7,15] 2) Digestion, Inductively Coupled Plasma Method[7,14]
24	Carbazole	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
25	Carbon disulfide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
26	Carbon tetrachloride	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method[11,27]
27	Chlordane	1) Ultrasonic Extraction, Gas Chromatographic Method[10,23] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
28	p-Chloroaniline	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
29	Chlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
30	Chlorodibromomethane	Purge and T[redacted] Spectromet[redacted]
31	Chloroform	Purge and T[redacted] Spectromet[redacted]
32	2-Chlorophenol	Ultrasonic E[redacted] Spectromet[redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
33	Chromium	1) Digestion, Flame Atomic Absorption Spectrometric Method[7,15] 2) Digestion, Inductively Coupled Plasma Method[7,14]
34	Chromium (III)	1) Digestion, Flame Atomic Absorption Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation[7,8,15,17] 2) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation[7,8,14,17]
35	Chromium (VI)	Alkaline Digestion, Colorimetric Method[8,17]
36	Chrysene	1) Ultrasonic Extraction, Gas Chromatographic Method[10,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
37	Cyanide	Extraction, Distillation, Colorimetric Method[29,30]
38	2,4-D	Ultrasonic Extraction, Gas Chromatographic Method[26]
39	DDD	1) Ultrasonic Extraction, Gas Chromatographic Method[10,23] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
40	DDE	1) Ultrasonic Extraction, Gas Chromatographic Method[10,23] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
41	DDT	1) Ultrasonic Extraction, Gas Chromatographic Method[10,23] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
42	Dibenz(a,h)anthracene	1) Ultrasonic Extraction, Gas Chromatographic Method[10,25] 2) Ultrasoni[redacted]
43	Di-n-butyl phthalate	Ultrasonic E[redacted]
44	1,2-Dichlorobenzene	Purge and T[redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
45	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
46	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
47	3,3′-Dichlorobenzidine	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
48	1,1-Dichloroethane	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method [11,27]
49	1,2-Dichloroethane	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method [11,27]
50	1,1-Dichloroethylene	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method [11,27]
51	cis-1,2-Dichloroethylene	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method [11,27]
52	trans-1,2-Dichloroethylene	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method [11,27]
53	2,4-Dichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
54	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
55	1,3-Dichloropropane	Purge [redacted]
56	1,3-Dichloropropene	Purge [redacted]
57	Dieldrin	1) Ultr[redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
70	Heptachlor epoxide (ต่อ)	2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
71	Hexachlorobenzene	1) Ultrasonic Extraction, Gas Chromatographic Method[10,23] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
72	Hexachloro-1,3-butadiene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
73	n-Hexane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
74	α-HCH	1) Ultrasonic Extraction, Gas Chromatographic Method[10,23] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
75	β-HCH	1) Ultrasonic Extraction, Gas Chromatographic Method[10,23] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
76	γ-HCH	1) Ultrasonic Extraction, Gas Chromatographic Method[10,23] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
77	Hexachlorocyclopentadiene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
78	Hexachloroethane	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
79	Indeno(1,2,3-cd)pyrene	1) Ultrasonic Extraction, Gas Chromatographic Method[10,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
80	Isophorone	Ultrasonic Ext Spectrometric
81	Lead	1) Digestion, F Method[7,15] 2) Digestion, Ir
82	Manganese	1) Digestion, F Method[7,15] 2) Digestion, Ir

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ลำดับ	สารมลพิษ	วิธีวิเคราะห์
58	Diethyl phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
59	2,4-Dimethylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
60	2,4-Dinitrophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
61	2,4-Dinitrotoluene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
62	2,6-Dinitrotoluene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
63	Di-n-Octyl phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
64	Endosulfan	1) Ultrasonic Extraction, Gas Chromatographic Method[10,23] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
65	Endrin	1) Ultrasonic Extraction, Gas Chromatographic Method[10,23] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
66	Ethylbenzene	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method [11,27]
67	Fluoranthene	1) Ultrasonic Extraction, Gas Chromatographic Method[10,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
68	Fluorene	1) Ultrasonic Extraction, Gas Chromatographic Method[10,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrome
69	Heptachlor	1) Ultrasor Method[10, 2) Ultrasor Spectrome
70	Heptachlor epoxide	1) Ultrasor Method[10,

[redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
96	Polychlorinated Biphenyls(ต่อ) - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254	2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
	- Aroclor 1260	Ultrasonic Extraction, Gas Chromatographic Method[10,24]
	Polychlorinated Biphenyls - 2-Chlorobiphenyl - 2,3-Dichlorobiphenyl - 2,2',5-Trichlorobiphenyl - 2,4',5-Trichlorobiphenyl - 2,2',3,5'-Tetrachlorobiphenyl - 2,2',5,5'-Tetrachlorobiphenyl - 2,3',4,4'-Tetrachlorobiphenyl - 2,2',3,4,5'-Pentachlorobiphenyl - 2,2',4,5,5'-Pentachlorobiphenyl - 2,3,3',4',6-Pentachlorobiphenyl - 2,2',3,4,4',5'-Hexachlorobiphenyl - 2,2',3,4,5,5'-Hexachlorobiphenyl - 2,2',3,5,5',6-Hexachlorobiphenyl - 2,2',4,4',5,5'-Hexachlorobiphenyl - 2,2',3,3',4,4',5-Heptachlorobiphenyl - 2,2',3,4,4',5,5'-Heptachlorobiphenyl - 2,2',3,4,4',5',6-Heptachlorobiphenyl - 2,2',3,4',5,5',6-Heptachlorobiphenyl - 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	[redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
83	Mercury	1) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method[19] 2) Thermal Decomposition Amalgamation and Atomic Absorption Spectrometric Method[20]
84	Methanol	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
85	Methoxychlor	1) Ultrasonic Extraction, Gas Chromatographic Method[10,23] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
86	Methyl bromide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
87	Methylene chloride	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method [11,27]
88	2-Methylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
89	2-Methylnaphthalene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
90	Methyl tert-butyl ether	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
91	Naphthalene	1) Ultrasonic Extraction, Gas Chromatographic Method[10,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
92	Nickel	1) Digestion, Flame Atomic Absorption Spectrometric Method[7,15] 2) Digestion, Inductively Coupled Plasma Method[7,14]
93	Nitrobenzene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
94	N-Nitrosodiphenylamine	Ultrasonic Spectrom
95	N-Nitrosodi-n-propylamine	Ultrasonic Spectrom
96	Polychlorinated Biphenyls - Aroclor 1016	1) Ultraso Method[1

[redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
111	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
112	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
113	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
114	Trichloroethylene	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method[11,27]
115	2,4,5-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
116	2,4,6-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
117	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
118	Vanadium	Digestion, Inductively Coupled Plasma Method[7,14]
119	Vinyl acetate	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
120	Vinyl chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
121	m-Xylene	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method[11,27]
122	o-Xylene	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method[11,27]
123	p-Xylene	1) Purge [redacted]
124	Xylene (Total)	1) Purge [redacted]

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
97	Pentachlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
98	Phenanthrene	1) Ultrasonic Extraction, Gas Chromatographic Method[10,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
99	Phenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
100	Pyrene	1) Ultrasonic Extraction, Gas Chromatographic Method[10,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[10,28]
101	Selenium	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method[7,21] 2) Digestion, Inductively Coupled Plasma Method[7,14]
102	Silver	Digestion, Inductively Coupled Plasma Method[7,14]
103	Styrene	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method[11,27]
104	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27]
105	Tetrachloroethylene	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method[11,27]
106	Toluene	1) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[13,27] 2) Equilibrium Headspace, Gas Chromatographic/Mass Spectrometric Method[11,27]
107	Toxaphene	Ultrasonic Extraction, Gas Chromatographic Method[10,23]
108	TPH (C_5-C_8)	1) Purge [redacted]
109	TPH ($C_{>8}$-C_{16})	Ultraso [redacted]
110	TPH ($C_{>16}$-C_{35})	Ultraso [redacted]

14. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Inductively Coupled Plasma-Optical Emission Spectrometry. SW-846 Method 6010D**, 2014.

15. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Flame Atomic Absorption Spectrophotometry. SW-846 Method 7000B**, 2007.

16. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Arsenic (Atomic Absorption, Gaseous Hydride). SW-846 Method 7061A**, 1992.

17. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Chromium, Hexavalent (Colorimetric). SW-846 Method 7196A**, 1992.

18. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Mercury in Liquid Waste (Manual Cold Vapor Technique). SW-846 Method 7470A**, 1994.

19. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique). SW-846 Method 7471B**, 1998.

20. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Mercury in Solids and Solutions by Thermal Decomposition, Amalgamation, and Atomic Absorption Spectrophotometry. SW-846 Method 7473**, 2007.

21. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Selenium (Atomic Absorption, Borohydride Reduction). SW-846 Method 7742**, 1994.

22. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Nonhalogenated Organics Using GC/FID. SW-846 Method 8015D**, 2003.

23. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Organochlorine Pesticides by Gas Chromatography. SW-846 Method 8081B**, 2007.

24. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Polychlorinated Biphenyls (PCBs) by Gas Chromatography. SW-8**

[redacted]

25. Unite

Evaluation Solid Waste

Chromatography. SW-8

26. Unite

Evaluation Solid Waste Physical/Chemical Methods. **Chlorinated Herbicides by GC Using Methylation or Pentafluorobenzylation Derivertization. SW-846 Method 8151A**, 1996. คุณภู่

27. United States...

ลำดับ	สารมลพิษ	วิธีวิเคราะห์
125	Zinc	1) Digestion, Flame Atomic Absorption Spectrometric Method[7,15] 2) Digestion, Inductively Coupled Plasma Method[7,14] คุณภู่

<u>เอกสารอ้างอิง</u>

1. กระทรวงอุตสาหกรรม. ประกาศกระทรวงอุตสาหกรรม, พ.ศ. 2549. เรื่อง กำหนดค่าปริมาณเขม่าควันที่เจือปนในอากาศที่ระบายออกจากปล่องของหม้อน้ำโรงสีข้าวที่ใช้แกลบเป็นเชื้อเพลิง. **ราชกิจจานุเบกษา.** 4 ธันวาคม 2549. เล่มที่ 123 ตอนพิเศษ 125ง.

2. สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย. **คู่มือวิเคราะห์น้ำเสีย.** พิมพ์ครั้งที่ 4. กรุงเทพฯ: เรือนแก้วการพิมพ์, 2547.

3. กระทรวงอุตสาหกรรม. ประกาศกระทรวงอุตสาหกรรม, พ.ศ. 2566. เรื่อง การจัดการสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว.**ราชกิจจานุเบกษา.** 31 พฤษภาคม 2566. เล่มที่ 140 ตอนพิเศษ 126 ง.

4. APHA, AWWA, WEF. **Standard Methods for the Examination of Water and Wastewater.** 24th ed. Washington, DC: APHA, 2023.

5. United States Environmental Protection Agency. **Standards of Performance for New Stationary Sources.** 40 CFR 60. Appendix A, 2020.

6. United States Environmental Protection Agency. **Test Methods for Evaluation Solid Waste Physical/Chemical Methods. SW-846,** 2014.

7. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Acid Digestion of Sediments, Sludges, and Soils. SW-846 Method 3050B,** 1996.

8. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Alkaline Digestion for Hexavalent Chromium. SW-846 Method 3060A,** 1996.

9. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste 3. Physical/Chemical Methods. **Separatory Funnel Liquid-Liquid Extraction. SW-846 Method 3510C,** 1996.

10. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Ultrasonic Extraction. SW-846 Method 3550C,** 2007.

11. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Head**

[redacted]

12. United States Environme

Solid Waste Physical/Chemical Methods

Method 5030C, 2003.

13. United States Environme

Solid Waste Physical/Chemical Methods. **Closed System Purge and Trap and Extraction for Volatile Organics in Soil and Waste Sample. SW-846 Method 5035A,** 2000.

14. United States...

27. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry. SW-846 Method 8260D**, 2018.

28. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry. SW-846 Method 8270E**, 2018.

29. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Cyanide Extraction Procedure for Solids and Oils. SW-846 Method 9013A**, 2014.

30. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Cyanide in Waters and Extracts using Titrimetric and Manual Spectrophotometric Procedures. SW-846 Method 9014**, 2014.

31. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **pH Electrometric Measurement. SW-846 Method 9040C**, 2004.

32. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Soil and Waste pH. SW-846 Method 9045D**, 2004.

[redacted]