

ภาคผนวก ค

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ใบรับรองผลการตรวจวิเคราะห์

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## ผลการตรวจวิเคราะห์คุณภาพน้ำทิ้ง

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## Analysis Report CH2400209



TESTING  
No.0009

Client : dcondo nim Juristic Person Condominium  
239 Moo 5, Superhighway Chiang Mai-Lampang Rd., Tambon Fa Ham, Amphoe  
Mueang Chiang Mai, Chiang Mai, Thailand, 50000  
P/O : ----  
Project : ----  
Project Location: dcondo nim Juristic Person Condominium

Work Order : CH2400209  
Report Number : CH2400209-AA  
Date Received : Apr 08, 2025  
Date Reported : Apr 21, 2025  
Date Analysis Commenced : Apr 08, 2025  
No. of samples received : 5  
Temperature : 3.8 °C  
Sampled by : Takdanai Ubonsri

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

Signatories

Siriluk P.

Siriluk Bunnak  
Section Head

ALS Laboratory Group (Thailand) Co.,Ltd. Bangkok Life Sciences

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand T +662 760 3000



## Analysis Report CH2400209

Report Number : CH2400209-AA



TESTING  
No.0009

### Sample Receipt and Conditions

Sample ID	Sample Name	Sample Description	GPS	Conditions
CH2400209-001	สระว่ายน้ำ : จุดที่ดื่มที่สุด	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated
CH2400209-002	สระว่ายน้ำ : จุดที่ลึกที่สุด	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated
CH2400209-003	อาคาร A : น้ำเสีย	----	----	1x 500mL Plastic Bottle, 1x Plastic bottle - Preserved with H <sub>2</sub> SO <sub>4</sub> , 1x Plastic Bottle - Preserved with Zinc Acetate and NaOH, 1x Sterile Bottle - Preserved with Sodium Thiosulfate, 1x Oil & Grease, 1x 1L Plastic Bottle, refrigerated
CH2400209-005	อาคาร B : น้ำเสีย	----	----	1x 500mL Plastic Bottle, 1x Plastic bottle - Preserved with H <sub>2</sub> SO <sub>4</sub> , 1x Plastic Bottle - Preserved with Zinc Acetate and NaOH, 1x Sterile Bottle - Preserved with Sodium Thiosulfate, 1x Oil & Grease, 1x 1L Plastic Bottle, refrigerated
CH2400209-007	อาคาร C : น้ำเสีย	----	----	1x 500mL Plastic Bottle, 1x Plastic bottle - Preserved with H <sub>2</sub> SO <sub>4</sub> , 1x Plastic Bottle - Preserved with Zinc Acetate and NaOH, 1x Sterile Bottle - Preserved with Sodium Thiosulfate, 1x Oil & Grease, 1x 1L Plastic Bottle, refrigerated



## Analysis Report CH2400209

Report Number : CH2400209-AA



TESTING  
No.0009

### Brief Method Summaries

The methods in the analysis report are short format, refer to full test methods in accordance with the ISO/IEC 17025 certificate no. specified in the analysis report.

Method	Testing Lab	Method Descriptions
EN0021	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)
EN0032	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500 - S2 (C, F)
EN0035	Bangkok	In-house method : STM 04-100 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500-Norg (D)
EN0044	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5210 B and part 4500 - O (G)
EN0048	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5520 B
EN0100	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 C
EN0102	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 D
MC6009	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 B
MC6020	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 E
MC6022	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 E



## Analysis Report CH2400209

Report Number : CH2400209-AA



TESTING  
No.0009

Sub-Matrix: WASTEWATER  
(Matrix: WATER)

Client Sample ID

Sub-Matrix: WASTEWATER (Matrix: WATER)													
Client Sample ID						Sampling Date		อาคาร A : น้ำเสีย		อาคาร B : น้ำเสีย		อาคาร C : น้ำเสีย	
Method	Testing Lab	Analytes	LOD	LOQ	Unit	Guideline		Result	อาคาร A : น้ำเสีย	Result	อาคาร B : น้ำเสีย	Result	อาคาร C : น้ำเสีย
						MNRE 2548 Type A	MOPH 1/2550						
Chemical Parameters													
EN0044	Bangkok	BOD (5 days at 20°C)	----	2.0	mg/L	≤20	----	6.0	Apr 07, 2025 03:40 PM	17.8	Apr 07, 2025 03:50 PM	6.6	
EN0048	Bangkok	Oil & Grease	----	3	mg/L	≤20	----	4		5		3	
EN0021	Bangkok	pH at 25°C	----	1.0	pH Unit	5-9	----	7.5		7.4		7.1	
EN0032	Bangkok	Sulfides	----	0.5	mg/L	≤1	----	<0.5 *		<0.5 *		<0.5 *	
EN0035	Bangkok	Total Kjeldahl Nitrogen as N	0.15	1.0	mg/L	≤35	----	29.8		20.6		9.0	
Microbiological Parameters													
MC6022	Bangkok	Fecal Coliforms	----	----	MPN/100mL	----	----	240000		130000		24000	
Physical and Aggregate Properties													
EN0100	Bangkok	Total Dissolved Solids at 180°C	----	5	mg/L	----	----	288		252		312	
EN0102	Bangkok	Total Suspended Solids	----	5	mg/L	≤30	----	26		16		11	

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## ผลการตรวจวิเคราะห์คุณภาพน้ำสระว่ายนํ้า

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## Analysis Report CH2400206



Accreditation No.1031/47

Client : dcondo nim Juristic Person Condominium  
239 Moo 5, Superhighway Chiang Mai-Lampang Rd., Tambon Fa Ham, Amphoe  
Mueang Chiang Mai, Chiang Mai, Thailand, 50000  
P/O : ----  
Project : ----  
Project Location: dcondo nim Juristic Person Condominium

Work Order : CH2400206  
Report Number : CH2400206-AA  
Date Received : Jan 08, 2025  
Date Reported : Jan 17, 2025  
Date Analysis Commenced : Jan 08, 2025  
No. of samples received : 4  
Temperature : 4.2 °C  
Sampled by : Sittichok Taseeda

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

Signatories

Kittitee Jamjumroon  
Scientist (3)

ALS Laboratory Group (Thailand) Co.,Ltd. Bangkok Life Sciences

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand T +662 760 3000



## Analysis Report CH2400206

Report Number : CH2400206-AA



Accreditation No.1031/47

Sample Receipt and Conditions				
Sample ID	Sample Name	Sample Description	GPS	Conditions
CH2400206-001	น้ำประปา	----	----	1x 500mL Plastic Bottle, refrigerated
CH2400206-005	อาคาร A : น้ำถังเก็บน้ำใต้ดิน	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated
CH2400206-007	อาคาร B : น้ำถังเก็บน้ำใต้ดิน	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated
CH2400206-009	อาคาร C : น้ำถังเก็บน้ำใต้ดิน	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated
Brief Method Summaries				
The methods in the analysis report are short format, refer to full test methods in accordance with the ISO/IEC 17025 certificate no. specified in the analysis report.				
Method	Testing Lab	Method Descriptions		
EN0100	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 C		
MC6012	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 F		



## Analysis Report CH2400206

Report Number : CH2400206-AA



Accreditation No.1031/47

Sub-Matrix: PROCESS WATER  
(Matrix: WATER)

Client Sample ID

น้ำประปา

อาคาร A : น้ำถังเก็บน้ำใต้ดิน

อาคาร B : น้ำถังเก็บน้ำใต้ดิน

Method	Testing Lab	Analytes	LOD	LOQ	Unit	Sampling Date		Result	Result	Result
						Guideline				
Microbiological Parameters										
MC6012	Bangkok	Escherichia coli			in 100mL				Not Detected	Not Detected
Physical and Aggregate Properties										
EN0100	Bangkok	Total Dissolved Solids at 180°C		5	mg/L			156		





## Analysis Report CH2400206

Report Number : CH2400206-AA



Accreditation No.1031/47

Sub-Matrix: PROCESS WATER

(Matrix: WATER)

Client Sample ID

อาคาร C : น้ำถังเก็บน้ำใต้ดิน

Method	Testing Lab	Analytes	LOD	LOQ	Unit	Sampling Date		Result		
						Guideline				
Microbiological Parameters										
MC6012	Bangkok	Escherichia coli			in 100mL			Not Detected		

Guideline: ----

Comment: The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Sampling is not included in scope of accreditation ISO/IEC 17025

Key: ° LOD : Limit of Detection

° "≤" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

----- END OF REPORT -----



## Analysis Report CH2400206



TESTING  
No.0009

Client : dcondo nim Juristic Person Condominium  
239 Moo 5, Superhighway Chiang Mai-Lampang Rd., Tambon Fa Ham, Amphoe  
Mueang Chiang Mai, Chiang Mai, Thailand, 50000  
P/O : ----  
Project : ----  
Project Location: dcondo nim Juristic Person Condominium

Work Order : CH2400206  
Report Number : CH2400206-AB  
Date Received : Jan 08, 2025  
Date Reported : Jan 17, 2025  
Date Analysis Commenced : Jan 08, 2025  
No. of samples received : 5  
Temperature : 4.2 °C  
Sampled by : Sittichok Taseeda

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

Signatories

Siriluk P.

Siriluk Bunnak  
Section Head

ALS Laboratory Group (Thailand) Co.,Ltd. Bangkok Life Sciences

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand T +662 760 3000



## Analysis Report CH2400206

Report Number : CH2400206-AB



TESTING  
No.0009

Sample Receipt and Conditions				
Sample ID	Sample Name	Sample Description	GPS	Conditions
CH2400206-002	สระว่ายน้ำ : จุดที่ดื่มที่สุด	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated
CH2400206-003	สระว่ายน้ำ : จุดที่ลึกที่สุด	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated
CH2400206-004	อาคาร A : น้ำเสีย	----	----	1x 500mL Plastic Bottle, 1x Plastic bottle - Preserved with H <sub>2</sub> SO <sub>4</sub> , 1x Plastic Bottle - Preserved with Zinc Acetate and NaOH, 1x Sterile Bottle - Preserved with Sodium Thiosulfate, 1x Oil & Grease, 1x 1L Plastic Bottle, refrigerated
CH2400206-006	อาคาร B : น้ำเสีย	----	----	1x 500mL Plastic Bottle, 1x Plastic bottle - Preserved with H <sub>2</sub> SO <sub>4</sub> , 1x Plastic Bottle - Preserved with Zinc Acetate and NaOH, 1x Sterile Bottle - Preserved with Sodium Thiosulfate, 1x Oil & Grease, 1x 1L Plastic Bottle, refrigerated
CH2400206-008	อาคาร C : น้ำเสีย	----	----	1x 500mL Plastic Bottle, 1x Plastic bottle - Preserved with H <sub>2</sub> SO <sub>4</sub> , 1x Plastic Bottle - Preserved with Zinc Acetate and NaOH, 1x Sterile Bottle - Preserved with Sodium Thiosulfate, 1x Oil & Grease, 1x 1L Plastic Bottle, refrigerated



## Analysis Report CH2400206

Report Number : CH2400206-AB



TESTING  
No.0009

### Brief Method Summaries

The methods in the analysis report are short format, refer to full test methods in accordance with the ISO/IEC 17025 certificate no. specified in the analysis report.

Method	Testing Lab	Method Descriptions
EN0021	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)
EN0032	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500 - S2 (C, F)
EN0035	Bangkok	In-house method : STM 04-100 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500-Norg (D)
EN0044	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5210 B and part 4500 - O (G)
EN0048	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5520 B
EN0100	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 C
EN0102	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 D
MC6009	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 B
MC6020	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 E
MC6022	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 E



Analysis Report CH2400206



TESTING  
No. 0009

(Matrix: WATER)

Sampling Date

## Microbiological Parameters

° Result(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.

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END OF REPORT  
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## Analysis Report CH2400207



TESTING  
No.0009

Client : dcondo nim Juristic Person Condominium  
239 Moo 5, Superhighway Chiang Mai-Lampang Rd., Tambon Fa Ham, Amphoe  
Mueang Chiang Mai, Chiang Mai, Thailand, 50000  
P/O : ----  
Project : ----  
Project Location: dcondo nim Juristic Person Condominium

Work Order : CH2400207  
Report Number : CH2400207-AA  
Date Received : Feb 05, 2025  
Date Reported : Feb 10, 2025  
Date Analysis Commenced : Feb 05, 2025  
No. of samples received : 2  
Temperature : 2.8 °C  
Sampled by : Phanudeth Petchaut

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

Signatories

Kittitee Jamjumroon  
Scientist (3)

ALS Laboratory Group (Thailand) Co.,Ltd. Bangkok Life Sciences

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand T +662 760 3000



## Analysis Report CH2400207

Report Number : CH2400207-AA



TESTING  
No.0009

### Sample Receipt and Conditions

Sample ID	Sample Name	Sample Description	GPS	Conditions
CH2400207-001	สระว่ายน้ำน้ำ : จุดที่ต้นที่สุด	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate
CH2400207-002	สระว่ายน้ำน้ำ : จุดที่ลึกที่สุด	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate

### Brief Method Summaries

The methods in the analysis report are short format, refer to full test methods in accordance with the ISO/IEC 17025 certificate no. specified in the analysis report.

Method	Testing Lab	Method Descriptions
MC6009	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 B
MC6020	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 E



## Analysis Report CH2400207

Report Number : CH2400207-AA



TESTING  
No.0009

Sub-Matrix: PROCESS WATER

(Matrix: WATER)

Client Sample ID

Method	Testing Lab	Analytes	LOD	LOQ	Unit	Sampling Date		Result	Result	Feb 04, 2025 10:30 AM	Feb 04, 2025 10:35 AM
						Guideline					
						MOPH 1/2550					
Microbiological Parameters											
MC6009	Bangkok	Total Coliforms			MPN/100mL	<10		<1.1			
MC6020	Bangkok	Fecal Coliforms			in 100mL	Not Detected		Not Detected			Not Detected

Guideline: MOPH 1/2550: Recommendations of The Public Health Committee on Swimming Pool Operations

Comment: The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Sampling is not included in scope of accreditation ISO/IEC 17025

- Key:
- LOD : Limit of Detection
  - "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

----- END OF REPORT -----





## Analysis Report CH2400208



TESTING  
No.0009

Client : dcondo nim Juristic Person Condominium  
239 Moo 5, Superhighway Chiang Mai-Lampang Rd., Tambon Fa Ham, Amphoe  
Mueang Chiang Mai, Chiang Mai, Thailand, 50000  
P/O : ----  
Project : ----  
Project Location: dcondo nim Juristic Person Condominium

Work Order : CH2400208  
Report Number : CH2400208-AA  
Date Received : Mar 05, 2025  
Date Reported : Mar 11, 2025  
Date Analysis Commenced : Mar 05, 2025  
No. of samples received : 2  
Temperature : 3.0 °C  
Sampled by : Nattapong Sopa  
TBD

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

Signatories

Kittitee Jamjumroon  
Scientist (3)

ALS Laboratory Group (Thailand) Co.,Ltd. Bangkok Life Sciences

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand T +662 760 3000



## Analysis Report CH2400208

Report Number : CH2400208-AA



TESTING  
No.0009

### Sample Receipt and Conditions

Sample ID	Sample Name	Sample Description	GPS	Conditions
CH2400208-001	สระว่ายน้ำ : จุดที่ต้นที่สุด	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated
CH2400208-002	สระว่ายน้ำ : จุดที่ลึกที่สุด	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated

### Brief Method Summaries

The methods in the analysis report are short format, refer to full test methods in accordance with the ISO/IEC 17025 certificate no. specified in the analysis report.

Method	Testing Lab	Method Descriptions
MC6009	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 B
MC6020	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 E



## Analysis Report CH2400208

Report Number : CH2400208-AA



TESTING  
No.0009

Sub-Matrix: PROCESS WATER

(Matrix: WATER)

Client Sample ID

Method	Testing Lab	Analytes	LOD	LOQ	Unit	Sampling Date		Guideline	Result	Result	Sampling Date
Microbiological Parameters											
MC6009	Bangkok	Total Coliforms	-----	-----	MPN/100mL	<10	-----	<1.1	-----	<1.1	Mar 04, 2025 10:40 AM
MC6020	Bangkok	Fecal Coliforms	-----	-----	in 100mL	Not Detected	-----	Not Detected	-----	Not Detected	Mar 04, 2025 10:40 AM

Guideline: MOPH 1/2550: Recommendations of The Public Health Committee on Swimming Pool Operations

Comment: The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Sampling is not included in scope of accreditation ISO/IEC 17025

- Key:
- LOD : Limit of Detection
  - "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

----- END OF REPORT -----



## Analysis Report CH2400209



TESTING  
No.0009

Client : dcondo nim Juristic Person Condominium  
239 Moo 5, Superhighway Chiang Mai-Lampang Rd., Tambon Fa Ham, Amphoe  
Mueang Chiang Mai, Chiang Mai, Thailand, 50000  
P/O : ----  
Project : ----  
Project Location: dcondo nim Juristic Person Condominium

Work Order : CH2400209  
Report Number : CH2400209-AA  
Date Received : Apr 08, 2025  
Date Reported : Apr 21, 2025  
Date Analysis Commenced : Apr 08, 2025  
No. of samples received : 5  
Temperature : 3.8 °C  
Sampled by : Takdanai Ubonsri

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

Signatories

Siriluk P.

Siriluk Bunnak  
Section Head

ALS Laboratory Group (Thailand) Co.,Ltd. Bangkok Life Sciences

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand T +662 760 3000



## Analysis Report CH2400209

Report Number : CH2400209-AA



TESTING  
No.0009

### Sample Receipt and Conditions

Sample ID	Sample Name	Sample Description	GPS	Conditions
CH2400209-001	สระว่ายน้ำ : จุดที่ดื่มที่สุด	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated
CH2400209-002	สระว่ายน้ำ : จุดที่ลึกที่สุด	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated
CH2400209-003	อาคาร A : น้ำเสีย	----	----	1x 500mL Plastic Bottle, 1x Plastic bottle - Preserved with H <sub>2</sub> SO <sub>4</sub> , 1x Plastic Bottle - Preserved with Zinc Acetate and NaOH, 1x Sterile Bottle - Preserved with Sodium Thiosulfate, 1x Oil & Grease, 1x 1L Plastic Bottle, refrigerated
CH2400209-005	อาคาร B : น้ำเสีย	----	----	1x 500mL Plastic Bottle, 1x Plastic bottle - Preserved with H <sub>2</sub> SO <sub>4</sub> , 1x Plastic Bottle - Preserved with Zinc Acetate and NaOH, 1x Sterile Bottle - Preserved with Sodium Thiosulfate, 1x Oil & Grease, 1x 1L Plastic Bottle, refrigerated
CH2400209-007	อาคาร C : น้ำเสีย	----	----	1x 500mL Plastic Bottle, 1x Plastic bottle - Preserved with H <sub>2</sub> SO <sub>4</sub> , 1x Plastic Bottle - Preserved with Zinc Acetate and NaOH, 1x Sterile Bottle - Preserved with Sodium Thiosulfate, 1x Oil & Grease, 1x 1L Plastic Bottle, refrigerated



## Analysis Report CH2400209

Report Number : CH2400209-AA



TESTING  
No.0009

### Brief Method Summaries

The methods in the analysis report are short format, refer to full test methods in accordance with the ISO/IEC 17025 certificate no. specified in the analysis report.

Method	Testing Lab	Method Descriptions
EN0021	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500 - H (B)
EN0032	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500 - S2 (C, F)
EN0035	Bangkok	In-house method : STM 04-100 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500-Norg (D)
EN0044	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5210 B and part 4500 - O (G)
EN0048	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5520 B
EN0100	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 C
EN0102	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 D
MC6009	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 B
MC6020	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 E
MC6022	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 E



## Analysis Report CH2400209

Report Number : CH2400209-AA



TESTING  
No.0009

Sub-Matrix: WASTEWATER  
(Matrix: WATER)

Client Sample ID

Sub-Matrix: WASTEWATER (Matrix: WATER)											
Client Sample ID						อาคาร A : น้ำเสีย		อาคาร B : น้ำเสีย		อาคาร C : น้ำเสีย	
Method	Testing Lab	Analytes	LOD	LOQ	Unit	Sampling Date		Result	อาคาร B : น้ำเสีย	อาคาร C : น้ำเสีย	
						MNRE 2548 Type A	MOPH 1/2550				
Chemical Parameters											
EN0044	Bangkok	BOD (5 days at 20°C)	-----	2.0	mg/L	≤20	-----	6.0	17.8	6.6	
EN0048	Bangkok	Oil & Grease	-----	3	mg/L	≤20	-----	4	5	3	
EN0021	Bangkok	pH at 25°C	-----	1.0	pH Unit	5-9	-----	7.5	7.4	7.1	
EN0032	Bangkok	Sulfides	-----	0.5	mg/L	≤1	-----	<0.5 *	<0.5 *	<0.5 *	
EN0035	Bangkok	Total Kjeldahl Nitrogen as N	0.15	1.0	mg/L	≤35	-----	29.8	20.6	9.0	
Microbiological Parameters											
MC6022	Bangkok	Fecal Coliforms	-----	-----	MPN/100mL	-----	-----	240000	130000	24000	
Physical and Aggregate Properties											
EN0100	Bangkok	Total Dissolved Solids at 180°C	-----	5	mg/L	-----	-----	288	252	312	
EN0102	Bangkok	Total Suspended Solids	-----	5	mg/L	≤30	-----	26	16	11	



## Analysis Report CH2400209

Report Number : CH2400209-AA



TESTING  
No.0009

Sub-Matrix: PROCESS WATER

(Matrix: WATER)

Client Sample ID

สรุว่ายน้ : จุดที่ต้นที่สุด

---

สรุว่ายน้ : จุดที่ต้นที่สุด

สรุว่ายน้ : จุดที่ต้นที่สุด

---

Method	Testing Lab	Analytes	LOD	LOQ	Unit	Sampling Date		Result	Result	Result
						Guideline				
						MNRE 2548 Type A	MOPH 1/2550			
Microbiological Parameters										
MC6009	Bangkok	Total Coliforms			MPN/100mL		<10	<1.1	<1.1	
MC6020	Bangkok	Fecal Coliforms			in 100mL		Not Detected	Not Detected	Not Detected	

Guideline: MNRE 2548 Type A: Building: Notification of The Ministry of Natural Resources and Environment on Effluent from building Type A (Guideline for TDS are in addition to the TDS of the water used not more than 500 mg/L)

MOPH 1/2550: Recommendations of The Public Health Committee on Swimming Pool Operations

Comment: The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Sampling is not included in scope of accreditation ISO/IEC 17025

Key:

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Result(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.

----- END OF REPORT -----





## Analysis Report CH2400209



ISO/IEC 17025  
Accreditation No. 10311/47

Client : dcondo nim Juristic Person Condominium  
239 Moo 5, Superhighway Chiang Mai-Lampang Rd., Tambon Fa Ham, Amphoe  
Mueang Chiang Mai, Chiang Mai, Thailand, 50000  
P/O : ----  
Project : ----  
Project Location: dcondo nim Juristic Person Condominium

Work Order : CH2400209  
Report Number : CH2400209-AB  
Date Received : Apr 08, 2025  
Date Reported : Apr 21, 2025  
Date Analysis Commenced : Apr 08, 2025  
No. of samples received : 3  
Temperature : 3.8 °C  
Sampled by : Takdanai Ubonsri

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

Signatories

Kittitee Jamjumroon  
Scientist (3)

ALS Laboratory Group (Thailand) Co.,Ltd. Bangkok Life Sciences

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand T +662 760 3000



## Analysis Report CH2400209

Report Number : CH2400209-AB



ISO/IEC 17025  
Accreditation No. 10311/47

Sample Receipt and Conditions				
Sample ID	Sample Name	Sample Description	GPS	Conditions
CH2400209-004	อาคาร A : น้ำถังเก็บน้ำใต้ดิน	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated
CH2400209-006	อาคาร B : น้ำถังเก็บน้ำใต้ดิน	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated
CH2400209-008	อาคาร C : น้ำถังเก็บน้ำใต้ดิน	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated
Brief Method Summaries				
The methods in the analysis report are short format, refer to full test methods in accordance with the ISO/IEC 17025 certificate no. specified in the analysis report.				
Method	Testing Lab	Method Descriptions		
MC6012	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023. Part 9221 F		



# Analysis Report CH2400209

Report Number : CH2400209-AB



ISO/IEC 17025  
Accreditation No. 10311/47

Sub-Matrix: PROCESS WATER  
(Matrix: WATER)

Client Sample ID

Sub-Matrix: PROCESS WATER											
(Matrix: WATER)											
Client Sample ID						Sampling Date		อาคาร A : น้ำถังเก็บน้ำใต้ดิน			
Method	Testing Lab	Analytes	LOD	LOQ	Unit	Guideline		อาคาร B : น้ำถังเก็บน้ำใต้ดิน		อาคาร C : น้ำถังเก็บน้ำใต้ดิน	
								Result		Result	
Microbiological Parameters											
MC6012	Bangkok	Escherichia coli			in 100mL			Detected	Not Detected	Not Detected	
Result											
CH2400209-004											
Result											
CH2400209-006											
Result											
CH2400209-008											
Result											
Not Detected											

Guideline: ----

Comment: The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Sampling is not included in scope of accreditation ISO/IEC 17025

Key: ° LOD : Limit of Detection

° "≤" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

----- END OF REPORT -----



## Analysis Report CH2400210



TESTING  
No.0009

Client : dcondo nim Juristic Person Condominium  
239 Moo 5, Superhighway Chiang Mai-Lampang Rd., Tambon Fa Ham, Amphoe  
Mueang Chiang Mai, Chiang Mai, Thailand, 50000  
P/O : ----  
Project : ----  
Project Location: dcondo nim Juristic Person Condominium

Work Order : CH2400210  
Report Number : CH2400210-AA  
Date Received : May 09, 2025  
Date Reported : May 16, 2025  
Date Analysis Commenced : May 09, 2025  
No. of samples received : 2  
Temperature : 2.1 °C  
Sampled by : Natthakit Sapankaew

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

Signatories

Kittitee Jamjumroon  
Scientist (3)

ALS Laboratory Group (Thailand) Co.,Ltd. Bangkok Life Sciences

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand T +662 760 3000



## Analysis Report CH2400210

Report Number : CH2400210-AA



TESTING  
No.0009

### Sample Receipt and Conditions

Sample ID	Sample Name	Sample Description	GPS	Conditions
CH2400210-001	สระว่ายน้ำ : จุดที่ต้นที่สุด	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated
CH2400210-002	สระว่ายน้ำ : จุดที่ลึกที่สุด	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate, refrigerated

### Brief Method Summaries

The methods in the analysis report are short format, refer to full test methods in accordance with the ISO/IEC 17025 certificate no. specified in the analysis report.

Method	Testing Lab	Method Descriptions
MC6009	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 B
MC6020	Bangkok	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 E



## Analysis Report CH2400210

Report Number : CH2400210-AA



TESTING  
No.0009

Sub-Matrix: PROCESS WATER

(Matrix: WATER)

Client Sample ID

สรุว่าบนำ : จุดที่ต้นที่สุด

---

Sub-Matrix: PROCESS WATER												
(Matrix: WATER)												
			Client Sample ID				สรุว่าบนำ : จุดที่ต้นที่สุด		สรุว่าบนำ : จุดที่ลิกที่สุด			
Method	Testing Lab	Analytes	LOD	LOQ	Unit	Sampling Date		Guideline	Result	Result	CH2400210-002	
						May 08, 2025 02:40 PM	May 08, 2025 02:45 PM					
Microbiological Parameters												
MC6009	Bangkok	Total Coliforms			MPN/100mL	<10		<1.1		<1.1		
MC6020	Bangkok	Fecal Coliforms			in 100mL	Not Detected		Not Detected		Not Detected		

Guideline: MOPH 1/2550: Recommendations of The Public Health Committee on Swimming Pool Operations

Comment: The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Sampling is not included in scope of accreditation ISO/IEC 17025

Key:

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

----- END OF REPORT -----



## Analysis Report CH2400211



TESTING  
No.0009

Client : dcondo nim Juristic Person Condominium  
239 Moo 5, Superhighway Chiang Mai-Lampang Rd., Tambon Fa Ham, Amphoe  
Mueang Chiang Mai, Chiang Mai, Thailand, 50000  
P/O : ----  
Project : ----  
Project Location: dcondo nim Juristic Person Condominium

Work Order : CH2400211  
Report Number : CH2400211-AA  
Date Received : Jun 13, 2025  
Date Reported : Jun 20, 2025  
Date Analysis Commenced : Jun 14, 2025  
No. of samples received : 2  
Sampled by : TBD

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. The report shall not be reproduced except in full without the written approval of the laboratory.

Signatories

Kittitee Jammumroon  
Scientist (3)

ALS Laboratory Group (Thailand) Co.,Ltd. Bangkok Life Sciences

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand T +662 760 3000



# Analysis Report CH2400211

Report Number : CH2400211-AA



TESTING  
No.0009

Sample Receipt and Conditions				
Sample ID	Sample Name	Sample Description	GPS	Conditions
CH2400211-001	สระว่ายน้ำน้ำ : จุดที่ต้นที่สุด	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate
CH2400211-002	สระว่ายน้ำน้ำ : จุดที่ลึกที่สุด	----	----	1x 500mL Sterile Bottle - Preserved with Sodium Thiosulfate

Brief Method Summaries	
The methods in the analysis report are short format, refer to full test methods in accordance with the ISO/IEC 17025 certificate no. specified in the analysis report.	
Method	Method Descriptions
MC6009	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 B
MC6020	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, Part 9221 E





# Analysis Report CH2400211

Report Number : CH2400211-AA



TESTING  
No.0009

Sub-Matrix: PROCESS WATER

(Matrix: WATER)

Client Sample ID

สรุว่าบนำ : จดที่ต้นที่สุด

สรุว่าบนำ : จดที่ลิกที่สุด

Method	Testing Lab	Analytes	LOD	LOQ	Unit	Sampling Date		Guideline	Result	Result	Result
Microbiological Parameters											
MC6009	Bangkok	Total Coliforms	-----	-----	MPN/100mL	<10	-----	<1.1	<1.1	<1.1	-----
MC6020	Bangkok	Fecal Coliforms	-----	-----	in 100mL	Not Detected	-----	Not Detected	Not Detected	Not Detected	-----

ภาคผนวก ง

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ใบรับรองการสอบเทียบเครื่องมือ



right solutions.  
right partner.

รายการเครื่องมือที่ใช้ในการวิเคราะห์ / ทดสอบ

Sample Name	Parameter	Equipment Name	ID No.	Calibrated Date	Next Cal	Freq. Calibrate (Months)
Water Lab	Total Dissolved Solids 180°C	Electronic Top-Loading Balance	BKK_EN0003	2-Aug-24	2-Aug-25	12
Water Lab	Total Dissolved Solids 180°C	Oven	BKK_EN0273	14-May-24	14-Nov-25	18
Water Lab	pH at 25 °C	pH meter	BKK_EN0342	17-Oct-24	17-Oct-25	12
Water Lab	Total Coliform	Autoclave	BKK_ML0041	4-Mar-25	4-Sep-26	18
Water Lab	Total Coliform	Incubator	BKK_ML0010	3-Dec-24	3-Jun-26	18
Water Lab	Total Coliform	Hot Air Oven	BKK_ML0013	23-Apr-24	23-Oct-25	18
Water Lab	Fecal Coliform	Autoclave	BKK_ML0041	4-Mar-25	4-Sep-26	18
Water Lab	Fecal Coliform	Incubator	BKK_ML0010	3-Dec-24	3-Jun-26	18
Water Lab	Fecal Coliform	Hot Air Oven	BKK_ML0013	23-Apr-24	23-Oct-25	18
Water Lab	Fecal Coliform	Water Bath	BKK_ML0056	4-Mar-25	4-Mar-26	12
Water Lab	<i>Escherichia coli</i>	Autoclave	BKK_ML0041	4-Mar-25	4-Sep-26	18
Water Lab	<i>Escherichia coli</i>	Incubator	BKK_ML0010	3-Dec-24	3-Jun-26	18
Water Lab	<i>Escherichia coli</i>	Hot Air Oven	BKK_ML0013	23-Apr-24	23-Oct-25	18
Water Lab	<i>Escherichia coli</i>	Water Bath	BKK_ML0056	4-Mar-25	4-Mar-26	12
Water Lab	Sulfide	Burette	BKK_EN0171	27-Feb-24	27-Aug-25	18
Water Lab	Sulfide	Chamber (Cooling Room)	BKK_EN0167	4-Jun-25	4-Dec-26	18
Water Lab	Oil & Grease	Electronic Top-Loading Balance	BKK_EN0003	2-Aug-24	2-Aug-25	12
Water Lab	Oil & Grease	Water Bath	BKK_EN0439	29-Oct-24	29-Oct-25	12
Water Lab	Total Kjeldahl Nitrogen	Digestion Unit	BKK_EN0366	9-Apr-25	9-Apr-26	12
Water Lab	Total Kjeldahl Nitrogen	Discrete analyzer	BKK_EN0037	16-Aug-24	16-Aug-25	12
Water Lab	Total Suspended Solids	Electronic Top-Loading Balance	BKK_EN0003	2-Aug-24	2-Aug-25	12
Water Lab	Total Suspended Solids	Oven	BKK_EN0273	14-May-24	14-Nov-25	18
Water Lab	BOD	DO Meter	BKK_EN0205	2-Feb-24	2-Aug-25	18
Water Lab	BOD	Incubator	BKK_EN0272	22-Aug-24	22-Aug-25	12
Water Lab	BOD	Burette	BKK_EN0171	27-Feb-24	27-Aug-25	18

Sartorius (Thailand) Co., Ltd.  
129 Rama 9 Road, Huaykong, Huaykong, Bangkok 10310  
Tel: +66 2643 8351-6, e-mail: service.thailand@sartorius.com



REVIEW BY: *Jyda K*  
APPROVED BY: *Shik P*  
NEXT CAL DATE: 02/08/25

SARTORIUS  
CALIBRATION 0426

# Certificate of Calibration

Model Number: MSE2245-100-DU  
Description: Analytical Balance  
Serial Number: 0027405555  
ID No.: BKK-EN0003  
Manufacturer: Sartorius

Customer Name: ALS Laboratory Group (Thailand) Co., Ltd.  
104 Phatthanarak 40, Phatthanarak Rd., Kwaeng Suan Luang, Khet Suan Luang, Bangkok 10250.

Calibrated Place: Lab Room

Calibrated By: Mr. Chuchai Intirana  
Calibration Date: Friday, August 02, 2024  
Calibration Procedure No.: This calibration was conducted by Using in-house calibration procedure number (WI-003)  
Based on UKAS IAB 14 : 2019

**Metrological data:**  
Capacity: 220 g Readability: 0.0001 g  
Temperature: 23.0 °C ± 5.0 °C  
Humidity: 55.0 % RH ± 10.0 % RH  
Pressure:   
**Reasons for calibration:**  
☒ New Installation ☒ Service / Repair ☒ Recalibration/ Maintenance ☐ Good Operation ☐ Full

## Measurement Method UKAS Publication Ref: Lab 14

The measurement uncertainty stated is the expanded uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor (k=2) to provide a level of confidence of approximately 95%. It is determined in accordance with the Guide to Expression of Uncertainty in Measurement (GUM). The calibration certificate documents the traceability to National Standards, which realise the unit of measurement according to the International Standard System of Units (SI). Report of Tolerance came from list of Sartorius Metrological Specifications.

## Traceability:

Model Number	Description	Traceability	Certificate No.	Due Date
YCS011-522-00	Sartorius weight set 1mg - 500mg EXYCS011-522-00	ITS	M72081975	23-Aug-2025
Testo 174 H	Thermo-Hygrometer, Testo 174H	ENTECH	HIT 661303.H661140	12-Nov-2024

This certificate relates and apply this equipment only.  
This certificate may not be reproduced other than in full except with the prior written approval of the Verification Operation Division Sartorius (Thailand) Co., Ltd.

*Signature*  
Mr. Chuchai Intirana (Technical Manager)

Sartorius (Thailand) Co., Ltd.  
129 Rama 9 Road, Huaykong, Huaykong, Bangkok 10310  
Tel: +66 2643 8351-6, e-mail: service.thailand@sartorius.com

# Certificate of Calibration

Model Number: MSE2245-100-DU  
Description: Analytical Balance  
Serial Number: 0027405555  
ID No.: BKK-EN0003  
Manufacturer: Sartorius

## Calibration Results : Without Adjustment

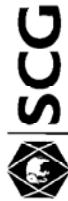
Repeatability		Eccentricity (Off-center loading error)	
The repeatability is the ability of a weighing instrument to display nearly identical results under constant test conditions when the same load within a measurement range is placed repeatedly on the weighing pan in the same manner. The standard deviation is used to express repeatability quantitatively.		The off-center loading error is related to the difference between the center of the load, i.e. 1/2 or 1/4 of maximum capacity, placed in the middle of the weighing pan and between each of four additional measurement points (positions defined according to OIML R110).	
Nominal Value (Low Load)	20.0000	Nominal value:	100 g
Tolerance	0.0001 g	Tolerance	0.0004 g
Nominal Value (High Load)	200.0000		
Tolerance	0.0001 g		
Standard Deviation	0.00004		

Linearity

The linearity, also called linearity error, describes the deviation of the characteristic curve of a weighing instrument from the linear slope.

Tolerance		0.0002 g		
Nominal Value (g)	Conventional Mass Value (g)	Displayed Value (g)	Deviation (g)	Uncertainty (g)
0.01	0.0100	0.0100	0.0000	0.00015
0.1	0.1000	0.1000	0.0000	0.00015
1	1.0000	1.0000	0.0000	0.00015
2	2.0000	2.0000	0.0000	0.00015
5	5.0000	5.0000	0.0000	0.00015
10	10.0000	10.0000	0.0000	0.00015
20	20.0000	20.0000	0.0000	0.00015
50	50.0000	50.0001	0.0001	0.00016
100	100.0000	100.0001	0.0001	0.00019
200	200.0000	200.0000	0.0000	0.00029

End of Report



## Metrology

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110, Thailand.

Saraburi Tel : +66 3627 3096 Fax : +66 3627 3100

Bangkok Tel : +668 9205 6851 , +669 8247 2360

Website : www.scieco.co.th E-Mail : calibrate@scg.com



Certificate No. T240904

Page 1 of 3

### Certificate of Calibration

Equipment : Chamber ( Oven )  
Manufacturer : Memmert  
Model : UF 450  
Serial No. : B717.0531  
Customer Code : BKK\_EN0273

ID No. : T8042A4

Customer : ALS Laboratory Group (Thailand) Co.,Ltd.

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan,

Khet Suan Luang, Bangkok 10250

Customer Location : Laboratory (Oven Room)

Date of Receipt : 08 May 2024

Calibrated By : Preecha Phisassuthikul ( Temperature Calibration Manager )

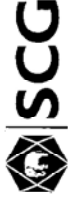
Approved By : / Nuafun Sungchum (Metrology Manager)

Date of Issue : 23 MAY 2024

The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrology.

FM-L14 119/18-08-66



## Metrology

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110, Thailand.



Certificate No. T240904

Page 2 of 3

### Calibration Report

Equipment : Chamber ( Oven )  
Date of Calibration : 14 May 2024  
Environment : Temperature : 26.5-28.1 °C  
Line Voltage : 226.7-229.8 V  
Relative Humidity : 51 - 57 %RH

#### Condition of this results of calibration :

1. This equipment was calibrated by insert nine resistance thermometer detectors into its chamber , the other one resistance thermometer detector use for ambient temperature measurement . The calibration was done in according to WI-T20 ( based on ASTM E145-94 ( Reapproved 2001 ) and AS2853-1986 ) .

All data show below were final values and the initial data from customer request . The temperature scale used was based on ITS - 90 .

#### 2. Reference Standard Instrument :

Instrument	Model	Instrument No.	Certificate No.	Due Date
RTD	100 ohm	21-(CHI-10)	T231955	17 November 2024
DATA LOGGER	34970A	T121	T231955	17 November 2024

3. This certificate is traceable to :

National Institute of Metrology ( Thailand ) through Metrological Center ( NSC-TISI-TIS 17025 CALIBRATION 0244 ) .

#### 4. Condition of calibrated item : good

#### Equipment Description :

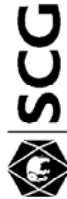
Time Constant : 1 Hour 30 Minute At 104 °C  
Fresh Air Damper : ☐ Open ☐ Min ☐ Medium ☐ Max  
☐ Close ☒ Not Available

#### 5. Adjustment :

( X ) without adjustment ( ) after adjustment

Approved By :

FM-L15 118/18-08-66



**Metrology**  
SCI ECO Services Company Limited

33/2 Moo 3, T. Banpa, A. Kaengkhloi, Saraburi 18110, Thailand.

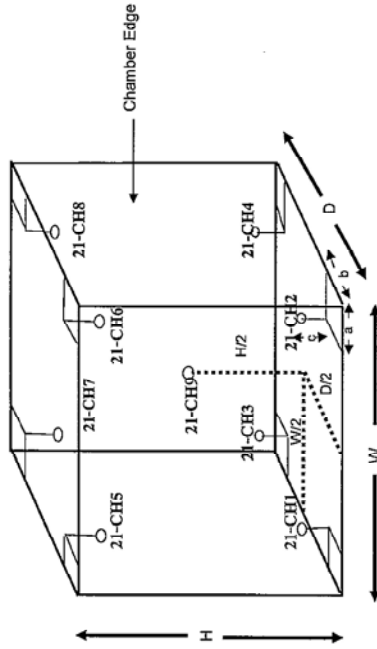


NSC-TIS-TIS 17025  
CALIBRATION 0244

Certificate No. T240904

Page 3 of 3

## Calibration Report



### Remark :

Internal Dimensions of Chamber : W (Width) = 104 cm., H (Height) = 72 cm. and D (Depth) = 60 cm.  
Size of Installed Standard sensor number 21-CH1 to number 21-CH8 : a = 5 cm., b = 5 cm. and c = 5 cm.  
Size of Installed Standard sensor number 21-CH9 : W/2 = 104 cm./2, H/2 = 72 cm./2 and D/2 = 60 cm./2

### Measurement Results

Calibration Point	Average Standard Reading at each position (°C)								
	21-CH1	21-CH2	21-CH3	21-CH4	21-CH5	21-CH6	21-CH7	21-CH8	21-CH9
104	103.4	103.0	103.7	103.6	103.3	104.6	103.3	104.0	103.9
180	179.5	181.1	179.2	179.5	179.0	181.3	179.8	179.9	180.2

Chamber (Oven)		Temperature Distribution					Coverage Factor k
		Reading (°C)	Average (°C)	Stability (± °C)	Uniformity (°C)	Uncertainty (± °C)	
		Min, Max	Average				
104.0		103.9, 104	104.0	0.14	1.27	0.44	2.00
180.0		179.9, 180.1	180.0	0.39	2.29	0.76	2.00

\* The quoted uncertainty exclude "uniformity"

The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k which for a t-distribution, providing

a level of confidence of approximately 95 %.

End of Certificate

Approved By: \_\_\_\_\_

Signature

FM-L15 118/18-08-66



**TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)**  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
534/4 PATTANAKARN ROAD SOI 18, SUWIMLUANG, SUANLUANG BANGKOK 10250  
TEL.0-2717-3000-26 FAX.0-2719-9484



NSC-TIS-TIS 17025  
CALIBRATION 0084

## Certificate of Calibration

Cert.No.: 24CH1295

Page.: 1 of 3

Equipment : pH Meter  
Manufacturer : Hach  
Model : HQ411d  
Serial No. : 200100031163  
ID No. : BKK\_EN0342  
Condition As-Received:  
Received Date : 16 October 2024  
Calibration Date : 17 October 2024  
Reference : 2410-0548DSC-5  
Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.  
104 Phathanakan 40, Phathanakan Rd.,  
Khaewang Phatthakan, Khet Suan Luang,  
Bangkok 10250 Thailand

Ambient Temperature : (25 ± 2.5) °C  
Relative Humidity : (50 ± 15) %  
Calibration Procedure : In - house method :  
- CP-CH5 by direct measurement with  
certified reference material (CRM)  
- CP-CH8 by comparison with temperature standard

Calibrated by : Warakorn Lengagatrakul

Approved by :   
Approved Signatory

( ) Unmopphol Harachai  
( ) Ponpan Paipim  
(✓) Sathip Meangmai

Issue Date : 21 October 2024

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written  
Approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.





Cert.No.: 24CH1295  
Page.: 2 of 3

#### Condition of this calibration result

1. Reference Standard Instrument

##### Instrument

1) Ref. Standard Thermometer

**Serial No.** 2188080 **ID No.** 130RC044 **Cert. No.** 2411022 **Due Date** 16 Sep 2025

- This Certification is traceable to SI Through Technology Promotion Association (Thailand - Japan)
2. Certified Reference Materials : The measurement results are traceable to SI through Hach Lange GmbH Ltd.  
Deutsche Akkreditierungsstelle, Accredited No.D-RM-15184-01-00  
: The measurement results are traceable to SI through CPA chem Ltd.,  
ANSI-ASQ National Accreditation Board, Accredited No. AR-1835

##### Buffer Solution

**Manufacturer**  
CPA chem  
Hach Lange GmbH  
CPA chem

##### Lot No.

1034203  
C03145  
1034205

##### Exp. date

27 Sep 2026  
28 Feb 2026  
27 Sep 2025

3. This certificate is valid only to the item calibrated on date and place of calibration.

#### Calibration Results

**Function** : pH Measurement

**Performing three buffers standard curve by using buffer nominal pH (4,7,10)**

Unit Under Calibration	Standard pH Buffer Solution	Actual pH Reading	Actual mV Reading (mV)	Uncertainty of pH Measurement (±)	Coverage factor <i>k</i>
pH Electrode	4.008	4.028	174.6	0.0044	2.00
S/N.: 230473042902	6.999	7.014	1.4	0.0084	2.05
	10.010	10.018	-172.8	0.0066	2.00

**Remark** - Can not connect the BNC because the plug does not match with the socket.



Cert.No.: 24CH1295  
Page.: 3 of 3

#### Calibration Results

**Function** : Temperature Measurement

**(\*) Without adjustment**

This equipment was connected with Temperature Probe;

- Model : PHC281  
- Serial No. : 230473042902

Dimension of probe

- Length : 103 mm.  
- Diameter : 12 mm.  
- Immersion Depth : 90 mm.

Calibration Point (°C)	Standard Temperature (°C)	UUC* Reading (°C)	Error (°C)	Uncertainty of measurement (± °C)	Coverage factor <i>k</i>
25.0	25.002	25.0	-0.002	0.13	2.00

**Remark** : UUC\* = Unit Under Calibration

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

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TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
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35/4 PATTANAKARN ROAD SCI 18, SUANLUANG, SUANLUANG BANGKOK 10250  
TEL. 0-2917-3000/29 FAX 0-219-9484



Cert. No.: 23TM1408  
Page: 1 of 4

## Certificate of Calibration

Equipment : Autoclave  
Manufacturer : TOMY  
Model : SX-700  
Serial No. : 48134190  
ID No. : BKK\_ML0041

Submitted by : ALS Laboratory Group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Phatthanakan, Khet Suan Luang,  
Bangkok 10250 Thailand  
Location : Media Preparation Room

Received Order : 03 October 2023  
Calibration Date : 04 October 2023  
Ambient Temperature :  $(26 \pm 10) ^\circ\text{C}$   
Relative Humidity :  $(50 \pm 30) \%$   
Calibrated by : Kiri Rutanaprasachai

Approved by :  
( ) Pornthipaa Tamayakul  
(x) Ponpan Paipim  
( ) Suwit Imjai

Issue Date : 11 October 2023

The Uncertainties are for a confidence probability of approximately 95%

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Approval of the head of Corporate Services 3 - Equipment Calibration and Testing Services.

A 0053272



Equipment : Autoclave  
Condition As-Received : Used Item  
Reference : 2310-00060C-E  
Procedure Used :-

Calibration were conducted using in-house calibration procedure CP-OT03 according to direct measurement method with Data Acquisition which connected with Thermocouple Type T  
The temperature scale used was based on ITS-90.

### Condition of this result of calibration

1. Reference standard instrument:-

Instrument	Serial No.	Cert. No.	Traceable	Due Date
1) Data Acquisition	MY57013823	23LM65	TPA	25 Mar 2024

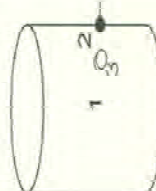
2. This certificate is valid only to the item calibrated on date and place of calibration.  
3. This certification is traceable to the International System of Unit.  
4. This result of calibration covers laboratory autoclaves for the sterilization of goods and material which could be infected with organisms categorized as Hazard Group 1, 2 and 3\*\*

(\*\* = Categorization of pathogens according to hazard and categories of containment, second edition, 1990 )  
It does not cover autoclaves for use with material infect with organisms in Hazard Group 4, for which complete containment and sterilization of infected condensate is considered to be essential.  
This result of calibration does not apply to sterilizers or disinfectors used for medical, dental, pharmaceutical or veterinary purposes which are directly concerned with patient care, or those used for fabrics subjected to sterilization which are required to be dry at the end of cycle.

Remark : TPA : Technology Promotion Association ( Thailand - Japan )

Result of Calibration :- ( \* ) Without Adjustment

Function of UUC\* : Temperature Source



		Environmental		
		( °C )	( %R.H. )	( Volt )
Beginning of Calibration		26	64	221
Finished of Calibration		27	67	222

Position	Description	Ref. Std. ID No.:
1 =	Center of chamber	19-17TC-08
2 =	Temperature sensor	19-17TC-09
3 =	Exhaust port	19-17TC-10

PR

a 1184533





Equipment : Autoclave  
Condition As-Received : Used Item  
Reference : 231C-0008OC-6  
Page : 3 of 4

Result of Calibration : ( ) Without Adjustment  
Function of UUC\* : Temperature Source

Operating parameter Set : Temperature = 108 °C  
Sterilization period = 10 minute

UUC* Setting (°C)	UUC* Reading (°C)	Position	Average* Standard Reading (°C)	Stability (± °C)	Pressure Reading (MPa)	Uncertainty (± °C)	Coverage Factor <i>k</i>
108	108	1	108.352	0.12	0.04	0.90	2
		2	108.253				
		3	108.140				

Operating parameter Set : Temperature = 115 °C  
Sterilization period = 20 minute

UUC* Setting (°C)	UUC* Reading (°C)	Position	Average* Standard Reading (°C)	Stability (± °C)	Pressure Reading (MPa)	Uncertainty (± °C)	Coverage Factor <i>k</i>
115	115	1	115.376	0.13	0.08	0.90	2
		2	115.297				
		3	115.157				

Operating parameter Set : Temperature = 118 °C  
Sterilization period = 10 minute

UUC* Setting (°C)	UUC* Reading (°C)	Position	Average* Standard Reading (°C)	Stability (± °C)	Pressure Reading (MPa)	Uncertainty (± °C)	Coverage Factor <i>k</i>
118	118	1	118.053	0.11	0.09	0.90	2
		2	118.037				
		3	117.954				

Average\* : The average of 30 values in each position  
Stability : One-half of the greatest maximum difference of measured temperature at any one probe.  
UUC\* : Unit Under Calibration  
Note : The reported uncertainty of measurement was included stability and excluded uniformity .

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a 1184532



Equipment : Autoclave  
Condition As-Received : Used Item  
Reference : 231C-0008OC-6  
Page : 4 of 4

Result of Calibration : ( ) Without Adjustment  
Function of UUC\* : Temperature Source

Operating parameter Set : Temperature = 121 °C  
Sterilization period = 30 minute

UUC* Setting (°C)	UUC* Reading (°C)	Position	Average* Standard Reading (°C)	Stability (± °C)	Pressure Reading (MPa)	Uncertainty (± °C)	Coverage Factor <i>k</i>
121	121	1	121.186	0.17	0.11	0.91	2
		2	121.082				
		3	120.980				

Average\* : The average of 30 values in each position.

Stability : One-half of the greatest maximum difference of measured temperature at any one probe.

UUC\* : Unit Under Calibration

Note : The reported uncertainty of measurement was excluded stability.

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

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PR

a 1184531



## Metrology

SCIECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110, Thailand.

Bangkok Tel : +66 3627 3096 Fax : +66 3627 3100

Website : www.scieco.co.th E-Mail : calibrate@scg.com



NSC-TISI-TIS 17025  
CALIBRATION 0244

Certificate No. T250353

Page 1 of 4

### Certificate of Calibration

Equipment : Autoclave  
Manufacturer : TOMY  
Model : SX-700  
Serial No. : 48134190  
Customer Code : BKK\_ML0041  
ID No. : T7725A3  
Customer : ALS Laboratory Group (Thailand) Co., Ltd.

REVIEW BY	Sittichok
APPROVED BY	[Signature]
NEXT CAL DATE	01/09/26

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan,  
Khet Suan Luang, Bangkok 10250

Customer Location : Washing Room  
Date of Receipt : 26 February 2025  
Calibrated By : Boonchai Suriyawong (Site Calibration Manager)  
Approved By : [Signature] / Sujjar Naknakred (Site Calibration Manager)  
Date of Issue : 10 Mar 2025

The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrology.



## Metrology

SCIECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110, Thailand.

Certificate No. T250353

Page 2 of 4

### Calibration Report

Equipment : Autoclave  
Date of Calibration : 4 March 2025  
Environment : Temperature : 22.2-25.4 °C  
Line Voltage : 221.1-224.7 V  
Relative Humidity : 55 - 65 %RH

#### Condition of this results of calibration :

1. This equipment was calibrated by insert 3 standard temperature recorder into its chamber and test according to WI-T23 inhouse method( based on BS 2646-1 : 2021)  
All data show below were final values and the initial data from customer request . The temperature scale used was based on ITS - 90 .

#### 2. Reference Standard Instrument :

Instrument	Model	Standard No.	Certificate No.	Due Date
1. Temperature recorder	RTD	T210	T242028	11 December 2025
2. Temperature recorder	RTD	T211	T242029	11 December 2025
3. Temperature recorder	RTD	T212	T242030	11 December 2025

#### 3. This certificate is traceable to :

National Institute of Metrology (Thailand) through Metrological Center ( NSC-TISI-TIS 17025 CALIBRATION 0244.)

#### 4. Condition of calibrated item : good

##### Equipment Description :

Pressure Indicator 0.11-0.12 MPa At 121 °C Holding time 20 minute

#### 5. Adjustment :

( X ) without adjustment

( ) after adjustment

Approved By. [Signature]



Metrology

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110, Thailand.

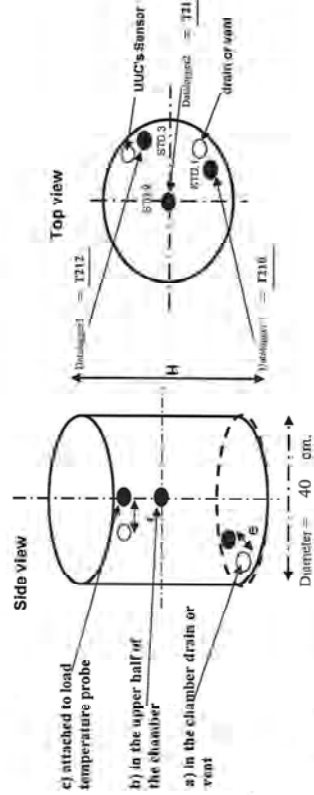


MSC-718-718 11025  
CALIBRATION 1244

Certificate No. T250353

Page 3 of 4

## Calibration Report



### Remark :

Size of Installed Standard sensor STD.1 : Distance the chamber drain or vent  $\leq 10$  cm (less than or be equal to 10 cm.)

Size of Installed Standard sensor STD.2 : Geometric Center (upper half of the chamber)

Size of Installed Standard sensor STD.3 : Distance UUC's Sensor  $f = 2$  cm.

### Measurement Results :

Calibration Point	Average Standard Reading at each position (°C)		
	T210	T211	T212
121	121.2	121.1	121.1

Setting (°C)	Autoclave		Temperature Distribution			
	Reading (°C)		Average (°C)	Stability (±°C)	Uniformity (±°C)	Coverage Factor k
	Min	Max				
121	-	121	121.2	0.1	0.1	2.00

\* The quoted uncertainty exclude "uniformity"

The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k$  which for a t-distribution, providing a level of confidence of approximately 95 %.

End of Certificate

Approved By: \_\_\_\_\_

FM-LJ15 118/18-08-66



Metrological Center

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110

Telephone : +66 2 586 5792-4 Fax : +66 2 586 5109

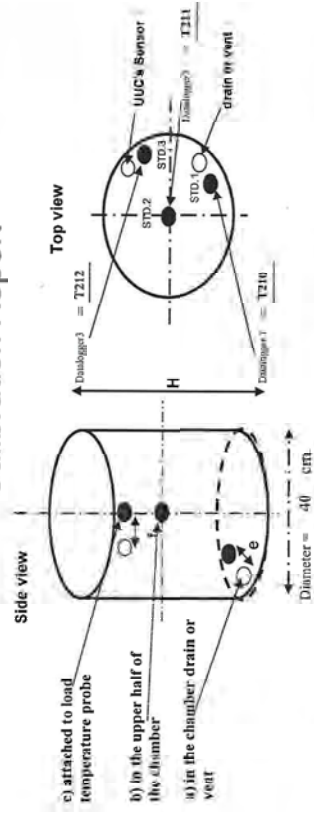
Website : www.scieco.co.th E-Mail : calibrate@scg.co.th

Certificate No. T250353

TEST REPORT (BKK\_ML0041)

Page 4 of 4

## Calibration Report



### Remark :

Size of Installed Standard sensor STD.1 : Distance the chamber drain or vent  $\leq 10$  cm (less than or be equal to 10 cm.)

Size of Installed Standard sensor STD.2 : Geometric Center (upper half of the chamber)

Size of Installed Standard sensor STD.3 : Distance UUC's Sensor  $f = 2$  cm.

### Measurement Results :

Calibration Point	Average Standard Reading at each position (°C)		
	T210	T211	T212
121	121.18	121.12	121.13

Setting (°C)	Autoclave		Temperature Distribution			
	Reading (°C)		Average (°C)	Stability (±°C)	Uniformity (±°C)	Coverage Factor k
	Min	Max				
121	-	121	121.16	0.10	0.10	2.00

\* The quoted uncertainty exclude "uniformity"

The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k$  which for a t-distribution, providing a level of confidence of approximately 95 %.

End of Certificate

Approved By: \_\_\_\_\_

FM-LJ13 108/30-05-57





TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250  
TEL 0-2717-3000-29 FAX 0-2719-9484



## Certificate of Calibration

Cert. No.: 24TM1398  
Page : 1 of 3

Equipment : Incubator

Manufacturer : SHEL-LAB

Model : 1915A

Serial No. : 0200599

ID No. : BKK\_ML0010

Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.,  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Phatthanakan, Khet Suan Luang,  
Bangkok 10250 Thailand

Location : Incubation & Micrological Reading

Received Order : 03 December 2024

Calibration Date : 03 December 2024

Ambient Temperature :  $(26 \pm 10) ^\circ\text{C}$

Relative Humidity :  $(50 \pm 30) \%$

AC Line Voltage :  $(220 \pm 22) \text{ V}$

Calibrated by : Kunchit Promprat

Approved by :

( ) Pornthippa Tameyakul  
( ) Ponpan Paipim  
(✓) Suwit Imjai

Issue Date : 17 December 2024

17 December 2024

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written approval of the head of Corporate Services 3 : Equipment Calibration and Testing Services.



Equipment : Incubator  
Condition As-Received : Used Item  
Reference : 2412-0004OC-1

Procedure Used :-

Calibration were conducted using calibration procedure CP-OT02 based on TLAS G-20 according to direct measurement method with Data Acquisition which connected with Resistance Temperature Detector ( RTD ).  
The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

Instrument Serial No. Cert. No. Traceable Due Date  
1 ) Data Acquisition MY49023932 24LM119 TPA 27 Jul 2025

2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

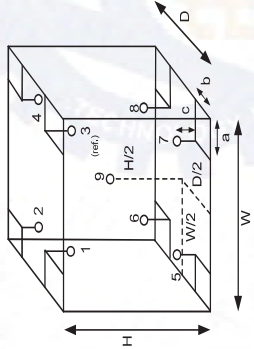
Remark : TPA : Technology Promotion Association ( Thailand - Japan )

Result of Calibration :- ( \* ) Without Adjustment

Function of UUC\* : Temperature Source

Fresh air setting : Close

Environment during calibration		
	Beginning	Finished
Temp. ( °C )	24	24
REL.Humid. ( % )	51	55
AC Supply ( Volt )	223	223



Probe Installation Details :

a = 10 cm  
b = 10 cm  
c = 10 cm

Dimension of Chamber :

D = 0.50 m  
W = 0.75 m  
H = 1.2 m  
Capacity = 0.45 m<sup>3</sup>

Position :	Ref. Std. ID No.:
1	19-16RTD-01
2	19-16RTD-02
3	19-16RTD-03
4	23-16RTD-04
5	19-14RTD-05
6	19-14RTD-06
7	21-16RTD-07
8	19-16RTD-08
9 (ref.)	19-16RTD-09

Cert. No.: 24TM1398  
Page : 2 of 3



Equipment : Incubator  
Condition As-Received : Used Item  
Reference : 2412-0004OC-1  
Result of Calibration :- ( \* ) Without Adjustment  
Function of UUC\* : Temperature Source  
Fresh air setting : Close

Cert. No.: 24TM1398  
Page : 3 of 3

Calibration Point (°C)	UUC* Setting (°C)	UUC* Reading (°C)	Temperature stability (± °C)	Temperature uniformity (°C)	Overall Variation (°C)	Coverage Factor <i>k</i>
35.0	35.0	35.0	0.048	0.40	0.46	2

Calibration Point (°C)	Measured Temperature (°C)									Uncertainty (± °C)
	Position									
	1	2	3	4	5	6	7	8	9 (ref.)	
35.0	34.888	34.840	35.116	35.141	34.750	34.896	34.921	35.054	34.768	
									0.30	

Average\* : The average of 30 values in each position.  
Temperature stability : One-half of the greatest maximum difference of measured temperature at any one sensor.  
Temperature uniformity : The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.  
Overall Variation : The Difference of the maximum and minimum measured temperatures throughout observation.  
UUC\* : Unit Under Calibration  
Note : The reported uncertainty of measurement was included stability and excluded uniformity .

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

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TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
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TEL 0-2717-3000-29 FAX 0-2719-9484



## Certificate of Calibration

Cert. No.: 24TM667  
Page : 1 of 3

Equipment : Hot Air Oven  
Manufacturer : Binder  
Model : ED 240E2  
Serial No. : 00-15533  
ID No. : BKK\_ML0013

Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khaeng Phatthanakan, Khet Suan Luang,  
Bangkok 10250 Thailand  
Location : Media Preparation Room

Received Order : 23 April 2024  
Calibration Date : 23 April 2024  
Ambient Temperature : ( 26 ± 10 ) °C  
Relative Humidity : ( 50 ± 30 ) %

Calibrated by : Tawatchai Pama

Approved by :  
( ) Ponpan Paipim  
( ✓ ) Suwit Imjai  
( ) Kunchit Promprat

Approved Signatory

Issue Date : 26 April 2024

The Uncertainties are for a confidence probability of approximately 95%

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**Equipment :** Hot Air Oven  
**Condition As-Received :** Used Item  
**Reference :** 2404-0439OC-8

**Cert. No.:** 24TM667  
**Page :** 2 of 3

**Procedure Used :-**

Calibration were conducted using calibration procedure CP-OT02 based on TLAS G-20 according to direct measurement method with Data Acquisition which connected with Thermocouple Type T.

The temperature scale used was based on ITS-90.

**Condition of this result of calibration**

Instrument	Serial No.	Cert. No.	Traceable	Due Date
1.) Data Acquisition	MY49001451	24LM44	TPA	17 Mar 2025

2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

**Remark :** TPA : Technology Promotion Association ( Thailand - Japan )

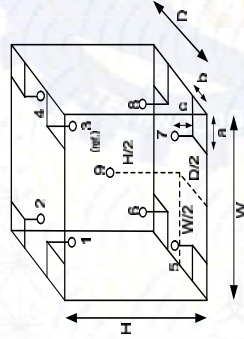
**Result of Calibration :-**

**Function of UUC\* :** ( \* ) Without Adjustment

**Fresh air setting :** Temperature Source

**Close**

Environment during calibration		
	Beginning	Finished
Temp. ( °C )	24	23
REL.Humid. ( % )	65	65
AC Supply ( Volt )	223	222



**Probe Installation Details :**

a =	10	cm
b =	10	cm
c =	10	cm

**Dimension of Chamber :**

D =	0.50	m
W =	0.80	m
H =	0.60	m
Capacity =	0.24	m <sup>3</sup>



**Equipment :** Hot Air Oven  
**Condition As-Received :** Used Item  
**Reference :** 2404-0439OC-8  
**Result of Calibration :-** ( \* ) Without Adjustment  
**Function of UUC\* :** Temperature Source  
**Fresh air setting :** Close

**Cert. No.:** 24TM667  
**Page :** 3 of 3

Calibration Point ( °C )	UUC* Setting ( °C )	UUC* Reading ( °C )	Temperature stability ( ± °C )	Temperature uniformity ( °C )	Overall Variation ( °C )	Coverage Factor k	Measured Temperature ( °C )									Uncertainty ( ± °C )
							Position									
							1	2	3	4	5	6	7	8	9 (ref.)	
180	180	180	0.64	2.7	3.7	2	181.009	181.511	180.922	181.359	181.217	183.659	181.664	181.986	181.474	1.5

**Average\* :** The average of 30 values in each position.

**Temperature stability :** One-half of the greatest maximum difference of measured temperature at any one sensor.

**Temperature uniformity :** The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

**Overall Variation :** The Difference of the maximum and minimum measured temperatures throughout observation.

**UUC\* :** Unit Under Calibration

**Note :** The reported uncertainty of measurement was included stability and excluded uniformity .

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor  $k$ , providing a level of confidence of approximately 95 %.

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TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
534/4 PATTANA 4-APN ROAD SOI 18, SUANLUANG, SUANLUANG 3 BANGKOK 10250  
TEL.0-2717-3000-28 FAX.0-2719-9484



## Certificate of Calibration

Cert. No.: 24TM469  
Page : 1 of 3

Equipment : Water Bath  
Manufacturer : Memmert  
Model : WNE 45  
Serial No. : L712.0429  
ID No. : BKK\_ML0056

Submitted by :

ALS Laboratory Group (Thailand) Co.,Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Phatthanakan, Khet Suan Luang,  
Bangkok 10250 Thailand  
Incubation & Microbiological Reading

Location :

Received Order : 01 March 2024  
Calibration Date : 01 March 2024  
Ambient Temperature : ( 26 ± 10 ) °C  
Relative Humidity : ( 50 ± 30 ) %

Calibrated by :

Krisda Malee

Approved by :

Approved Signatory

( ) Pornthippa Tameyakul  
( ) Unnopphol Harachai  
(✓) Suwit Injai

Issue Date :

4 March 2024

**The Uncertainties are for a confidence probability of approximately 95%**

This certificate may not be reproduced other than in full, except with the prior written  
Approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.



Equipment : Water Bath  
Condition As-Received : Used Item  
Reference : 2403-0001OC-1  
Procedure Used :-

Calibration were conducted using in-house calibration procedure CP-OT04 Based on ASTM E715 according to direct measurement method with Data Acquisition which connected with Industrial Platinum Resistance Thermometer ( IPRT ).

The temperature scale used was based on ITS-90.

### Condition of this result of calibration

1. Reference standard instrument:-

**Instrument**      **Serial No.**      **Cert. No.**      **Traceable**      **Due Date**  
1 ) Data Acquisition      MY57013711      23LM1115      TPA      11 Jul 2024

2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

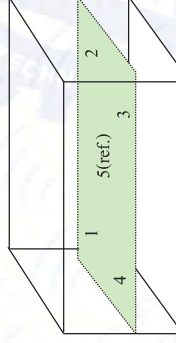
**Remark :** TPA : Technology Promotion Association ( Thailand - Japan )

**Result of Calibration :-** ( \* ) Without Adjustment

**Function of UUC\* :** Temperature Source

**Heat transfer medium used :** Water

	Environmental		AC Voltage Supply ( Volt )
	( °C )	( %R.H. )	
Beginning of Calibration	24	55	221
Finished of Calibration	23	56	220



Front

Position :	Ref. Std. ID No.:
1	4803988-001
2	4803988-002
3	4803988-003
4	4803988-004
5(ref.)	4803988-005

Cert. No.: 24TM469  
Page : 2 of 3





Equipment : Water Bath  
Condition As-Received : Used Item  
Reference : 2403-0001OC-1  
Result of Calibration :- ( \* ) Without Adjustment  
Function of UUC\* : Temperature Source

Cert. No.: 24TM469  
Page : 3 of 3

Calibration point (°C)	UUC* Setting (°C)	UUC* Reading (°C)	Average* Standard Reading (°C)					Uncertainty (± °C)
			Position					
			1	2	3	4	5 (ref.)	
44.5	44.5	44.5	44.469	44.462	44.492	44.510	44.496	0.15
45.0	45.0	45.0	44.975	44.974	45.007	45.023	44.999	0.15

Calibration point (°C)	Uniformity (°C)	Stability (± °C)	Coverage Factor k
44.5	0.087	0.029	2
45.0	0.069	0.031	2

Average\* : The average of 30 values in each position.

Uniformity : The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

Stability : One-half of the greatest maximum difference of measured temperature at any one probe.

UUC\* : Unit Under Calibration

Note : The reported uncertainty of measurement was included stability and excluded uniformity.

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor  $k$ , providing a level of confidence of approximately 95 %.

-oOo-



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250  
TEL 0-2717-3000-29 FAX 0-2719-9484



## Certificate of Calibration

Cert. No.: 25TM460  
Page : 1 of 3

Equipment : Water Bath  
Manufacturer : Memmert  
Model : WNE 45  
Serial No. : L712.0429  
ID No. : BKK\_ML0056

Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Phatthanakan, Khet Suan Luang,  
Bangkok 10250 Thailand

Location : Incubation & Microbiological Reading

Received Order : 04 March 2025  
Calibration Date : 04 March 2025  
Ambient Temperature : (26 ± 10 ) °C  
Relative Humidity : (50 ± 30 ) %  
AC Line Voltage : (220 ± 22 ) V

Calibrated by : Khit Ruttanaprapachai

Approved by :

( ) Chakrit Waewwanjua  
( ) Suwit Injai  
(✓) Kunchit Promprat

Issue Date : 06 March 2025

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written  
Approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.

REVIEW BY .....  
Sithichok T.  
APPROVED BY .....  
NEXT CAL DATE ..... 04/03/26





**Equipment :** Water Bath  
**Condition As-Received :** Used Item  
**Reference :** 2503-0006OC-2

**Cert. No.:** 25TM460  
**Page :** 2 of 3

**Procedure Used :-**

Calibration were conducted using in-house calibration procedure CP-OT04 Based on ASTM E715 according to direct measurement method with Data Acquisition which connected with Industrial Platinum Resistance Thermometer ( IPRT ).

The temperature scale used was based on ITS-90.

**Condition of this result of calibration**

1. Reference standard instrument:-

**Instrument**      **Serial No.**      **Cert. No.**      **Traceable**      **Due Date**  
1 ) Data Acquisition      MY44073381      23LM73      TPA      18 May 2025

2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

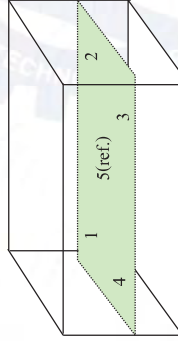
**Remark :** TPA : Technology Promotion Association ( Thailand - Japan )

**Result of Calibration :-** ( \* ) Without Adjustment

**Function of UUC\* :** Temperature Source

**Heat transfer medium used :** Water

	Environmental		AC Voltage Supply
	( °C )	( %R.H. )	
Beginning of Calibration	24	49	220
Finished of Calibration	25	51	221



Front

Position :	Ref. Std. S/N:.
1	4803988-006
2	4803988-007
3	4804539-014
4	4804539-015
5(ref.)	4804539-016



**Equipment :** Water Bath  
**Condition As-Received :** Used Item  
**Reference :** 2503-0006OC-2  
**Result of Calibration :-** ( \* ) Without Adjustment  
**Function of UUC\* :** Temperature Source

**Cert. No.:** 25TM460  
**Page :** 3 of 3

Calibration point ( °C )	UUC* Setting ( °C )	UUC* Reading ( °C )	Average* Standard Reading ( °C )					Uncertainty ( ± °C )
			1	2	3	4	5 (ref.)	
44.5	44.5	44.5	44.489	44.469	44.497	44.476	44.479	0.15
45.0	45.0	45.0	44.990	44.966	44.997	44.983	44.980	0.15

Calibration point ( °C )	Uniformity ( °C )	Stability ( ± °C )	Coverage Factor <i>k</i>
44.5	0.045	0.035	2
45.0	0.047	0.031	2

**Average\* :** The average of 30 values in each position.

**Uniformity\* :** The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.

**Stability\* :** One-half of the greatest maximum difference of measured temperature at any one probe.

**UUC\* :** Unit Under Calibration

**Note :** The reported uncertainty of measurement was included stability and excluded uniformity.

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

-o0o-



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
534/4 PATTANA KARN ROAD SOI 18, SUANLUANG, SUANLUANG 3 BANGKOK 10250  
TEL.0-2717-3000-28 FAX.0-2719-9484



## Certificate of Calibration

Cert.No.: 24CG952  
Page.: 1 of 2

Equipment :

Capacity :

Serial No. :

ID. No. :

Manufacturer :

Made in :

Submitted by :

Ambient Temperature :

Relative Humidity :

Barometric Pressure :

Calibration Procedure :

Calibrated by :

Approved by :

( ) Unnophol Harachai  
(✓) Srisuda Khamtha  
( ) Sa-ngaeunkam Wongsa

Issue Date :

27 February 2024

Burette

50 mL

-

BKK\_EN0171

Witeg

Germany

ALS Laboratory Group (Thailand) Co.,Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Phatthanakan, Khet Suan Luang,  
Bangkok 10250 Thailand

(20 ± 2.5) °C

(50 ± 10) %

760 mmHg

ASTM E 542 - 01

Natcha Chayingcheiw

Approved Signatory

REVIEW BY *Siririk P.*

APPROVED BY *KALAL*

NEXT CAL DATE *27/08/25*



Equipment : Burette

Received Date : 23 February 2024

Condition As-Received : New Item

Calibration Date : 27 February 2024

Reference : 2402-0757DSC-1

Cert.No.: 24CG952

Page.: 2 of 2

### Condition of this result of calibration

1. Reference Standard Instruments :

Instruments	Model	Serial No.	ID. No.	Certificate No.	Traceability	Due date
1) Balance	XP205DR	1126143764	140RC004	23MM538	TPA	15 Sep 2024
2) Thermo-Hygrograph	THDX-CE	00016540	140EC001	23H1275	TPA	09 June 2024
3) Thermometer	-	0834181	140EC005	23I848	TPA	10 Aug 2024

This certification is traceable to SI Unit

2. The certificate is valid only to the item calibrated on date and place of calibration.

3. True value is converted to true volume at the standard temperature of 20 °C

### Calibration result :

Nominal capacity ( mL )	Reading ( mL )	Uncertainty ( ± mL )	k Factor
50	50.0032	0.010	2.00

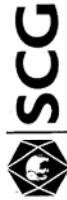
Remark mL = cm<sup>3</sup>

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k* , providing a level of confidence of approximately 95 %.

-o0o-

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full, except with the prior written Approval of the head of Corporate Services 3 - Equipment Calibration and Testing Services.



## Metrology

SCI ECO Services Company Limited

33/2 Moo 3, T. Banpa, A. Kaengkhoei, Saraburi 18110, Thailand.

Saraburi Tel : +66 3627 3096 Fax : +66 3627 3100

Bangkok Tel : +668 9205 6857 : +668 8247 2360

Website : www.scieco.co.th E-Mail : calibrate@scg.com



Certificate No. T232160

Page 1 of 4

### Certificate of Calibration

Equipment : Chamber ( Cooling Room )

Manufacturer : KOLDTECH

Model : KM 320

Serial No. : TBN-1012061/05

Customer Code : BKK\_EN0167

ID No. : T2463A3

Customer : ALS Laboratory Group (Thailand) Co.,Ltd.

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan,

Khet Suan Luang, Bangkok 10250

Customer Location : Laboratory

Date of Receipt : 29 November 2023

Calibrated By : Atiphong Rongrat ( Technician )

Approved By : Boonchai Suriyawong (Site Calibration Manager)

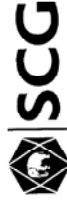
Date of Issue : 09 JAN 2024

REVIEW BY	<u>Kol-AL</u>
APPROVED BY	<u>Sink P</u>
NEXT CAL. DATE	<u>06/06/25</u>

The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrology.

FM-L14 11/9/18-08-66



## Metrology

SCI ECO Services Company Limited

33/2 Moo 3, T. Banpa, A. Kaengkhoei, Saraburi 18110, Thailand.

Certificate No. T232160

Page 2 of 4

### Calibration Report

Equipment : Chamber ( Cooling Room )  
Date of Calibration : 6 December 2023  
Environment : Temperature : 23.4-24.9 °C  
Line Voltage : 221.4-230.2 V  
Relative Humidity : 55 - 65 %RH

#### Condition of this results of calibration :

1. This equipment was calibrated by insert 16 standard thermocouples type T into its chamber , the other one standard thermocouples type T use for ambient temperature measurement . The calibration was done in according to WI-T20 ( based on ASTM E145-94 ( Reapproved 2001 ) and AS2853-1986 ).

All data show below were final values and the initial data from customer request . The temperature scale used was based on ITS - 90 .

#### 2. Reference Standard Instrument :

Instrument	Model	Instrument No.	Certificate No.	Due Date
TC	TYPE T	TN161-TN170	T230773	10 April 2024
TC	TYPE T	TN171-TN180	T230773	10 April 2024
DATA LOGGER	34970A	T149	T230773	10 April 2024

#### 3. This certificate is traceable to :

National Institute of Metrology ( Thailand ) through Metrological Center ( NSC-TISI-TIS 17025 CALIBRATION 0244 )

#### 4. Condition of calibrated item : good

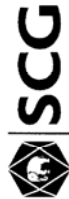
##### Equipment Description :

Time Constant : 1 Hour  
Fresh Air Damper : ☐ Open ☐ Min ☐ Medium ☐ Max  
☒ Not Available

5. Adjustment : ( X ) without adjustment ( ) after adjustment

Approved By: Boonchai

FM-L15 11/8/18-08-66



Metrology

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhloi, Saraburi 18110, Thailand.

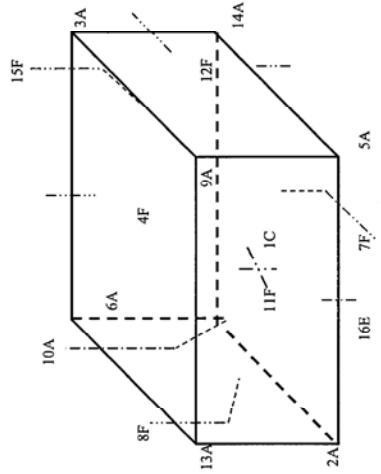


NSC-TIS-TIS 17025  
CALIBRATION 0244

Certificate No. T232160

Page 3 of 4

## Calibration Report

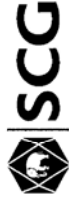


C = Centre, F = Centre of Face, A = Corner, E = Centre of Edge

1C =	TNI61
2A =	TNI62
3A =	TNI63
4F =	TNI64
5A =	TNI65
6A =	TNI66
7F =	TNI67
8F =	TNI68
9A =	TNI69
10A =	TNI70
11F =	TNI71
12F =	TNI72
13A =	TNI73
14A =	TNI74
15F =	TNI75
16E =	TNI76

Approved By.

FM-L15 118/18-08-66



Metrology

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhloi, Saraburi 18110, Thailand.



NSC-TIS-TIS 17025  
CALIBRATION 0244

Certificate No. T232160

Page 4 of 4

## Calibration Report

### Measurement Results

Calibration Point	Average Standard Reading at each position (°C)											
	TNI61	TNI62	TNI63	TNI64	TNI65	TNI66	TNI67	TNI68	TNI69	TNI70	TNI71	TNI72
	2.83	3.34	2.95	3.46	3.45	3.76	3.25	3.46	3.39	3.50	3.58	3.42
3.0	TNI73	TNI74	TNI75	TNI76								
	3.33	3.39	3.15	3.43								

Chamber (Cooling Room)		Temperature Distribution				
Setting (°C)	Reading (°C)		Average (°C)	Stability (± °C)	Uniformity (°C)	Coverage Factor k
	Min	Max				
3.0	2.8	4.1	3.5	1.10	2.00	1.90
			3.36			2.09

The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k$  which for a t-distribution, providing a level of confidence of approximately 95 %.

Approved By.

FM-L15 118/18-08-66





**Metrology Center**  
**SCI ECO Services Company Limited**  
51 Moo 8, Tukwang, Kaeng Khoi, Saraburi, Thailand 18260  
Bangkok Tel : +668 9205 6851 , +669 81924 0059  
Saraburi Tel : +669 8247 2330  
Website : www.scieco.co.th E-Mail : calibra@scg.co.th



NSC-TISI-TIS 17025  
CALIBRATION 0244

Certificate No. T250873

## Certificate of Calibration

Page 1 of 4

Equipment : Chamber ( Cooling Room )  
Manufacturer : KOLDTECH  
Model : KM 320  
Serial No. : TBN-1012061/05  
Customer Code : BKK\_EN0167  
ID No. : T2463A3  
Customer : ALS Laboratory Group (Thailand) Co.,Ltd.  
104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan,  
Khet Suan Luang, Bangkok 10250  
Customer Location : Laboratory Room  
Date of Receipt : 28 May 2025  
Calibrated By : Atiphong Rongrat ( Technician )  
Approved By : Boonchai Suriyawong ( Site Calibration Manager )  
Date of Issue : 19 JUN 2025

The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrological Center.

FM-TL06 102/27-03-68



**Metrology Center**  
**SCI ECO Services Company Limited**  
51 Moo 8, Tukwang, Kaeng Khoi, Saraburi, Thailand 18260



NSC-TISI-TIS 17025  
CALIBRATION 0244

Certificate No. T250873

## Calibration Report

Page 2 of 4

Equipment : Chamber ( Cooling Room )  
Date of Calibration : 4 June 2025  
Environment : Temperature : 23.4-24.9 °C  
Line Voltage : 221.4-230.2 V  
Relative Humidity : 55 - 65 %RH

### Condition of this results of calibration :

1. This equipment was calibrated by insert 16 standard thermocouples type T into its chamber, the other one standard thermocouples type T use for ambient temperature measurement. The calibration was done in according to WI-T20 ( based on ASTM E145-94 ( Reapproved 2001 ) and AS2853-1986 ).  
All data show below were final values and the initial data from customer request. The temperature scale used was based on ITS - 90.

### 2. Reference Standard Instrument :

Instrument	Model	Instrument No.	Certificate No.	Due Date
TC	TYPE T	TN91-TN100	T242036	3 December 2025
TC	TYPE T	TN101-TN110	T242036	3 December 2025
DATA LOGGER	34970A	T121	T242036	3 December 2025

### 3. This certificate is traceable to :

National Institute of Metrology ( Thailand ) through Metrological Center ( NSC-TISI-TIS 17025 CALIBRATION 0244 )

### 4. Condition of calibrated item : good

### Equipment Description :

Time Constant : 2 Hour Minute At 3 °C  
Fresh Air Damper : ☐ Open ☐ Mir ☐ Medium ☐ Max  
☐ Close ☒ Not Available

### 5. Adjustment :

( X ) without adjustment ( ) after adjustment

Approved By: Boonchai

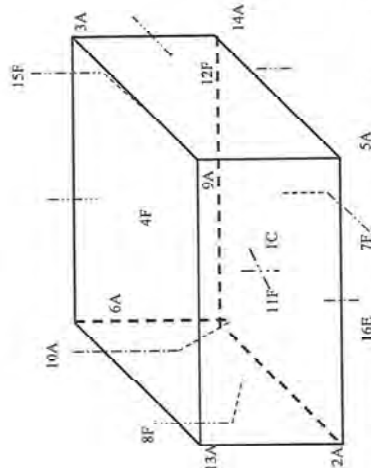
FM-TL07 102/27-03-68



Certificate No. T250873

Page 3 of 4

## Calibration Report



C = Centre, F = Centre of Face, A = Corner, E = Centre of Edge

1C	=	TN91
2A	=	TN92
3A	=	TN93
4F	=	TN94
5A	=	TN95
6A	=	TN96
7F	=	TN97
8F	=	TN98
9A	=	TN99
10A	=	TN100
11F	=	TN101

12F	=	TN102
13A	=	TN103
14A	=	TN104
15F	=	TN105
16E	=	TN106

Approved By: 

FM-TL07 102/27-03-68



Certificate No. T250873

Page 4 of 4

## Calibration Report

### Measurement Results

Calibration Point	Average Standard Reading at each position (°C)									
	TN91	TN92	TN93	TN94	TN95	TN96	TN97	TN98	TN99	TN100
	2.95	2.92	3.05	2.92	3.16	3.50	3.40	3.03	3.14	2.98
3.0	TN103	TN104	TN105	TN106						
	3.19	3.06	3.46	2.92						

Chamber ( Cooling Room )			Temperature Distribution				Coverage Factor <i>k</i>
Setting (°C)	Reading (°C)		Average (°C)	Stability (± °C)	Uniformity (°C)	Uncertainty (± °C)	
	Min, Max	Average					
3.0	2.8, 3.9	3.4	3.14	1.20	1.30	1.80	2.04

The calibration result apply only the above calibrated item.  
The result of test was found accurate as shown on date and place of test only.  
The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor & which for a t-distribution, providing a level of confidence of approximately 95 %.

Approved By: 

FM-TL07 102/27-03-68



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)  
CORPORATE SERVICES 3: EQUIPMENT CALIBRATION AND TESTING SERVICES  
534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250  
TEL 0-2717-3000-29 FAX 0-2719-9484



## Certificate of Calibration

Cert. No.: 24TM1618  
Page : 1 of 3

Equipment : Water Bath

Manufacturer : Memmert

Model : WNE29

Serial No. : L622.0282

ID No. : BKK\_EN0439

Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Phatthanakan, Khet Suan Luang,  
Bangkok 10250 Thailand

Location : Organic Preparation Lab

Received Order : 29 October 2024

Calibration Date : 29 October 2024

Ambient Temperature : ( 26 ± 10 ) °C

Relative Humidity : ( 50 ± 30 ) %

Calibrated by : Man Pattanapongpalboon

Approved by :   
Approved Signatory

( ) Ponpan Palpim  
( ) Suwit Imjai  
(✓) Kunchit Promprat

Issue Date : 30 October 2024

**The Uncertainties are for a confidence probability of approximately 95%**

This certificate may not be reproduced other than in full, except with the prior written  
Approval of the head of Corporate Services 3: Equipment Calibration and Testing Services.



Equipment : Water Bath  
Condition As-Received : Used Item  
Reference : 2410-0782OC-4

Procedure Used :-

Calibration were conducted using in-house calibration procedure CP-OT04 Based on ASTM E715 according to direct measurement method with Data Acquisition which connected with Industrial Platinum Resistance Thermometer ( IPT ).

The temperature scale used was based on ITS-90.

Condition of this result of calibration

1. Reference standard instrument:-

Instrument Serial No. Cert. No. Traceable Due Date  
1 ) Data Acquisition MY57013711 24LM115 TPA 13 Jul 2025

2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

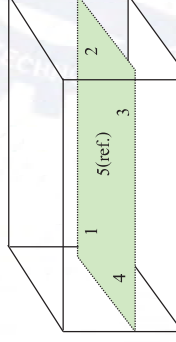
Remark : TPA : Technology Promotion Association ( Thailand - Japan )

Result of Calibration :- ( \* ) Without Adjustment

Function of UUC\* : Temperature Source

Heat transfer medium used : Water

	Environmental		AC Voltage Supply ( Volt )
	( °C )	( %R.H. )	
Beginning of Calibration	25	54	222
Finished of Calibration	25	57	226



Front

Position :	Ref. Std. ID No.:
1	4803988-001
2	4803988-002
3	4803988-003
4	4803988-004
5(ref.)	4803988-005

Cert. No.: 24TM1618  
Page : 2 of 3





**Equipment :** Water Bath  
**Condition As-Received :** Used Item  
**Reference :** 2410-07820C-4  
**Result of Calibration :-** ( \* ) Without Adjustment  
**Function of UUC\* :** Temperature Source

**Cert. No.:** 24TM1618  
**Page :** 3 of 3

Calibration point ( °C )	UUC* Setting ( °C )	UUC* Reading ( °C )	Average* Standard Reading ( °C )					Uncertainty ( ± °C )
			1	2	3	4	5 (ref.)	
85.0	85.0	85.0	85.133	85.212	85.150	84.983	85.096	0.22

Calibration point ( °C )	Uniformity ( °C )	Stability ( ± °C )	Coverage Factor <i>k</i>
85.0	0.21	0.13	2

**Average\* :** The average of 30 values in each position.  
**Uniformity :** The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady-state conditions.  
**Stability :** One-half of the greatest maximum difference of measured temperature at any one probe.  
**UUC\* :** Unit Under Calibration  
**Note :** The reported uncertainty of measurement was included stability and excluded uniformity.

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

-o0o-



## Metrological Center

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhroi, Saraburi 18110

Telephone : +66 2 586 5792-4 Fax : +66 2 586 5109

Website : www.sci-eco.co.th E-Mail : calibrate@sci-eco.co.th

Certificate No. TS-0742

Page 1 of 5

## Certificate of Calibration

**Equipment :** Digestion Unit  
**Manufacturer :** SCP Science  
**Model :** DigiPRER HT  
**Serial No. :** HTC1120480658  
**Customer Code :** BKK\_EN0366

**ID No. :** T2635A5

**Customer :** ALS Laboratory Group (Thailand) Co., Ltd.

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan,

Khet Suan Luang, Bangkok 10250

**Customer Location :** Wet Chemistry Lab 1

**Date of Receipt :** 11 April 2024

**Calibrated By :** Sujjar Nakanakred ( Site Calibration Manager )

**Approved By :**  / Bounchai Suriyawong ( Site Calibration Manager )

**Date of Issue :** 02 MAY 2024

The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrological Center.

TM-L-12 (003)AUS-57





## Metrological Center

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhloi, Saraburi 18110

Telephone : +66 2 586 5792-4 Fax : +66 2 586 5109

Website : www.scieco.co.th E-Mail : calibrate@scg.co.th

Certificate No. T240742

Page 2 of 5

### Calibration Report

Equipment : Digestion Unit

Date of Calibration : 21 April 2024

Environment : Temperature : 23.9 - 26.3 °C

Line Voltage : 221.8 - 225.9 V

Relative Humidity : 55 - 65 %RH

#### Condition of this results of calibration :

1. This equipment was calibrated by insert four standard thermocouples type S into its chamber, the other one thermocouple type T use for ambient temperature measurement. The calibration was done as according to WITS-110.

was based on ITS - 90 .

2. Reference Standard Instrument :

Instrument Model

TC Type S

DATA LOGGER 34970A

Instrument No.

M20A2-(CH1)-(CH14)

T47

Certificate No.

T230886

T230886

Due Date

05 May 2024

05 May 2024

3. This certificate is traceable to :

National Institute of Metrology ( Thailand ) through Metrological Center ( NSC-ITS-ITS (2022 CALIBRATION 0244.)

4. Condition of calibrated item : good

Equipment Description :

Time Constant

Fresh Air Damper

Hour

Open

Close

Not Available

Minute

At

380

°C

Medium

Max

5. Adjustment : ( X ) without adjustment ( ) after adjustment

Approved By

*[Signature]*

PM 1.3 11 08/00-05-57



## Metrological Center

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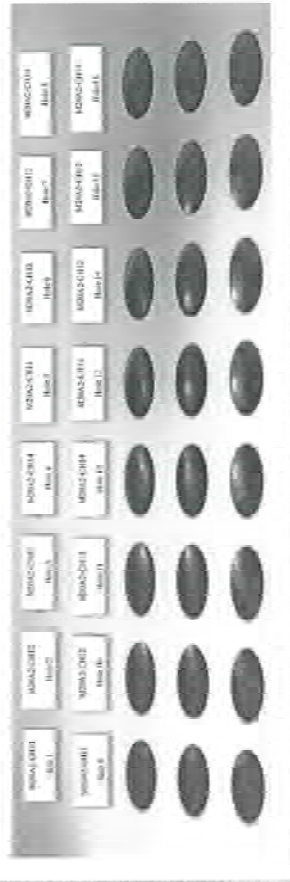
Telephone : +66 2 586 5792-4 Fax : +66 2 586 5109

Website : www.scieco.co.th E-Mail : calibrate@scg.co.th

Certificate No. T240742

Page 3 of 5

### Calibration Report



FRONT

#### Measurement Results

Cal. Point	Setting	Reading	STD.	Position of Standards at Block													
°C	°C	°C	Reading	INS-01-CH1	INS-02-CH1	INS-03-CH1	INS-04-CH1	INS-05-CH1	INS-06-CH1	INS-07-CH1	INS-08-CH1	INS-09-CH1	INS-10-CH1	INS-11-CH1	INS-12-CH1	INS-13-CH1	INS-14-CH1
				INS-01-CH1	INS-02-CH1	INS-03-CH1	INS-04-CH1	INS-05-CH1	INS-06-CH1	INS-07-CH1	INS-08-CH1	INS-09-CH1	INS-10-CH1	INS-11-CH1	INS-12-CH1	INS-13-CH1	INS-14-CH1
380.0	380.0	380.0	Max °C	378.3	378.3	378.3	378.3	378.3	378.3	378.3	378.3	378.3	378.3	378.3	378.3	378.3	378.3
			Min °C	378.2	378.2	378.2	378.2	378.2	378.2	378.2	378.2	378.2	378.2	378.2	378.2	378.2	378.2
			Average °C	378.4	378.4	378.4	378.4	378.4	378.4	378.4	378.4	378.4	378.4	378.4	378.4	378.4	378.4
			Stability ± °C	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Cal. Point	Setting	Reading	STD.	Position of Standards at Block													
°C	°C	°C	Reading	INS-01-CH1	INS-02-CH1	INS-03-CH1	INS-04-CH1	INS-05-CH1	INS-06-CH1	INS-07-CH1	INS-08-CH1	INS-09-CH1	INS-10-CH1	INS-11-CH1	INS-12-CH1	INS-13-CH1	INS-14-CH1
				INS-01-CH1	INS-02-CH1	INS-03-CH1	INS-04-CH1	INS-05-CH1	INS-06-CH1	INS-07-CH1	INS-08-CH1	INS-09-CH1	INS-10-CH1	INS-11-CH1	INS-12-CH1	INS-13-CH1	INS-14-CH1
380.0	380.0	380.0	Max °C	378.4	378.4	378.4	378.4	378.4	378.4	378.4	378.4	378.4	378.4	378.4	378.4	378.4	378.4
			Min °C	378.3	378.3	378.3	378.3	378.3	378.3	378.3	378.3	378.3	378.3	378.3	378.3	378.3	378.3
			Average °C	378.1	378.1	378.1	378.1	378.1	378.1	378.1	378.1	378.1	378.1	378.1	378.1	378.1	378.1
			Stability ± °C	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

Approved By

*[Signature]*

PM 1.3 11 08/00-05-57



## Metrological Center

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhloi, Saraburi 18110

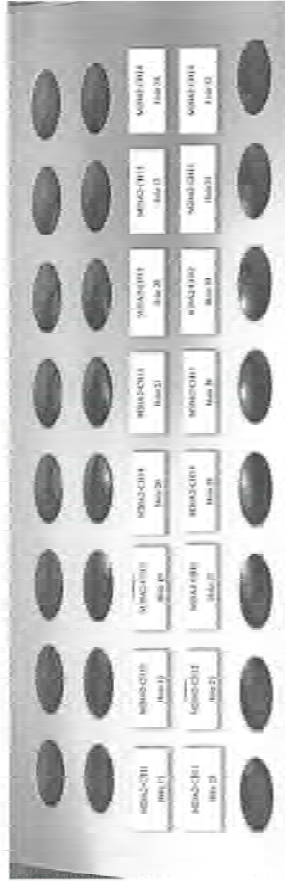
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Website : www.scieco.co.th E-Mail : calibrate@scg.co.th

Certificate No. T240742

Page 4 of 5

## Calibration Report



FRONT

### Measurement Results

MEASUREMENT RESULTS			STD.	Position of Standards at block									
Cal Point	Setting	Reading		NO12-CH1	NO14-CH1	NO16-CH1	NO18-CH1	NO20-CH1	NO22-CH1	NO24-CH1	NO26-CH1	NO28-CH1	
	t °C	t °C	Reading t °C	180.2	180.3	180.4	180.5	180.6	180.7	180.8	180.9	180.9	
180.0		379.2-380.2	Max °C	378.9	379.2	379.5	380.1	380.1	381.7	380.2	378.5	377.6	
			Min °C	378.2	378.6	379.1	379.6	381.7	380.2	378.5	377.2		
			Average °C	378.5	378.9	379.3	379.8	381.9	380.6	377.5			
			Stability ± °C	0.1	0.3	0.2	0.2	0.2	0.4	0.3	0.3		

Cal. Point	Setting	Reading	STD.	Position of Standards at Block							
180.0	°C	°C	Reading	NO12-CH1	NO14-CH1	NO16-CH1	NO18-CH1	NO20-CH1	NO22-CH1	NO24-CH1	NO26-CH1
				180.2	180.3	180.4	180.5	180.6	180.7	180.8	180.9
				180.2	180.3	180.4	180.5	180.6	180.7	180.8	180.9
				180.2	180.3	180.4	180.5	180.6	180.7	180.8	180.9
				180.2	180.3	180.4	180.5	180.6	180.7	180.8	180.9
				Max °C	378.5	378.1	378.0	378.6	380.7	379.7	380.9
				Min °C	378.2	377.8	377.2	378.1	380.3	379.0	380.4
				Average °C	378.4	378.0	377.9	379.4	380.5	379.4	380.6
				Stability ± °C	0.1	0.2	0.2	0.2	0.2	0.3	0.3

Approved By

*Bonzi*

PM-L13 10870-105-57



## Metrological Center

SCI ECO Services Company Limited

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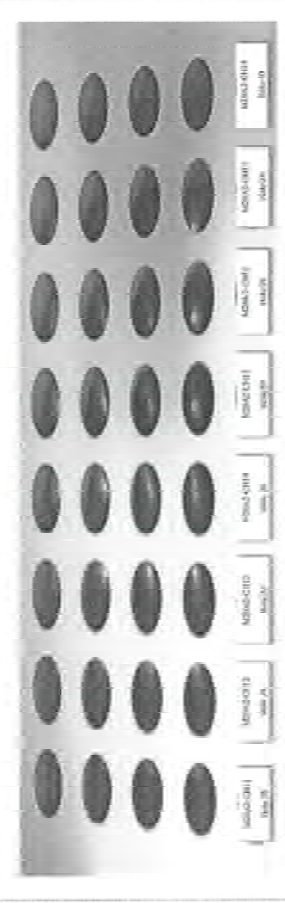
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Website : www.scieco.co.th E-Mail : calibrate@scg.co.th

Certificate No. T240742

Page 5 of 5

## Calibration Report



FRONT

### Measurement Results

MICROSCOPIC BLENDED		Cal. Point	Setting	Reading	STD.	Position of Standards at Block							
3819	°C	°C	°C	Reading	°C	NO12-CH1	NO14-CH1	NO16-CH1	NO18-CH1	NO20-CH1	NO22-CH1	NO24-CH1	NO26-CH1
						180.2	180.3	180.4	180.5	180.6	180.7	180.8	180.9
						180.2	180.3	180.4	180.5	180.6	180.7	180.8	180.9
						180.2	180.3	180.4	180.5	180.6	180.7	180.8	180.9
						180.2	180.3	180.4	180.5	180.6	180.7	180.8	180.9
						Max °C	378.3	377.9	378.7	379.5	381.6	380.5	378.0
						Min °C	378.0	377.6	378.4	379.1	381.2	380.0	377.6
						Average °C	378.2	377.8	378.6	379.3	381.4	380.3	377.8
						Stability ± °C	0.1	0.2	0.2	0.2	0.3	0.2	0.2

The expanded uncertainty of Temperature measurement was  $\pm 1.87^{\circ}\text{C}$ .

The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

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

Approved By

*Bonzi*

PM-L13 10870-105-57



## Metrological Center

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Website : www.sci.co.th E-Mail : calibrate@scg.co.th

Certificate No. T250578

Page 1 of 4

### Certificate of Calibration

**Equipment** : Digestion Unit  
**Manufacturer** : SCP Science  
**Model** : DigiPRER HT  
**Serial No.** : HTC1120480658  
**Customer Code** : BKK\_EN0366  
**ID No.** : T2635A5  
**Customer** : ALS Laboratory Group (Thailand) Co., Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250

REVIEW BY	<i>Jyda K</i>
APPROVED BY	<i>Sinik P</i>
NEXT CAL. DATE	09/04/26

**Customer Location** : Wet Chemistry Lab 1  
**Date of Receipt** : 2 April 2025  
**Calibrated By** : Aiphong Rongrat ( Technician )  
**Approved By** : *Bnla* / Boonchai Suriyawong ( Site Calibration Manager )  
**Date of Issue** : 13 MAY 2025

The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrological Center.

FM-L12 109/30-05-57



## Metrological Center

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Website : www.sci.co.th E-Mail : calibrate@scg.co.th

Certificate No. T250578

Page 2 of 4

### Calibration Report

**Equipment** : Digestion Unit  
**Date of Calibration** : 9 April 2025  
**Environment** : Temperature : 23.9 - 26.3 °C  
Line Voltage : 221.8 - 225.9 V  
Relative Humidity : 55 - 65 %RH

#### Condition of this results of calibration :

1. This equipment was calibrated by insert four standard thermocouples type S into its chamber, the other one thermocouple type T use for ambient temperature measurement. The calibration was done in according to WI-T10.  
All data show below were final values and the initial data from customer request. The temperature scale used was based on ITS - 90.
2. Reference Standard Instrument :

Instrument	Model	Instrument No.	Certificate No.	Due Date
TC	Type S	MT-(CHI-CH4)	T242035	04 December 2025
DATA LOGGER	34970A	T121	T242035	04 December 2025
3. This certificate is traceable to :  
National Institute of Metrology ( Thailand ) through Metrological Center ( NSC-TISI-TIS 17025 CALIBRATION 0244.)
4. Condition of calibrated item : good  
Equipment Description :

Time Constant	2	Hour	40	Minute	At	380	°C
Fresh Air Dumper	<input type="checkbox"/> Open	<input type="checkbox"/> Min	<input type="checkbox"/> Medium	<input type="checkbox"/> Max			
	<input type="checkbox"/> Close						
	<input checked="" type="checkbox"/> Not Available						
5. Adjustment :  
( X ) without adjustment ( ) after adjustment

Approved By: *Bnla*

FM-L13 108/30-05-57



# Metrological Center

SCI ECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhroi, Saraburi 18110

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Website : www.sci.co.th E-Mail : calibrate@sci.co.th

Certificate No. T250578

Page 3 of 4

## Calibration Report

Cal. Point	Setting	Reading	STD.	Position of Standards at Block
380.0	380.0	379.8 - 380.2	0.2	MT-CH1 Hole 1
				MT-CH2 Hole 2
				MT-CH3 Hole 3
				MT-CH4 Hole 4
				MT-CH5 Hole 5
				MT-CH6 Hole 6
				MT-CH7 Hole 7
				MT-CH8 Hole 8
				MT-CH9 Hole 9
				MT-CH10 Hole 10
				MT-CH11 Hole 11
				MT-CH12 Hole 12
				MT-CH13 Hole 13
				MT-CH14 Hole 14
				MT-CH15 Hole 15
				MT-CH16 Hole 16
				MT-CH17 Hole 17
				MT-CH18 Hole 18
				MT-CH19 Hole 19
				MT-CH20 Hole 20
				MT-CH21 Hole 21
				MT-CH22 Hole 22
				MT-CH23 Hole 23
				MT-CH24 Hole 24
				MT-CH25 Hole 25
				MT-CH26 Hole 26
				MT-CH27 Hole 27
				MT-CH28 Hole 28
				MT-CH29 Hole 29
				MT-CH30 Hole 30
				MT-CH31 Hole 31
				MT-CH32 Hole 32
				MT-CH33 Hole 33
				MT-CH34 Hole 34
				MT-CH35 Hole 35
				MT-CH36 Hole 36
				MT-CH37 Hole 37
				MT-CH38 Hole 38
				MT-CH39 Hole 39
				MT-CH40 Hole 40
				MT-CH41 Hole 41
				MT-CH42 Hole 42
				MT-CH43 Hole 43
				MT-CH44 Hole 44
				MT-CH45 Hole 45
				MT-CH46 Hole 46
				MT-CH47 Hole 47
				MT-CH48 Hole 48
				MT-CH49 Hole 49
				MT-CH50 Hole 50
				MT-CH51 Hole 51
				MT-CH52 Hole 52
				MT-CH53 Hole 53
				MT-CH54 Hole 54
				MT-CH55 Hole 55
				MT-CH56 Hole 56
				MT-CH57 Hole 57
				MT-CH58 Hole 58
				MT-CH59 Hole 59
				MT-CH60 Hole 60
				MT-CH61 Hole 61
				MT-CH62 Hole 62
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				MT-CH73 Hole 73
				MT-CH74 Hole 74
				MT-CH75 Hole 75
				MT-CH76 Hole 76
				MT-CH77 Hole 77
				MT-CH78 Hole 78
				MT-CH79 Hole 79
				MT-CH80 Hole 80
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				MT-CH84 Hole 84
				MT-CH85 Hole 85
				MT-CH86 Hole 86
				MT-CH87 Hole 87
				MT-CH88 Hole 88
				MT-CH89 Hole 89
				MT-CH90 Hole 90
				MT-CH91 Hole 91
				MT-CH92 Hole 92
				MT-CH93 Hole 93
				MT-CH94 Hole 94
				MT-CH95 Hole 95
				MT-CH96 Hole 96
				MT-CH97 Hole 97
				MT-CH98 Hole 98
				MT-CH99 Hole 99
				MT-CH100 Hole 100

FRONT

## Measurement Results

Cal. Point	Setting	Reading	STD.	Position of Standards at Block
380.0	380.0	379.8 - 380.2	0.2	MT-CH1 Hole 1
				MT-CH2 Hole 2
				MT-CH3 Hole 3
				MT-CH4 Hole 4
				MT-CH5 Hole 5
				MT-CH6 Hole 6
				MT-CH7 Hole 7
				MT-CH8 Hole 8
				MT-CH9 Hole 9
				MT-CH10 Hole 10
				MT-CH11 Hole 11
				MT-CH12 Hole 12
				MT-CH13 Hole 13
				MT-CH14 Hole 14
				MT-CH15 Hole 15
				MT-CH16 Hole 16
				MT-CH17 Hole 17
				MT-CH18 Hole 18
				MT-CH19 Hole 19
				MT-CH20 Hole 20
				MT-CH21 Hole 21
				MT-CH22 Hole 22
				MT-CH23 Hole 23
				MT-CH24 Hole 24
				MT-CH25 Hole 25
				MT-CH26 Hole 26
				MT-CH27 Hole 27
				MT-CH28 Hole 28
				MT-CH29 Hole 29
				MT-CH30 Hole 30
				MT-CH31 Hole 31
				MT-CH32 Hole 32
				MT-CH33 Hole 33
				MT-CH34 Hole 34
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				MT-CH37 Hole 37
				MT-CH38 Hole 38
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				MT-CH52 Hole 52
				MT-CH53 Hole 53
				MT-CH54 Hole 54
				MT-CH55 Hole 55
				MT-CH56 Hole 56
				MT-CH57 Hole 57
				MT-CH58 Hole 58
				MT-CH59 Hole 59
				MT-CH60 Hole 60
				MT-CH61 Hole 61
				MT-CH62 Hole 62
				MT-CH63 Hole 63
				MT-CH64 Hole 64
				MT-CH65 Hole 65
				MT-CH66 Hole 66
				MT-CH67 Hole 67
				MT-CH68 Hole 68
				MT-CH69 Hole 69
				MT-CH70 Hole 70
				MT-CH71 Hole 71
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				MT-CH79 Hole 79
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				MT-CH81 Hole 81
				MT-CH82 Hole 82
				MT-CH83 Hole 83
				MT-CH84 Hole 84
				MT-CH85 Hole 85
				MT-CH86 Hole 86
				MT-CH87 Hole 87
				MT-CH88 Hole 88
				MT-CH89 Hole 89
				MT-CH90 Hole 90
				MT-CH91 Hole 91
				MT-CH92 Hole 92
				MT-CH93 Hole 93
				MT-CH94 Hole 94
				MT-CH95 Hole 95
				MT-CH96 Hole 96
				MT-CH97 Hole 97
				MT-CH98 Hole 98
				MT-CH99 Hole 99
				MT-CH100 Hole 100

Cal. Point	Setting	Reading	STD.	Position of Standards at Block																		
380.0	380.0	379.8 - 380.2	0.2	MT-CH1 Hole 1	MT-CH2 Hole 2	MT-CH3 Hole 3	MT-CH4 Hole 4	MT-CH5 Hole 5	MT-CH6 Hole 6	MT-CH7 Hole 7	MT-CH8 Hole 8	MT-CH9 Hole 9	MT-CH10 Hole 10	MT-CH11 Hole 11	MT-CH12 Hole 12	MT-CH13 Hole 13	MT-CH14 Hole 14	MT-CH15 Hole 15	MT-CH16 Hole 16			
				378.9	378.9	378.9	378.9	378.9	378.9	378.9	378.9	378.9	378.9	378.9	378.9	378.9	378.9	378.9	378.9	378.9		
				Max °C	Max °C	Max °C	Max °C	Max °C	Max °C	Max °C	Max °C	Max °C	Max °C	Max °C	Max °C	Max °C	Max °C	Max °C	Max °C	Max °C	Max °C	
				378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	
				Min °C	Min °C	Min °C	Min °C	Min °C	Min °C	Min °C	Min °C	Min °C	Min °C	Min °C	Min °C	Min °C	Min °C	Min °C	Min °C	Min °C	Min °C	
				378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	378.5	
				Average °C	Average °C	Average °C	Average °C	Average °C	Average °C	Average °C	Average °C	Average °C	Average °C	Average °C	Average °C	Average °C	Average °C	Average °C	Average °C	Average °C	Average °C	
				378.6	378.6	378.6	378.6	378.6	378.6	378.6	378.6	378.6	378.6	378.6	378.6	378.6	378.6	378.6	378.6	378.6	378.6	
				Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C	Stability ± °C
				0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1				
0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3				
0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2												





บริษัท ดับเบิล เอส ไดแอกโนสติกส์ จำกัด  
DOUBLE S DIAGNOSTICS CO., LTD.

4 ซอยสุขุมวิท 14 แขวงคลองตันเหนือ เขตวัฒนา กรุงเทพฯ 10260 โทรศัพท์ (02) 747-7069 โทรสาร (02) 747-7068  
4 Soi Udomak 14, Bangna, Bangkok 10260 Tel. (02) 747-7069 Fax: (02) 747-7068

Maintenance Plan YEAR : 2024

เดือน	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
รวม												

Periodical maintenance check list for Konelab

	6M	12M	Notel
1.Diluent-wash tubing change	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2.ISE tubing change	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Vone
3.Syringe check/change	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
4.Dispensing check/ change	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
5.Waste tubing change when necessary	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
6.Lamp check/change	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
7.Mixer paddle/paddle change(not Konelab20)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
8.ISE needles check/change	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Vone
9.Pump tubing check/ change	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
10.Broken/worn out part check /change	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
11.Peristaltic pump check /cleaning/ lubrication	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
12.Heating check	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
13.Cooling check	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
14.Dispenser mechanic check/adjustment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
15.Cuvette transfer mechanic check/adjustment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
16.Dispenser movement check/adjustment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
17.Sample/reagent register check/adjustment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
18.Dispensing tubing tightness check	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
19.Photometer and optics cleaning/check/adjustment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
20.Workstation PC cleaning if necessary	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
21.Mechanic cleaning/lubrication	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
22.Instrument cleaning if necessary	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
23.Complete analyzer testing with waterblank/QC or sample	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
24.Test parameters/Adjustment/config. Save to USB key	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
25.UPS Test	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Place : R.S. LAB  
Date/Time : 16/8/22  
Service done by : R.S. LAB  
Signature of customer : R.S. LAB  
Instrument : K20 Aquaken  
Serial no : 89281  
Install date : 16/08/2024  
Date/Time : 16/08/2024

Laboratory  
Analyzer User

8/16/2024 14:53

Performed 8/16/2024  
Lot WB34

ACCEPTANCE CRITERIA

	Result	Limit	Warning
Temperature (°C)	37.8	37.0 +/- 1.0	
Dispensing ratio CV%	15.4	14.8 - 17.2	
Photometric noise	0.87	<1.7	
Max SD L340.2 (mM)	0.17	<2.0	
Max SD L340.4 (mM)	0.87	<3.0	
Linearity of photometer	1.0141	0.94 - 1.06	
Slope	0.8053	+/- 0.02	
Curvature	4.3	<15.0	
Max bias from linear fit (mM)	-1.6	+/- 6.0	
Max Delta %			
Linearity of sample dispensing	2.06	1.96 - 2.16	
Proport. volume XDISP2 (?l)	4.14	3.85 - 4.40	
Proport. volume XDISP4 (?l)	1.21	<2.0	
XDISP2 CV%	0.90	<2.0	
XDISP4 CV%	0.68	<2.0	
XDISP10 CV%			
Needle 0 ?l volume	0.005	<0.050	
Average (A)	0.002	<0.005	
Standard deviation (A)	0.03	<0.32	
Volume (?l)			

OTHER INFORMATION

Dispensing ratio	Posit Result (A)	Posit L340.2	L340.4
1	0.1549	1	0.15
2	0.1549	2	0.17
3	0.1537	3	0.04
4	0.1547	4	0.16
5	0.1547	5	0.11
6	0.1545	6	0.14

Photom. roise: SD (mM)

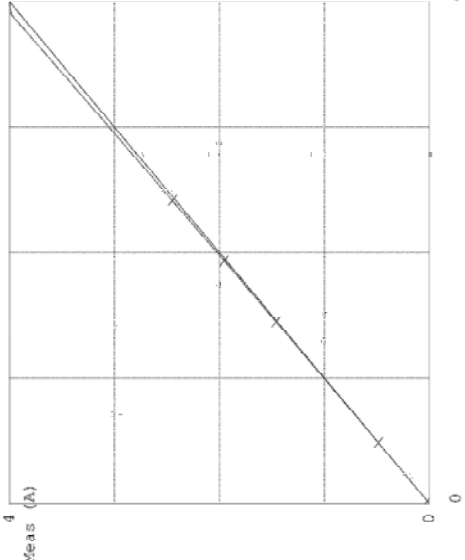
8/16/2024 14:53

Linearity of sample dispensing

Test	Absorbance (A)
XDISP2	0.306
XDISP4	0.612
XDISP10	1.471

Linearity of photometer

L3#0	Target (A)	Meas (A)	Delta (A)	Delta %
1	0.032	0.006	-0.004	-217.7
2	0.436	0.493	-0.007	-1.5
3	1.451	1.469	-0.018	-1.2
4	1.936	1.963	-0.027	-1.4
5	2.415	2.454	-0.039	-1.6



Certificate of Testing

Equipment : DO Meter

Manufacturer : YSI

Model : 5100

Serial No. : 15L103204

ID No. : BKK\_EN0205

Received Date : 01 February 2024

Test Date : 02 February 2024

Reference : 2402-0008DSC-10

Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Phatthanakan, Khet Suan Luang,  
Bangkok 10250 Thailand

Laboratory Condition : Temperature ( 25 ± 5 ) °C  
Humidity ( 50 ± 20 ) %  
In - house method : CP-CH9  
by Comparison Technique with Azide Modification Method

Tested by : Walalak Sirithean

Approved by :

Approved Signatory

REVIEW BY :

APPROVED BY :

NEXT CAL DATE : 02/08/25

(✓) Saithip Meangmai  
( ) Warakorn Lengagrakul  
( ) Ponpan Paipim

Issue Date : 7 February 2024



Cert.No.: 24TW28  
Page.: 2 of 2

Condition of this result of calibration

1. Reference Standard Instruments :

This certification is traceable to the International System of Unit through the reference standards laboratory of Industrial Calibration Center, Technology Promotion Association (Thailand-Japan).

Instruments	Serial No.	ID No.	Certificate No.	Due Date
1. Burette	-	130BU10	23CG1172	22 Mar 2025
2. Balance	1124013382	140RC006	23MM18	20 Feb 2024

2. Standard Material :-

Material	Manufacturer	Lot.No.	Assay
Sodium Thiosulfate pentahydrate	Merck	AM1763316	100.2%

Result : Dissolved Oxygen Meter Adjustment With Air 100 %  
Dissolved Oxygen Probe No.: 17A100064

Titration Method (Azide Modification Method) (mg/L)	DO Meter Reading (mg/L)	Standard Deviation (mg/L)
8.18	8.18	0.0055

This report was certified only for the instrument we tested.It is allowable to use for study  
Intend to use for advertising and referral purpose is prohibited.This report may not be reproduced  
other in full,without written approval of the laboratory

-o0o-

**Certificate of Calibration**

Cert. No.: 24LM15  
Page.: 1 of 2

Equipment : DO Meter with Sensor  
Manufacturer : YSI  
Model : 5100  
Serial No. : 15L103204  
ID No. : BKK\_EN0205  
Submitted by : ALS Laboratory Group (Thailand) Co.,Ltd.  
104 Phatthanakan 40, Phatthanakan Rd.,  
Khwaeng Phatthanakan, Khet Suan Luang,  
Bangkok 10250 Thailand  
Location : TPA Chemistry Calibration Laboratory  
Received Order : 01 February 2024  
Calibrated Date : 02 February 2024  
Ambient Temperature : ( 26 ± 10 ) °C  
Relative Humidity : ( 50 ± 30 ) %  
AC Line Voltage : ( 220 ± 22 ) V

Calibrated by : Warakorn Lemgagtrakul

Approved by :

( ) Pornthippa Tameyakul  
( ) Ponpan Paipim  
(✓) Suwit Imjai

Approved Signatory

Issue Date :

7 February 2024

**The Uncertainties are for a confidence probability of approximately 95%**

This certificate may not be reproduced other than in full, except with the prior written  
Approval of the head of Corporate Services 3 - Equipment Calibration and Testing Services.





Equipment : DO Meter with Sensor  
Condition As-Received : Used Item  
Reference : 2402-0008DSC-13  
Cert. No.: 24LM15  
Page.: 2 of 2

**Procedure Used :-**

Calibration were conducted using in-house calibration procedure CP-OT01 according to comparison with Industrial Platinum Resistance Thermometer (IPRT ) into Temperature Bath.  
The temperature scale used was based on ITS-90.

**Condition of this result of calibration**

1. Reference standard instrument:-

Instrument	Serial No.	Cert. No.	Traceable	Due Date
1) Digital Thermometer	2188080	231216	TPA	11 Oct 2024

2. This certificate is valid only to the item calibrated on date and place of calibration.

3. This certification is traceable to the International System of Unit.

Remark : TPA : Technology Promotion Association ( Thailand - Japan )

**Result of Calibration :-** ( \* ) Without Adjustment

Function : Temperature measurement.

This instrument was connected with temperature sensor, S/N.: 17A100064

Calibration Point (°C)	Immersion Depth (mm)	Standard Temperature (°C)	UUC* Reading (°C)	Error (°C)	Uncertainty (± °C)	Coverage Factor k
20.0	80	20.003	19.92	-0.083	0.15	2.00

UUC\* : Unit Under Calibration

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor *k*, providing a level of confidence of approximately 95 %.

-o0o-

Equipment : Chamber ( Incubator )  
Manufacturer : MEMMERT  
Model : ICP 750  
Serial No. : F818.0033  
Customer Code : BKK\_EN0272  
ID No. : T8041A4  
Customer : ALS Laboratory Group (Thailand) Co.,Ltd.

104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan,  
Khet Suan Luang, Bangkok 10250

Customer Location : Wet Chemistry Lab 2

Date of Receipt : 14 August 2024

Calibrated By : Sujjar Naknakred ( Site Calibration Manager )

Approved By :  / Boonchai Suriyawong ( Assistant Calibration Manager )

Date of Issue : 17 AUG 2024

The uncertainties are for a confidence probability of approximately 95%.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation Scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standard laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Metrology.

REVIEW BY 

APPROVED BY 

NEXT CAL DATE 22/08/25





Metrology

SCIECO Services Company Limited

33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110, Thailand.



Certificate No. T241495

Page 2 of 4

## Calibration Report

Equipment : Chamber ( Incubator )  
Date of Calibration : 22 August 2024 ( Finished Time 11:19 AM )  
Environment : Temperature 22.3-23.0 °C  
Line Voltage 222.5-227.5 V

### Condition of this results of test. :

1. This instrument was calibrated by insert 12 standard resistance thermometer into its chamber and test according to W1-T20 ( based on ASTM E145-94 ( Reapproved 2001 ) and AS2853-1986. )  
All data show below were final values and the initial data may be obtained upon request.

The temperature scale used was based on ITS - 90.

### 2. Reference Standard Instrument :

Instrument	Model	Instrument No.	Certificate No.	Due Date
RTD	100 ohm	27-(CH1-10)	T240709	19 April 2025
RTD	100 ohm	28-(CH1-10)	T240709	19 April 2025
DATA LOGGER	34970A	T149	T240709	19 April 2025

### 3. This certificate is traceable to :

National Institute of Metrology ( Thailand ) through Metrological Center ( NSC-TISI-TIS 17025 CALIBRATION 1244. )

### 4. Condition of calibrated item : good

#### UUC Description :

Time Constant 1 Hour 38 Minute At 20 °C  
Fresh Air Damper ☐ Open ☐ Min ☐ Medium ☐ Max  
☐ Close  
☒ Not Available

### 5. Result of test :

( ) without adjustment

( X ) after adjustment

Approved By \_\_\_\_\_

FM-L15 118/18-08-66



Metrology

SCIECO Services Company Limited

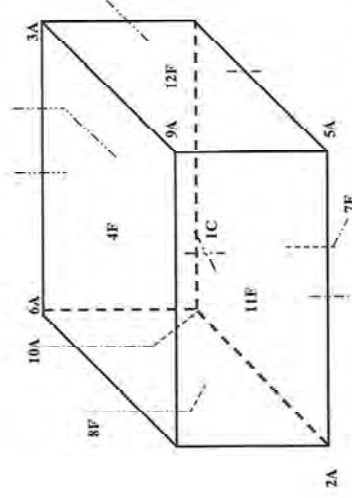
33/2 Moo 3, T.Banpa, A.Kaengkhoi, Saraburi 18110, Thailand.



Certificate No T241495

Page 3 of 4

## Calibration Report



C = Centre, F = Centre of Face, A = Corner, E = Centre of Edge

1C =	27-CH1
2A =	27-CH2
3A =	27-CH3
4F =	27-CH4
5A =	27-CH5
6A =	27-CH6
7F =	27-CH7
8F =	27-CH8
9A =	27-CH9
10A =	27-CH10

11F =	28-CH1
12F =	28-CH2

Approved By \_\_\_\_\_

FM-L15 118/18-08-66



## Metrology

SCI ECO Services Company Limited

33/2 Moo 3, T. Banpa, A. Kaengkhoi, Saraburi 18110, Thailand.



Certificate No. T241495

Page 4 of 4

## Calibration Report

### Measurement Results

Calibration Point	Average Standard Reading at each position (°C)									
	27-CH1	27-CH2	27-CH3	27-CH4	27-CH5	27-CH6	27-CH7	27-CH8	27-CH9	27-CH10
20.0	20.12	20.32	20.29	20.23	20.30	20.34	20.40	20.16	20.34	19.62
	28-CH1	28-CH2								
	19.70	19.65								

Chamber ( Incubator )		Temperature Distribution				
Setting (°C)	Reading (°C)		Average (°C)	Stability (±°C)	Uniformity (°C)	Coverage Factor k
	Min, Max	Average				
20.0	19.9, 20.1	20.0	20.01	0.04	0.19	2.00

\* The quoted uncertainty exclude "uniformity"

The calibration result apply only the above calibrated item.

The result of test was found accurate as shown on date and place of test only.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k which for a t-distribution, providing a level of confidence of approximately 95 %.

Approved By: \_\_\_\_\_

## ภาคผนวก จ

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สำเนาหนังสืออนุญาตขึ้นทะเบียน  
ห้องปฏิบัติการวิเคราะห์เอกชน



ที่อก ๐๓๑๐/๑/ ๑ ๖ ๑ ๖ ๘

กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒ ๐ พฤศจิกายน ๒๕๖๖

เรื่อง คัดอาณัติลงรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท โอแอลเอส แลบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/คัดอาณัติ/เปลี่ยนแปลงบุคลากร และชนิดสารเคมีของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๔ สิงหาคม ๒๕๖๖

สิ่งที่ส่งมาด้วย ๑. รายชื่อผู้ควบคุมห้องปฏิบัติการวิเคราะห์ จำนวน ๑ แผ่น

๒. รายชื่อเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๕ แผ่น

๓. ขอบข่ายสารเคมีที่ได้รับขึ้นทะเบียนโรงงานอุตสาหกรรม จำนวน ๓๑ แผ่น

ตามที่ส่งมาด้วย ๑. บริษัท โอแอลเอส แลบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ขอต่ออาณัติหนึ่งสื่อ  
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๔ สถานที่ตั้งเลขที่ ๑๐๔ ซอยพัฒนาการ ๔๐  
ถนนพัฒนาการ แขวงพัฒนาการ เขตสวนหลวง กรุงเทพมหานคร ต่อกรมโรงงานอุตสาหกรรม ดังนี้

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท โอแอลเอส แลบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

คัดอาณัติหนึ่งสื่อขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมห้องปฏิบัติการวิเคราะห์ จำนวน ๖ ราย ตามสิ่งที่ส่งมาด้วย ๑

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ ๑๘๑ ราย ตามสิ่งที่ส่งมาด้วย ๒

ค. ขอบข่ายสารเคมีที่ได้รับขึ้นทะเบียนให้น้ำเสีย น้ำใต้ดิน อากาศเสีย สิ่งปฏิกูล  
หรือวัสดุที่ไม่ใช้แล้ว และดิน ตามสิ่งที่ส่งมาด้วย ๓

หนังสือฉบับนี้จะหมดอายุในวันที่ ๒ กันยายน ๒๕๖๙ หากประสงค์จะต่ออายุหนึ่งสื่อ  
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออาณัติพร้อมเอกสารประกอบคำขอต่อ  
กรมโรงงานอุตสาหกรรม ภายใน ๓๐ วันก่อนวันสิ้นสุดของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน  
ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ทั้งนี้ให้นำใบคำขอมารถโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

นายดิเรก จันทะเฒ่า  
(นายดิเรก จันทะเฒ่า)

นักวิทยาศาสตร์ชำนาญการพิเศษ  
ผู้อำนวยการกองวิจัยและพัฒนาสิ่งแวดล้อมโรงงาน  
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและพัฒนาสิ่งแวดล้อมโรงงาน

โทร. ๐ ๒๔๓๐ ๖๓๑๖ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๖ ต่อ ๒๑๔๕๔

ไปรษณีย์อิเล็กทรอนิกส์ saraban@dlwmail.go.th



“อุตสาหกรรมก้าวหน้า วิถีไทย ร่วมกันพัฒนา อุตสาหกรรมสีเขียว”



สิ่งที่ส่งมาด้วย ๑

เอกสารแนบท้ายหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน  
บริษัท โอแอลเอส แลบอราทอรี กรุ๊ป (ประเทศไทย) จำกัด  
ที่อก ๐๓๑๐(๑)/ ๑ ๖ ๑ ๖ ๘ ลงวันที่ ๒ ๐ พฤศจิกายน ๒๕๖๖

ก. ผู้ควบคุมห้องปฏิบัติการวิเคราะห์ จำนวน ๖ ราย

- ๑) นางสาวพัทธพร จันทะเฒ่า เลขทะเบียน ๖-๒๐๔-ค-๐๐๐๑
- ๒) นางสาวสุชนีย์ โสมการกุล ณ นคร เลขทะเบียน ๖-๒๐๔-ค-๐๐๐๒
- ๑) นายศราวุธ จิตราชนนท์ เลขทะเบียน ๖-๒๐๔-ค-๐๐๐๓
- ๔) นางสาวกนกกร เอนก เลขทะเบียน ๖-๒๐๔-ค-๐๐๐๔
- ๕) นายสุริยา สอนแก้ว เลขทะเบียน ๖-๒๐๔-ค-๐๐๐๕
- ๖) นายวิชาญ พูลทรัพย์ เลขทะเบียน ๖-๒๐๔-ค-๐๐๐๖

นายดิเรก



- ๗๘) นายประเสริฐ สุระขันท์  
๗๙) นายบุลล จันทะนิยม  
๘๐) นายพิทักษ์ ทองตุ้มเว้า  
๘๑) นายพิพล หอมงษ์  
๘๒) นายอนุพงษ์ มั่งคั่งเพชร  
๘๓) นายเจษฎาภูมิ ปัดทะมะ  
๘๔) นายเกษม สายวรรณ  
๘๕) นายพิชัย บุญเลิศ  
๘๖) นายอนุพงษ์ ไชยวงศ์  
๘๗) นายสมาน กุ่มบือ  
๘๘) นายสุวิชัย ไกรรัมย์  
๘๙) นายอนุวัตร ศรีประเสริฐ  
๙๐) นายชวลิต นาคาม  
๙๑) นายพงษ์ชัย ชัยทิพย์  
๙๒) นายสิทธิโชค ทาดีดา  
๙๓) นายอภกร อิมสุตา  
๙๔) นางสาววณิชชา ขาดีวินัย  
๙๕) นางสาวกัมมัตถวัน มีนาถ  
๙๖) นางสาวเกศวัน สิงห์สมบูรณ์  
๙๗) นางสาวระยณีน พรหมจันทร์  
๙๘) นายกรัตน์ วัชรพงษ์  
๙๙) นายจักริน หมั้ววิชา  
๑๐๐) นายพัชรชัย สุนะเปี้ย  
๑๐๑) นายณนาภที่ ดีระทองคำ  
๑๐๒) นายศุภพล สมานอก  
๑๐๓) นายภักต์นัย อุบลศรี  
๑๐๔) นายอัครพร นามะกุลณา  
๑๐๕) นายอติพงษ์ ปันแดง  
๑๐๖) นายมนชัย อุทัยแก้ว  
๑๐๗) นายบุลล ศุภสิทธิ์  
๑๐๘) นายบัณฑิต สาริน  
๑๐๙) นายประเสริฐ พลนาค  
๑๑๐) นายสงฆ์ โสมเจียว  
๑๑๑) นายอัครพงษ์ มาปิตย์  
๑๑๒) นายมงคล สลาพิชัย  
๑๑๓) นายสิรินทร์ ทองถิ่น  
๑๑๔) นายอานา ทันผั้ว  
๑๑๕) นายอติศักดิ์ มโน

๑๑๖) นายอนันต์ชัย...

๑๑๗)

- ๑๑๘) นายอนันต์ชัย ชื่น  
๑๑๙) นายวราวุธ ลีนา  
๑๒๐) นายแสงธรรม นาคะสิทธิ์  
๑๒๑) นายสุวิชัย รัตนะ  
๑๒๒) นายพชรภูมิ ไชยอนันต์  
๑๒๓) นายวิเศษ สรรพมา  
๑๒๔) นายประสิทธิ์ ผ่อง  
๑๒๕) นายเกษัย จุฬะ  
๑๒๖) นางสาวนันทพร บุญตะนัด  
๑๒๗) นางสาวพัชรินทร์ แสนสรัย  
๑๒๘) นายพรวิทย์ เปี่ยมพิมาย  
๑๒๙) นางสาวศุภมาศ หอมมาก  
๑๓๐) นางสาวลลิตา จิตรสว่าง  
๑๓๑) นางสาวไมพร เล็กอุ้ย  
๑๓๒) นางสาวณิชาพร คำแก้ว  
๑๓๓) นางสาวสุกัญญา ภาคภูมิ  
๑๓๔) นางสาวไพฑูริย์ ศรีภูมิ  
๑๓๕) นางสาวทิพนพร หุยปัญญา  
๑๓๖) นางสาวอริดา ปานทอง  
๑๓๗) นางสาวอริสา ทองนวล  
๑๓๘) นางสาวอรยา คำทอง  
๑๓๙) นางสาวบุรณีย์ สุนทรสนาม  
๑๔๐) นางสาวอัญชลี คำจันทร์  
๑๔๑) นายบุญฤทธิ์ เอี่ยมเทศ  
๑๔๒) นางสาวศุภรดา บันยาร  
๑๔๓) นางสาวพจวิศ คุณาน  
๑๔๔) นางสาวจิราเจต พงดา  
๑๔๕) นางสาวอารยา มีชัย  
๑๔๖) นางสาววิชุดา นาคบุญ  
๑๔๗) นางสาวนันทิยา จันทะคุณ  
๑๔๘) นายอติพงษ์ แซ่ลี  
๑๔๙) นายอนุวัติ ภูมิวิ  
๑๕๐) นายธีรพล แสงทอง  
๑๕๑) นายศักดิ์พัฒน์ บุญมัน  
๑๕๒) นายธีรศักดิ์ เอมไธ  
๑๕๓) นายชัยมงคล ศรีจันทร์  
๑๕๔) นางสาวอรรณพ สามาน  
๑๕๕) นางสาวนิษฐพร สิงหา  
๑๕๖) นายณเรศ นอยมดี

๑๕๗) นางสาวอุบล...

๑๕๘)

- ๑๕๓) นางสาวอุบล เสกศิริ  
๑๕๔) นางสาวนโมรัตน์ พงษ์ไตร  
๑๕๕) นายภาณุภูมิ แก่นไชย  
๑๕๖) นางสาวสุภาวดี แด่พ่วง  
๑๕๗) นางสาวพรทิศา สาคางาม  
๑๕๘) นายเอกวิทย์ วันทะนา  
๑๕๙) นายโตมรเมศ พิทยารวม  
๑๖๐) นายจิรเมธ ปะเสสิฐสิริพงษ์  
๑๖๑) นายรัฐพล กฤษณะ  
๑๖๒) นายธีรศักดิ์ ศรีวิชัย  
๑๖๓) นายฐิติพงษ์ สพานแก้ว  
๑๖๔) นายบุญรัตน์ ปะเที  
๑๖๕) นายปิ่นมณีวิทย์ แสนอรัญย์  
๑๖๖) นายพิชญพงษ์ ไซยา  
๑๖๗) นายภัทรวพษ์ มณฑาทอง  
๑๖๘) นายสันต์ ศรีบุญ  
๑๖๙) นายภาณุเดช เพชรบุ  
๑๗๐) นายอนุช วิเศษ  
๑๗๑) นายภัทรวพษ์ มีสุข  
๑๗๒) นางสาวนุชรี ลิละทีป  
๑๗๓) นางสาวสุภาวดี โกสินัน  
๑๗๔) นางสาวอรณิช เทียนคำ  
๑๗๕) นางสาวพรเพ็ญ ขอบสอน  
๑๗๖) นางสาววันวิสา ขอนทิ  
๑๗๗) นางสาวอรรณณ เถาวัล  
๑๗๘) นางสาวอัยลิณ เมย์วิ  
๑๗๙) นางสาววิสา คู่ครอง  
๑๘๐) นายสุกกร ศิริวรรณ  
๑๘๑) นางสาวจตุรรมณ กระจำพันธุ

สัญญา

เอกสารแนบท้ายหนังสือรับรองข้อมูลทะเบียนห้องปฏิบัติการวิเคราะห์ห้อง  
บริษัท เอลเอส แล็บราทอรี กรุ๊ป (ประเทศไทย) จำกัด เลขทะเบียน ว-๒๐๔  
ที่ อท ๐๓๑๐(๑)/ ๑ ๖ ๑ ๖ ๘ ลงวันที่ ๒๐ พฤศจิกายน ๒๕๖๖  
ค. ขอขำยสารณที่ด้ข้ทะเบียนเป็นจากกรมโรงงานอุตสาหกรรม จำนวน ๓๓๕ รายการ  
นี้เหลือ จำนวน 60 รายการ

ลำดับที่	สารเคมี	วิธีวิเคราะห์
1	Aldicarb	High-Performance Liquid Chromatographic Method <sup>(4)</sup>
2	Aldicarb Sulfone	High-Performance Liquid Chromatographic Method <sup>(4)</sup>
3	Aldicarb Sulfoxide	High-Performance Liquid Chromatographic Method <sup>(4)</sup>
4	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
5	Arsenic	1) Digestion, Inductively Coupled Plasma Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
6	Barium	1) Digestion, Inductively Coupled Plasma Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
7	α-BHC	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
8	β-BHC	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
9	δ-BHC	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
10	γ-BHC	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
11	Biochemical Oxygen Demand	1) 5-Day BOD Test, Azide Modification Method <sup>(4)</sup> 2) 5-Day BOD Test, Membrane Electrode Method <sup>(4)</sup>
12	Carbaryl	High-Performance Liquid Chromatographic Method <sup>(4)</sup>
13	Carbofuran	High-Performance Liquid Chromatographic Method <sup>(4)</sup>
14	Cadmium	1) Digestion, Inductively Coupled Plasma Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
15	Chemical Oxygen Demand	Mass Spectrometric Method <sup>(4)</sup> 1) Closed Reflux, Colorimetric Method <sup>(4)</sup> 2) Closed Reflux, Titrimetric Method <sup>(4)</sup>
16	Chlordane	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
17	Chromium	1) Digestion, Inductively Coupled Plasma Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
18	Color	ADMI Weighted-Ordinate Spectrophotometric Method <sup>(4)</sup> สัญญา

ลำดับที่	สารเคมี	วิธีการหา
19	Copper	1) Digestion, Inductively Coupled Plasma Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
20	Cyanide	Distillation, Colorimetric Method <sup>(4)</sup>
21	2,4'-DDD	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
22	4,4'-DDD	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
23	2,4'-DDE	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
24	4,4'-DDE	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
25	2,4'-DDT	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
26	4,4'-DDT	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
27	Dieldrin	Mass Spectrometric Method <sup>(4)</sup> Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
28	Endosulfan Sulfate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
29	Endosulfan I	Mass Spectrometric Method <sup>(4)</sup> Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
30	Endosulfan II	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
31	Endrin	Mass Spectrometric Method <sup>(4)</sup> Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
32	Endrin Aldehyde	Mass Spectrometric Method <sup>(4)</sup> Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
33	Formaldehyde	Distillation, Colorimetric Method <sup>(8)</sup>
34	Free Chlorine	1) DPD Ferrous Titrimetric Method <sup>(4)</sup> 2) DPD Colorimetric Method <sup>(4)</sup>
35	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
36	Heptachlor Epoxide	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
37	Hexavalent Chromium	Colorimetric Method <sup>(4)</sup>
38	3-Hydroxycarbofuran	High-Performance Liquid Chromatographic Method <sup>(4)</sup>
39	Lead	1) Digestion, Inductively Coupled Plasma Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>

40) Manganese...

กรม

ลำดับที่	สารเคมี	วิธีการหา
40	Manganese	1) Digestion, Inductively Coupled Plasma Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
41	Mercury	1) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
42	Methiocarb	High-Performance Liquid Chromatographic Method <sup>(4)</sup>
43	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
44	Methomyl	High-Performance Liquid Chromatographic Method <sup>(4)</sup>
45	Nickel	1) Digestion, Inductively Coupled Plasma Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
46	Oil & Grease	1) Liquid-Liquid, Partition-Gravimetric Method <sup>(4)</sup> 2) Soxhlet Extraction Method <sup>(4)</sup>
47	Oxamyl	High-Performance Liquid Chromatographic Method <sup>(4)</sup>
48	Propoxur	High-Performance Liquid Chromatographic Method <sup>(4)</sup>
49	pH	Electrometric Method <sup>(4)</sup>
50	Phenols	1) Distillation, Chloroform Extraction Method <sup>(4)</sup> 2) Distillation, Direct Photometric Method <sup>(4)</sup>
51	Selenium	1) Digestion, Inductively Coupled Plasma Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
52	Sulfide	Idometric Method <sup>(4)</sup>
53	Temperature	Laboratory and Field Methods <sup>(4)</sup>
54	Total Dissolved Solids	Dried at 180 °C <sup>(4)</sup>
55	Total Kjeldahl Nitrogen	Semi-Micro Kjeldahl Method <sup>(4)</sup>
56	Total Phosphorous	Digestion, Colorimetric Method <sup>(4)</sup>
57	Total Suspended Solids	Dried from 103--05 °C <sup>(4)</sup>
58	Toxaphene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
59	Trivalent Chromium	1) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method; Colorimetric Method; Calculation <sup>(4)</sup>
60	Zinc	1) Digestion, Inductively Coupled Plasma Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(4)</sup>

กรม

น้ำดื่ม...



หน้าถัดไป จำนวน 126 รายการ

ลำดับที่	สารเคมี	วิธีการตรวจ
1	Acenaphthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
2	Acetone	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
3	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
5	Antimony	1) Digestion, Inductively Coupled Plasma Method <sup>(a)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(a)</sup>
6	Arsenic	1) Digestion, Inductively Coupled Plasma Method <sup>(a)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(a)</sup>
7	Atrazine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
8	Barium	1) Digestion, Inductively Coupled Plasma Method <sup>(a)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(a)</sup>
9	Benzo(a)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
10	Benzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
11	Benzo(b)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
12	Benzo(k)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
13	Benzoic Acid	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
14	Benzo(a)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
15	Benzo(g,h,i)perylene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
16	Beryllium	1) Digestion, Inductively Coupled Plasma Method <sup>(a)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(a)</sup>
17	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>

18 Bis(2-ethylhexyl)phthalate...

ลำดับที่	สารเคมี	วิธีการตรวจ
18	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
19	Bromodichloromethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
20	Bromoform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
21	Butanol	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
22	Butyl benzyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
23	Cadmium	1) Digestion, Inductively Coupled Plasma Method <sup>(a)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(a)</sup>
24	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
25	Carbon disulfide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
26	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
27	Chlordane	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
28	p-Chloroaniline	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
29	Chlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
30	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
31	Chloroform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
32	2-Chlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
33	Chromium	1) Digestion, Inductively Coupled Plasma Method <sup>(a)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(a)</sup>
34	Chromium (II)	1) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation <sup>(a)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method; Colorimetric Method; Calculation <sup>(a)</sup>
35	Chromium (VI)	Colorimetric Method <sup>(a)</sup>

36 Chrysene...

ลำดับที่	สารเคมี	วิธีการตรวจ
36	Chrysene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
37	Cyanide	Distillation, Colorimetric Method <sup>(a)</sup>
38	2,4-D	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
39	DOD	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
40	DDE	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
41	DDT	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
42	Dibenz(a,h)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
43	Di-n-Butyl Phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
44	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
45	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
46	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
47	3,3-Dichlorobenzidine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
48	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
49	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
50	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
51	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
52	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
53	2,4-Dichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
54	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
55	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>

56 1,3-Dichloropropene...

ลำดับที่	สารเคมี	วิธีการตรวจ
56	1,3-Dichloropropene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
57	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
58	Methyl Phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
59	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
60	2,4-Dinitrophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
61	2,4-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
62	2,6-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
63	Di-n-octyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
64	Endosulfan	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
65	Erdrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
66	Ethylbenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
67	Fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
68	Fluorene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
69	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
70	Heptachlor epoxide	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
71	Hexachlorobenzene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
72	Hexachloro-1,3-butadiene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
73	n-Hexane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
74	α-HCH	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>
75	β-HCH	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(a)</sup>

76 γ-HCH...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
76	γ-HCH	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
77	Hexachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
78	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
79	Indeno(1,2,3-c)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
80	Isophorone	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
81	Lead	1) Digestion, Inductively Coupled Plasma Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
82	Manganese	1) Digestion, Inductively Coupled Plasma Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
83	Mercury	1) Digestion, Cold Vapor Atomic Absorption Spectrometric Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
84	Methanol	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
85	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
86	Methyl bromide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
87	Methylene chloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
88	2-Methylphenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
89	2-Methylnaphthalene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
90	Methyl tert-butyl Ether	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
91	Naphthalene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
92	Nickel	1) Digestion, Inductively Coupled Plasma Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
93	Nitrobenzene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>

94 N-Nitrosodiphenylamine...

3mL

ลำดับที่	สารเคมี	วิธีวิเคราะห์
94	N-Nitrosodiphenylamine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
95	N-Nitrosodi-n-Propylamine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
96	Polychlorinated Biphenyls - PCB 1016 - PCB 1221 - PCB 1232 - PCB 1242 - PCB 1248 - PCB 1254 - PCB 1260	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
97	Pentachlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
98	pH	Electrometric Method <sup>(4)</sup>
99	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
100	Phenol	1) Distillation, Chloroform Extraction Method <sup>(4)</sup> 2) Distillation, Direct Photometric Method <sup>(4)</sup> 3) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
101	Pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
102	Selenium	1) Digestion, Inductively Coupled Plasma Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
103	Silver	1) Digestion, Inductively Coupled Plasma Method <sup>(4)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
104	Styrene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
105	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
106	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
107	Toluene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
108	Toxaphene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
109	TPH (C <sub>5</sub> -C <sub>9</sub> )	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>

3mL

110 TPH (C<sub>8</sub>-C<sub>10</sub>)...

ลำดับที่	สารเคมี	วิธีการหา
110	TPH (C <sub>10</sub> -C <sub>16</sub> )	Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method <sup>(1,2)</sup>
111	TPH (C <sub>10</sub> -C <sub>16</sub> )	Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method <sup>(1,2)</sup>
112	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
113	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
114	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
115	Trichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
116	2,4,5-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
117	2,4,6-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
118	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
119	Vanadium	1) Digestion, Inductively Coupled Plasma Method <sup>(3)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>
120	Vinyl acetate	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
121	Vinyl chloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
122	m-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
123	o-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
124	p-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
125	Xylene (Total)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(4)</sup>
126	Zinc	1) Digestion, Inductively Coupled Plasma Method <sup>(3)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(4)</sup>

3my

เอกสารแนบ...

เอกสารแนบ (ต่อเนื่องจาก) จำนวน 28 รายการ

ลำดับที่	สารเคมี	วิธีการหา
1	Antimony	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>(3)</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(3)</sup>
2	Arsenic	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>(3)</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(3)</sup>
3	Beryllium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>(3)</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(3)</sup>
4	Cadmium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>(3)</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(3)</sup>
5	Carbon Monoxide	1) Instrumental Analyzer Method <sup>(3)</sup> 2) Sampling Bag N <sub>2</sub> /Dispersive Infrared Method <sup>(3)</sup>
6	Chlorine	1) Absorption Sampling, Ion Chromatographic Method <sup>(3)</sup> 2) Isokinetic Sampling, Ion Chromatographic Method <sup>(3)</sup>
7	Chromium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>(3)</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(3)</sup>
8	Cobalt	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>(3)</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(3)</sup>
9	Copper	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>(3)</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(3)</sup>
10	Cresol	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(3)</sup> 2) Isokinetic Sampling, Gas Chromatographic Method <sup>(3)</sup>
11	Dioxins	Isokinetic Sampling <sup>(3)</sup>
12	Hydrogen Chloride	1) Absorption Sampling, Ion Chromatographic Method <sup>(3)</sup> 2) Isokinetic Sampling, Ion Chromatographic Method <sup>(3)</sup>
13	Hydrogen Fluoride	1) Absorption Sampling, Ion Chromatographic Method <sup>(3)</sup> 2) Isokinetic Sampling, Ion Chromatographic Method <sup>(3)</sup>
14	Hydrogen Sulfide	Absorption Sampling, Iodometric Method <sup>(3)</sup>

3my

15 Lead...

ลำดับที่	สารเคมี	วิธีการวิเคราะห์
15	Lead	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>(3)</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(5)</sup>
16	Manganese	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>(3)</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(5)</sup>
17	Mercury	1) Isokinetic Sampling, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>(3)</sup> 2) Isokinetic Sampling, Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method <sup>(5)</sup>
18	Nickel	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>(3)</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(5)</sup>
19	Opacity	Ringelmann's Method <sup>(2)</sup>
20	Oxides of Nitrogen	1) Absorption Sampling, Phenoldisulfonic Acid Method <sup>(5)</sup> 2) Absorption Sampling, Alkaline Permanganate/Colorimetric Method <sup>(5)</sup>
21	Selenium	3) Instrumental Analyzer Method <sup>(5)</sup> 1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>(3)</sup>
22	Sulfur Dioxide	2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(5)</sup> 1) Absorption Sampling, Barium-Thio Titrimetric Method <sup>(5)</sup>
23	Sulfuric Acid	2) Instrumental Analyzer Method <sup>(5)</sup> Isokinetic Sampling, Barium-Thio Titrimetric Method <sup>(5)</sup>
24	Tellurium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>(3)</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(5)</sup>
25	Tin	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>(3)</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(5)</sup>
26	Total Suspended Particulate	1) Isokinetic Sampling, Gravimetric Method <sup>(5)</sup> 2) Paired Train, Isokinetic Sampling, Gravimetric Method <sup>(5)</sup>

27 Vanadium...

ลำดับที่	สารเคมี	วิธีการวิเคราะห์
27	Uranium	1) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>(3)</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(5)</sup> Adsorption Sampling, Gas Chromatographic Method <sup>(5)</sup>
28	Xylene	Adsorption Sampling, Gas Chromatographic Method <sup>(5)</sup>

สิ่งปฏิกูลหรือวัสดุที่ไม่ได้กำหนด 35 รายการ

ลำดับที่	สารเคมี	วิธีการวิเคราะห์
1	Aldrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1,2,6)</sup> 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(10,26)</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(11,26)</sup>
2	Antimony	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1,4,16)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1,4,17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7,17)</sup>
3	Arsenic	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1,4,16)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1,4,17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7,17)</sup>
4	Barium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1,4,16)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1,4,17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7,17)</sup>

5 Beryllium...

ลำดับที่	สารเคมี	วิธีการตรวจ
5	Beryllium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1.6.18)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1.6.17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7.1.6)</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7.1.7)</sup>
6	Cadmium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1.6.18)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1.6.17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7.1.6)</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7.1.7)</sup>
7	Chlorine	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1.9.24)</sup> 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(10.23)</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(11.23)</sup>
8	Chromium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1.6.18)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1.6.17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7.1.6)</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7.1.7)</sup>
9	Chromium (III)	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1.6.18)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1.6.17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7.1.6)</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7.1.7)</sup>

10 Chromium (VI)...

ลำดับที่	สารเคมี	วิธีการตรวจ
10	Chromium (VI)	1) Waste Extraction, Colorimetric Method <sup>(1.6.19)</sup> 2) Alkaline Digestion, Colorimetric Method <sup>(8.19)</sup>
11	Cobalt	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1.6.18)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1.6.17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7.1.6)</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7.1.7)</sup>
12	Copper	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1.6.18)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1.6.17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7.1.6)</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7.1.7)</sup>
13	2,4-D	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1.9.24)</sup> 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(10.23)</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(11.23)</sup>
14	DDD	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1.9.24)</sup> 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(10.23)</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(11.23)</sup>
15	DDE	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1.9.24)</sup> 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(10.23)</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(11.23)</sup>
16	DDT	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1.9.24)</sup> 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(10.23)</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(11.23)</sup>

2) Soxhlet...



ลำดับที่	สารเคมี	วิธีวิเคราะห์
17	Dieldrin	2) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup> 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1,9,28)</sup> 2) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup> 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1,9,28)</sup> 2) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup> 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1,9,28)</sup> 2) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup> 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1,9,28)</sup> 2) Soxhlet Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1,9,28)</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1,9,28)</sup> 2) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
18	Endrin	
19	Heptachlor	
20	Lead	
21	Lindane	

22 Mercury...

ลำดับที่	สารเคมี	วิธีวิเคราะห์
22	Mercury	1) Waste Extraction, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>(1,6,20)</sup> 2) Waste Extraction, Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method <sup>(1,6,20)</sup> 3) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>(20)</sup> 4) Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method <sup>(20)</sup> 5) Thermal Decomposition Amalgamation and Atomic Absorption Spectrometric Method <sup>(21)</sup> 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1,9,28)</sup> 2) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup> 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1,9,28)</sup> 2) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup> 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1,6,16)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1,6,17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup> 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7,17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 4) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup> 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>(1,9,28)</sup> 2) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 3) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
23	Methoxychlor	
24	Mirex	
25	Molybdenum	
26	Nickel	
27	Polychlorinated biphenyls (PCBs) - Aroclor 1015 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260	

- 2-Chlorobiphenyl...

ลำดับที่	สารพิษ	วิธีวิเคราะห์
	<ul style="list-style-type: none"> <li>- 2-Chlorobiphenyl</li> <li>- 2,3-Dichlorobiphenyl</li> <li>- 2,2',5'-Trichlorobiphenyl</li> <li>- 2,4',5'-Trichlorobiphenyl</li> <li>- 2,2',3,5'-Tetrachlorobiphenyl</li> <li>- 2,2',5,5'-Tetrachlorobiphenyl</li> <li>- 2,3',4,4'-Tetrachlorobiphenyl</li> <li>- 2,2',3,4,5'-Pentachlorobiphenyl</li> <li>- 2,2',4,5,5'-Pentachlorobiphenyl</li> <li>- 2,3',3',4',6-Pentachlorobiphenyl</li> <li>- 2,2',3,4,4',5'-Hexachlorobiphenyl</li> <li>- 2,2',3,4,5,5'-Hexachlorobiphenyl</li> <li>- 2,2',3,5,5',6'-Hexachlorobiphenyl</li> <li>Hexachlorobiphenyl</li> <li>- 2,2',4,4',5,5'-Hexachlorobiphenyl</li> <li>Heptachlorobiphenyl</li> <li>- 2,2',3,3',4,4',5'-Heptachlorobiphenyl</li> <li>- 2,2',3,4,4',5,5'-Heptachlorobiphenyl</li> <li>- 2,2',3,4,4',5',6'-Heptachlorobiphenyl</li> <li>- 2,2',3,4',5,5',6'-Heptachlorobiphenyl</li> <li>- 2,2',3,3',4,4',5,5',6'-Nonachlorobiphenyl</li> <li>Pentachlorophenol</li> </ul>	<p>1) Waste Extraction, Separatory Funnel, Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method<sup>(1,3,4)</sup></p> <p>2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method<sup>(10,24)</sup></p> <p>3) Automated Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method<sup>(11,24)</sup></p> <p>Mass Spectrometric Method<sup>(2,24)</sup></p> <p>Electrometric Method<sup>(12,24)</sup></p> <p>1) Waste Extraction, Digestion, Inductively Coupled Plasma Method<sup>(14,16)</sup></p> <p>2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method<sup>(1,16,17)</sup></p> <p>3) Digestion, Inductively Coupled Plasma Method<sup>(14)</sup></p> <p>4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method<sup>(1,17)</sup></p>
28		
29	pH	
30	Selenium	

ลำดับที่	สารเคมี	วิธีการตรวจ
31	Silver	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1,6,16)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1,6,17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7,18)</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7,17)</sup> 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>(1,6,16)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1,6,17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7,18)</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7,17)</sup>
32	Thallium	
33	Toxaphene	1) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1,6,17)</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>(7,18)</sup> 3) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7,17)</sup> 1) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1,6,16)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1,6,17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7,18)</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7,17)</sup>
34	Vanadium	1) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1,6,16)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1,6,17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7,18)</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7,17)</sup> 1) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1,6,16)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1,6,17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7,18)</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7,17)</sup>
35	Zinc	1) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1,6,16)</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(1,6,17)</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>(7,18)</sup> 4) Digestion, Inductively Coupled Plasma/Mass Spectrometric Method <sup>(7,17)</sup>

สืบ จำนวน 125 รายการ

ลำดับที่	สารเคมี	วิธีการตรวจ
1	Acenaphthene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
2	Acetone	1) Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(13.23)</sup> 2) Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method <sup>(13)</sup>
3	Aldrin	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
4	Anthracene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
5	Antimony	1) Digestion, Inductively Coupled Plasma Method <sup>(7.16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7.17)</sup>
6	Arsenic	1) Digestion, Inductively Coupled Plasma Method <sup>(7.16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7.17)</sup>
7	Atrazine	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
8	Barium	1) Digestion, Inductively Coupled Plasma Method <sup>(7.16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7.17)</sup>
9	Benz(a)anthracene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
10	Benzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15.25)</sup>

11 Benzo(b)fluoranthene

ลำดับที่	สารเคมี	วิธีการตรวจ
11	Benzo(b)fluoranthene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
12	Benzo(k)fluoranthene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
13	Benzoic acid	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
14	Benzo(a)pyrene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
15	Benzo(g,h,i)perylene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
16	Beryllium	1) Digestion, Inductively Coupled Plasma Method <sup>(7.16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7.17)</sup>
17	Bis(2-chloroethyl)ether	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
18	Bis(2-ethylhexyl)phthalate	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
19	Bromodichloromethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15.23)</sup>
20	Bromoform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15.23)</sup>
21	Butanol	Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method <sup>(13.23)</sup>
22	Butyl Benzyl Phthalate	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>

23 Cadmium...

sm

ลำดับที่	สารเคมี	วิธีวิเคราะห์
23	Cadmium	1) Digestion, Inductively Coupled Plasma Method <sup>(7.16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7.17)</sup>
24	Carbazole	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
25	Carbon Disulfide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15.23)</sup>
26	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15.23)</sup>
27	Chlordane	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
28	p-Chloroaniline	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
29	Chlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15.23)</sup>
30	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15.23)</sup>
31	Chloroform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15.23)</sup>
32	2-Chlorophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
33	Chromium	1) Digestion, Inductively Coupled Plasma Method <sup>(7.16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7.17)</sup>
34	Chromium (III)	1) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation Method <sup>(7.16,17)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation Method <sup>(7.16,17,19)</sup>
35	Chromium (VI)	Alkaline Digestion, Colorimetric Method <sup>(8.19)</sup>

ลำดับที่	สารเคมี	วิธีวิเคราะห์
36	Chrysene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
37	Cyanide	Extraction, Distillation, Colorimetric Method <sup>(27.28.29)</sup>
38	2,4-D	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
39	DDD	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
40	DDE	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
41	DDT	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
42	Dbenz(a,h)anthracene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11.26)</sup>
43	Di-n-Butyl Phthalate	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15.23)</sup>
44	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15.23)</sup>
45	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15.23)</sup>
46	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15.23)</sup>
47	3,3-Dichlorobenzidine	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10.26)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15.23)</sup>
48	1,1-Dichloroethane	Mass Spectrometric Method <sup>(15.23)</sup>

ลำดับที่	สารเคมี	วิธีการตรวจ
49	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>
50	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>
51	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>
52	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>
53	2,4-Dichlorophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
54	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>
55	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>
56	1,3-Dichloropropene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>
57	Dieldrin	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
58	Diethyl Phthalate	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
59	2,4-Dimethylphenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
60	2,4-Dinitrophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
61	2,4-Dinitrotoluene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
62	2,6-Dinitrotoluene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>

ลำดับที่	สารเคมี	วิธีการตรวจ
63	Di-n-Octyl Phthalate	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
64	Endosulfan	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
65	Endrin	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
66	Ethylbenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,25)</sup>
67	Fluoranthene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
68	Fluorene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
69	Heptachlor	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
70	Heptachlor epoxide	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
71	Hexachlorobenzene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
72	Hexachloro-1,3-butadiene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,25)</sup>
73	n-Hexane	1) Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,25)</sup> 2) Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method <sup>(13)</sup>



ลำดับที่	สารเคมี	วิธีการตรวจ
74	α-HCH	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
75	β-HCH	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
76	γ-HCH	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
77	Hexachlorocyclopentadiene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
78	Hexachloroethane	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
79	Indenol, 2,3-cdpyrene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
80	Isophorone	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
81	Lead	1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>
82	Manganese	1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>
83	Mercury	1) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>(28)</sup> 2) Thermal Decomposition, Amalgamation, and Atomic Absorption Spectrophotometry <sup>(21)</sup> 3) Digestion, Cold-Vapor Atomic Fluorescence Spectrometric Method <sup>(30)</sup>

84 Methanol...

ลำดับที่	สารเคมี	วิธีการตรวจ
84	Methanol	1) Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,25)</sup> 2) Equilibrium Headspace, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,25)</sup>
85	Methoxychlor	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
86	Methyl Bromide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,25)</sup>
87	Methylene Chloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,25)</sup>
88	2-methylphenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
89	2-Methylnaphthalene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
90	Methyl tert-Butyl Ether	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,25)</sup>
91	Naphthalene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
92	Nicke.	1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>
93	Nitrobenzene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
94	N-Nitrosodiphenylamine	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
95	N-Nitrosodi-n-propylamine	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>

96 Polychlorinated biphenyls (PCBs)

ลำดับที่	สารเคมี	วิธีวิเคราะห์
96	Polychlorinated biphenyls (PCBs) - Aroclor 1016 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260 - 2-Chlorobiphenyl - 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',3,5,5',6'-Hexachlorobiphenyl 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',5,5',6'-Heptachlorobiphenyl - 2,2',3,4',5,5',6'-Heptachlorobiphenyl Nonachlorobiphenyl Pentachlorophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
97	Phenanthrene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup> 1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
98	Phenanthrene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>

ลำดับที่	สารเคมี	วิธีวิเคราะห์
99	Phenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
100	Pyrene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
101	Selenium	1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>
102	Silver	1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>
103	Styrene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>
104	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>
105	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>
106	Toluene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>
107	Toxaphene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,28)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,28)</sup>
108	TPH (C <sub>5</sub> -C <sub>8</sub> )	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>
109	TPH (C <sub>8</sub> -C <sub>14</sub> )	1) Automated Extraction, Gas Chromatographic Method <sup>(11,28)</sup> 2) Solvent Extraction, Gas Chromatographic Method <sup>(11,28)</sup> 3) Ultrasonic Extraction, Gas Chromatographic Method <sup>(11,28)</sup>
110	TPH (C <sub>15</sub> -C <sub>35</sub> )	1) Automated Extraction, Gas Chromatographic Method <sup>(11,28)</sup> 2) Solvent Extraction, Gas Chromatographic Method <sup>(11,28)</sup> 3) Ultrasonic Extraction, Gas Chromatographic Method <sup>(11,28)</sup>
111	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>
112	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>
113	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>
114	Trichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup>

ลำดับที่	สารเคมี	วิธีการวิเคราะห์
115	2,4,5-Trichlorophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,24)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,24)</sup> 1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,24)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,24)</sup> Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup> 1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>
116	2,4,6-Trichlorophenol	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,24)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,24)</sup> Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup> 1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>
117	1,3,5-Trimethylbenzene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,24)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,24)</sup> Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup> 1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>
118	Vanadium	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,24)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,24)</sup> Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup> 1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>
119	Vinyl Acetate	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,24)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,24)</sup> Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup> 1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>
120	Vinyl Chloride	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,24)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,24)</sup> Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup> 1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>
121	m-Xylene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,24)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,24)</sup> Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup> 1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>
122	o-Xylene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,24)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,24)</sup> Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup> 1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>
123	p-Xylene	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,24)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,24)</sup> Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup> 1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>
124	Xylene (Total)	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,24)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,24)</sup> Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup> 1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>
125	Zinc	1) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(10,24)</sup> 2) Automated Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>(11,24)</sup> Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>(15,23)</sup> 1) Digestion, Inductively Coupled Plasma Method <sup>(7,16)</sup> 2) Digestion, Inductively Coupled Plasma/ Mass Spectrometric Method <sup>(7,17)</sup>

เอกสารอ้างอิง

- กระทรวงอุตสาหกรรม, ประกาศกระทรวงอุตสาหกรรม, พ.ศ. 2566 เรื่อง การจัดการสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว, ราชกิจจานุเบกษา, 31 พฤษภาคม 2566, เล่มที่ 140 ตอนที่ ๑๒๖ ก.
- กระทรวงอุตสาหกรรม, ประกาศกระทรวงอุตสาหกรรม, พ.ศ. 2549 เรื่อง กำหนดค่าปริมาณตะกั่วในดินที่ถือเป็นเกณฑ์การปล่อยของน้ำทิ้งจากโรงงานอุตสาหกรรม, ราชกิจจานุเบกษา, 4 ธันวาคม 2549, เล่มที่ 123 ตอนที่ ๑๒๖ ก.
- สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย, คู่มือวิเคราะห์น้ำเสีย, พิมพ์ครั้งที่ 4, กรุงเทพมหานคร, 2547.
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*Signature*



ที่ อ.ก ๐๓๑๐๑/๔ ๑ ๒ ๑

กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๒ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๑๐๐

๒ ๕ เมษายน ๒๕๖๑

เรื่อง เปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แล็บอราทอรี กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ซื้อขาย/เปลี่ยนแปลงบุคลากร และขอมีคุณสมบัติของห้องปฏิบัติการวิเคราะห์ของเอกชน ลงวันที่ ๒๔ มีนาคม ๒๕๖๑

ตามคำขอที่อ้างถึง บริษัท เอแอลเอส แล็บอราทอรี กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๔ สถานที่ตั้งเลขที่ ๑๐๔ ซอยพัฒนาการ ๔๐ ถนนพัฒนาการ แขวงพัฒนาการ เขตสวนหลวง กรุงเทพมหานคร ขอเปลี่ยนแปลงบุคลากร ความละเอียดดังนี้

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว มีความเห็นดังนี้

๑. ให้ออกใบแจ้งหนี้ที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓ ราย

๑) นางสาวพรณิศา พุ่มคง

๒) นายกำชัย สุทธะ

๓) นางสาวสุกฤตา ปันมยุรา

๒. ให้เพิ่มเจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน จำนวน ๑๒ ราย

๑) นางสาวรุณิดา กลิ่นเขียว

๒) นางสาวกัญญ์กิสกร สายคำ

๓) นางสาวณัฐนันท์ กัทธวงค์

๔) นายอำนาจ วงษาคน

๕) นายฤกษ์พล ปัญญาวงศ์

๖) นายยศจักร หรรษา

๗) นายวีรวิทย์ ส่อสามสาม

๘) นายณัฐพงศ์ โสภ

๙) นายศักดิ์รินทร์ ปานเพ็ง

๑๐) นายณัฐพล จุ่มเงิน

๑๑) นายณนา สุภาพันธ์

๑๒) นายบรรณกร แก้วพงษ์ชา

ยี่สิบ หนึ่งร้อยยี่สิบ...

อนึ่ง หนังสือฉบับนี้จะหมดอายุพร้อมหนังสือตอบกลับในวันที่ยื่นหนังสือปฏิบัติภารกิจวิเคราะหภาพ  
ในวันที่ ๒ กันยายน ๒๕๖๔

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

๓

(นายพรยศ กลิ่นกรอง)  
รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเลื่อนเบียนผลิตภัณฑ์โรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบผลิตภัณฑ์และทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๔๙

ไปรษณีย์อิเล็กทรอนิกส์ sarabek@difw.mall.go.th



ที่ อก ๐๓๑๐(๑)/๑๒๓๖.๘ /

กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๘ แขวงทุ่งต้อม  
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๑๘ ธันวาคม ๒๕๖๓

เรื่อง ยกเลิกบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้ตรวจ บริษัท เอลเอส แอสโซซิเอตส์ จำกัด (ประเทศไทย) จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และขอรับสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๒ ธันวาคม ๒๕๖๓

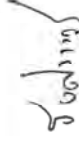
ตามคำขอที่ยื่นถึง บริษัท เอลเอส แอสโซซิเอตส์ จำกัด (ประเทศไทย) จำกัด ซึ่งปฏิบัติการ  
วิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๑๔ สลทที่ ๑๐๔ ขอเพิ่มบุคลากร ๔๐ คนเพิ่มจากการ แรกพัฒนาการ  
เขตสวนหลวง กรุงเทพมหานคร ขอยกเลิกบุคลากร ความละเอียดแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์  
จำนวน ๘ ราย ได้แก่

- |                               |                             |
|-------------------------------|-----------------------------|
| ๑) นายระพีพันธ์ วรรณสุขชัย    | ทะเบียนเลขที่ ๖-๒๐๑๔-๑-๐๐๖๐ |
| ๒) นายธีรณัฐ ขาวละออ          | ทะเบียนเลขที่ ๖-๒๐๑๔-๑-๐๐๗๒ |
| ๓) นายธีรวิวัฒน์ กิตติคำ      | ทะเบียนเลขที่ ๖-๒๐๑๔-๑-๐๑๐๘ |
| ๔) นางสาวอติชา ศิริสออง       | ทะเบียนเลขที่ ๖-๒๐๑๔-๑-๐๑๓๔ |
| ๕) นายกิตติพงศ์ แซ่ลี         | ทะเบียนเลขที่ ๖-๒๐๑๔-๑-๐๑๔๔ |
| ๖) นายจิรเมธ ประเสริฐศิริพงษ์ | ทะเบียนเลขที่ ๖-๒๐๑๔-๑-๐๑๖๐ |
| ๗) นายภัทรพงษ์ มณฑาทอง        | ทะเบียนเลขที่ ๖-๒๐๑๔-๑-๐๑๖๗ |
| ๘) นางสาวจางวรรณ กระจำกันต์   | ทะเบียนเลขที่ ๖-๒๐๑๔-๑-๐๑๘๓ |

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ



(นายธีรทัศน์ น. อูย์เอก)  
รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเลื่อนเบียนผลิตภัณฑ์โรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบผลิตภัณฑ์และทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๔๙

ไปรษณีย์อิเล็กทรอนิกส์ sarabek@difw.mall.go.th





ที่ อท ๐๓๐๔(๑)/ ๓ ๑ ๔ ๐



กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๑๐ เมษายน ๒๕๖๔

เรื่อง ยกเลิกบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอรับทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารเคมีของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๕ เมษายน ๒๕๖๔

ตามคำขอที่อ้างถึง บริษัท เอแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการ  
วิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๔๔ สถานที่ตั้งเลขที่ ๓๐๔ ซอยพัฒนาการ ๔๐ ถนนพัฒนาการ แขวงพัฒนาการ  
เขตสวนหลวง กรุงเทพมหานคร ขอเปลี่ยนแปลงบุคลากร ความละเอียดแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ไขยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์  
จำนวน ๒ ราย ได้แก่

- ๑) นายอิทธิพงศ์ ข้างแดง
- ๒) นายมงคล ผลาทิพย์

จึงเรียนมาเพื่อทราบ

ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๑๐๒  
ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๑๐๓

ขอแสดงความนับถือ

(นายธีรทัศน์ อิศรางกูร ณ อยุธยา)  
รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๐๐๓-๔

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๔๔

ไปรษณีย์อิเล็กทรอนิกส์ saraban@dw.mil.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



ที่ อท ๐๓๐๔(๑)/ ๔ ๖ ๗ ๓



กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๐๕ มิถุนายน ๒๕๖๔

เรื่อง เปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท เอแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด

อ้างถึง คำขอรับทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารเคมีของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๗ พฤษภาคม ๒๕๖๔

ตามคำขอที่อ้างถึง บริษัท เอแอลเอส แลบริทอรี่ กรุ๊ป (ประเทศไทย) จำกัด ห้องปฏิบัติการ  
วิเคราะห์เอกชน เลขทะเบียน ๖-๒๐๔๔ สถานที่ตั้งเลขที่ ๓๐๔ ซอยพัฒนาการ ๔๐ ถนนพัฒนาการ แขวงพัฒนาการ  
เขตสวนหลวง กรุงเทพมหานคร ขอเปลี่ยนแปลงบุคลากร ความละเอียดแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้เพิ่มเจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน  
จำนวน ๑๑ ราย ได้แก่

- ๑) นายอุดมกร มั่นชื่น
- ๒) นายชัยมงคล แสนมาตร
- ๓) นายเอกวิทย์ บุณสิทธิ์
- ๔) นายพิพัฒน์ อินธิกร
- ๕) นายศตวรรษ แก้วกันหา
- ๖) นายวิกรม มีศิริ
- ๗) นายภคณันท์ คำจันทร์พร
- ๘) นายศิริวิทย์ มีโพธิ์
- ๙) นายอิทธิพงษ์ ศรีคัมพะ
- ๑๐) นายอภิสิทธิ์ ศรีคัมพะ
- ๑๑) ว่าที่ร้อยตรี ภาณุพงศ์ แสนศรี

ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๑๑๔  
ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๑๑๕  
ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๑๑๖  
ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๑๑๗  
ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๑๑๘  
ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๑๑๙  
ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๑๒๐  
ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๑๒๑  
ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๑๒๒  
ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๑๒๓  
ทะเบียนเลขที่ ๖-๒๐๔๔-๑-๐๑๒๔

อนึ่ง หนังสือฉบับนี้จะสิ้นสุดอายุพร้อมหนังสือขออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน  
ในวันที่ ๒ กันยายน ๒๕๖๔

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายธีระ จันทสิทธิ์)  
อธิบดีกรมโรงงานอุตสาหกรรม  
ผู้ช่วยอธิบดีกรมโรงงานอุตสาหกรรม  
ผู้ตรวจราชการกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๐๐๓-๔

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๔๔

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บริษัท เอแอลเอส แลборาทอรี กรุ๊ป (ประเทศไทย) จำกัด

104 ซอยพัฒนาการ 40 ถนนพัฒนาการ

แขวงพัฒนาการ เขตสวนหลวง กรุงเทพมหานคร 10250

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ติดต่อเรา

