

ภาคผนวก ง

ใบรับรองผลการตรวจวิเคราะห์คุณภาพสิ่งแวดล้อม

ภาคผนวก ง.1

ใบรับรองผลการตรวจวิเคราะห์
คุณภาพอากาศจากปล่องระบายอากาศ



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : 224007_Cert-Stack/PM_Apr 24
Branch 2, Power Plant SAMPLING DATE : 18/04/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 22-23/04/2024
RECEIVED DATE : 19/04/2024 SAMPLE CONDITION : Normal
REPORT DATE : 28/04/2024 FUEL TYPE : Natural Gas
SOURCE DESCRIPTION : Combustion STACK LOCATION : H-3701
OPERATOR : Mr. Kittipong Thakoengsuk
STACK DESCRIPTION
Height : 30.0 m Gas Velocity : 13.0 m/s
Diameter : 4.20 m Flow Rate* : 6,219 Ncu.m/min
Temperature : 187.0 °C Excess Oxygen : 15.4 %

PARAMETER	UNITS	RESULTS*			STANDARDS ^{1/}	REFERENCE
		15.4%O ₂	7%O ₂	7%O ₂		METHODS
Particulate Matter	mg/Ncu.m.	1.78	4.47	60		US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO. 2-239-0-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 2-239-R-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment, B.E.2549.

The Monitoring Result of Emission Concentration

H-3701

PTT Global Chemical Public Co., Ltd.

(Branch 2 : Power Plant I-1)

April 18, 2024


Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	15.04	15.18	23.31	23.28	56.57
2	15.24	15.38	25.81	25.78	64.92
3	15.38	15.53	26.32	26.29	68.05
Average	15.22	15.36	25.15	25.12	63.06

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	15.04	15.18	0.39	0.33	0.80
2	15.24	15.38	0.41	0.35	0.88
3	15.38	15.53	0.39	0.32	0.83
Average	15.22	15.36	0.40	0.33	0.84

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 18, 2024 Run #: 1
 Start time: 10:40 AM Location: H-3701
 O₂ instrument Model: AMI 70 Finish time: 11:00 AM
 NO_x instrument Model: TELEDYNE 200 EM Serial No.: 071023-47
 SO₂ instrument Model: API 100 AH Serial No.: 433
 Fuel Type: Natural Gas Serial No.: 365
 Test Operator: Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
10:40 AM	14.99	22.58	0.38
10:41 AM	14.96	22.50	0.36
10:42 AM	14.97	22.89	0.34
10:43 AM	14.98	22.89	0.33
10:44 AM	14.99	22.80	0.38
10:45 AM	14.93	22.56	0.37
10:46 AM	15.00	22.52	0.35
10:47 AM	14.96	22.45	0.40
10:48 AM	14.94	22.32	0.39
10:49 AM	14.99	22.63	0.39
10:50 AM	14.99	22.74	0.40
10:51 AM	15.00	22.90	0.40
10:52 AM	15.04	23.26	0.42
10:53 AM	15.06	23.43	0.42
10:54 AM	15.07	23.98	0.42
10:55 AM	15.16	24.22	0.44
10:56 AM	15.21	24.15	0.43
10:57 AM	15.16	24.45	0.40
10:58 AM	15.19	24.71	0.37
10:59 AM	15.12	24.67	0.42
11:00 AM	15.20	24.92	0.40
Average	15.04	23.31	0.39

Signature 

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 18, 2024 Run #: 2
 Start time: 11:01 AM Location: H-3701
 O₂ instrument Model: AMI 70 Finish time: 11:21 AM
 NO_x instrument Model: TELEDYNE 200 EM Serial No.: 071023-47
 SO₂ instrument Model: API 100 AH Serial No.: 433
 Fuel Type: Natural Gas Serial No.: 365
 Test Operator: Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
11:01 AM	15.16	25.13	0.44
11:02 AM	15.18	25.45	0.38
11:03 AM	15.13	25.71	0.36
11:04 AM	15.19	25.93	0.36
11:05 AM	15.20	26.14	0.42
11:06 AM	15.28	26.12	0.44
11:07 AM	15.20	25.96	0.44
11:08 AM	15.24	26.08	0.39
11:09 AM	15.19	26.09	0.43
11:10 AM	15.29	26.29	0.42
11:11 AM	15.23	26.46	0.40
11:12 AM	15.24	26.61	0.45
11:13 AM	15.23	26.52	0.38
11:14 AM	15.26	26.54	0.40
11:15 AM	15.28	26.75	0.41
11:16 AM	15.26	22.13	0.42
11:17 AM	15.22	21.74	0.41
11:18 AM	15.32	26.39	0.36
11:19 AM	15.27	26.43	0.38
11:20 AM	15.34	26.89	0.45
11:21 AM	15.30	26.68	0.43
Average	15.24	25.81	0.41

Signature 

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 18, 2024
 Start time: 11:22 AM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: TELEDYNE 200 EM
 SO₂ instrument Model: API 100 AH
 Fuel Type : Natural Gas

Run # : 3
 Location : H-3701
 Finish time : 11:42 AM
 Serial No.: 071023-47
 Serial No.: 433
 Serial No.: 365
 Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
11:22 AM	15.31	26.50	0.43
11:23 AM	15.30	26.56	0.39
11:24 AM	15.29	26.86	0.39
11:25 AM	15.37	26.84	0.39
11:26 AM	15.39	26.71	0.42
11:27 AM	15.35	26.76	0.40
11:28 AM	15.40	26.74	0.37
11:29 AM	15.33	26.60	0.37
11:30 AM	15.37	19.95	0.43
11:31 AM	15.37	21.66	0.45
11:32 AM	15.44	26.29	0.46
11:33 AM	15.38	26.61	0.38
11:34 AM	15.37	26.78	0.34
11:35 AM	15.38	27.21	0.35
11:36 AM	15.46	27.12	0.40
11:37 AM	15.47	26.83	0.40
11:38 AM	15.34	26.86	0.42
11:39 AM	15.41	27.42	0.37
11:40 AM	15.42	27.41	0.36
11:41 AM	15.40	27.56	0.40
11:42 AM	15.44	27.41	0.36
Average	15.38	26.32	0.39

Signature 
 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : 224007_Cert-Stack/PM_Jun 24
 Branch 2, Power Plant SAMPLING DATE : 17/06/2024
 SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 18-19/06/2024
 RECEIVED DATE : 18/06/2024 SAMPLE CONDITION : Normal
 REPORT DATE : 22/06/2024 FUEL TYPE : Natural Gas
 SOURCE DESCRIPTION : Combustion STACK LOCATION : H-3703
 OPERATOR : Mr. Song Hengchwankul
 STACK DESCRIPTION


Height	: 30.0	m	Gas Velocity	: 18.3	m/s
Diameter	: 4.20	m	Flow Rate*	: 9,316	Ncu.m/min
Temperature	: 157.6	°C	Excess Oxygen	: 15.0	%

PARAMETER	UNITS	RESULTS*			STANDARDS ^U	REFERENCE
		15.0%O ₂	7%O ₂	7%O ₂		METHODS
Particulate Matter	mg/Ncu.m.	1.58	3.76	60		US. EPA Method 5

Phatchara Samanchan
 (Miss Phatchara Samanchan)

Analyst

REG.NO. J-239-V-0021


 (Miss Narisa Poowasanpetich)

Technical Management Team

REG.NO. J-239-P-0010

Remark : 1. Reported analysis refers to submitted sample only.

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3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^U Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment, B.E.2549.

**The Monitoring Result of Emission Concentration
H-3703**

PTT Global Chemical Public Co., Ltd.

(Branch 2 : Power Plant I-1)

June 17, 2024

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	15.15	15.01	32.55	32.54	76.79
2	15.17	15.04	32.27	32.26	76.52
3	15.18	15.06	32.13	32.12	76.45
Average	15.16	15.04	32.31	32.31	76.59

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	15.15	15.01	0.08	0.05	0.12
2	15.17	15.04	0.09	0.06	0.14
3	15.18	15.06	0.09	0.05	0.12
Average	15.16	15.04	0.09	0.05	0.13

**PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT**

Date: June 17, 2024

Start time: 11:30 AM

O₂ instrument Model: AMI 70

NO_x instrument Model: Teledyne 200 EM

SO₂ instrument Model: API 100 AH

Fuel Type : Natural Gas

Run # : 1

Location : H-3703

Finish time : 11:50 AM

Serial No.: 071023-47

Serial No.: 433

Serial No.: 118

Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
11:30 AM	15.15	32.58	0.07
11:31 AM	15.16	32.71	0.07
11:32 AM	15.15	32.60	0.07
11:33 AM	15.14	32.54	0.07
11:34 AM	15.15	32.68	0.07
11:35 AM	15.14	32.65	0.07
11:36 AM	15.14	32.58	0.07
11:37 AM	15.13	32.63	0.07
11:38 AM	15.15	32.69	0.07
11:39 AM	15.14	32.59	0.08
11:40 AM	15.14	32.56	0.08
11:41 AM	15.14	32.46	0.08
11:42 AM	15.16	32.31	0.08
11:43 AM	15.14	32.38	0.08
11:44 AM	15.14	32.58	0.08
11:45 AM	15.16	32.60	0.08
11:46 AM	15.16	32.51	0.08
11:47 AM	15.17	32.50	0.09
11:48 AM	15.16	32.50	0.09
11:49 AM	15.16	32.51	0.09
11:50 AM	15.16	32.33	0.09
Average	15.15	32.55	0.08

Signature



(Miss Katesarin Vorrader Wittaya)

Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Run # : 2
 Date: June 17, 2024
 Location: H-3703
 Start time: 11:51 AM
 Finish time: 12:11 PM
 O₂ instrument Model: AMI 70
 Serial No.: 071023-47
 NO_x instrument Model: Teledyne 200 EM
 Serial No.: 433
 SO₂ instrument Model: API 100 AH
 Serial No.: 118
 Fuel Type: Natural Gas
 Test Operator: Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
11:51 AM	15.17	32.35	0.09
11:52 AM	15.17	32.48	0.09
11:53 AM	15.17	32.44	0.09
11:54 AM	15.18	32.35	0.09
11:55 AM	15.18	32.18	0.09
11:56 AM	15.17	32.19	0.09
11:57 AM	15.16	32.36	0.09
11:58 AM	15.16	32.44	0.09
11:59 AM	15.16	32.42	0.09
12:00 PM	15.16	32.33	0.09
12:01 PM	15.17	32.24	0.09
12:02 PM	15.18	32.25	0.09
12:03 PM	15.17	32.34	0.09
12:04 PM	15.17	32.24	0.10
12:05 PM	15.16	32.12	0.10
12:06 PM	15.16	32.08	0.10
12:07 PM	15.18	31.95	0.10
12:08 PM	15.16	32.00	0.10
12:09 PM	15.16	32.28	0.10
12:10 PM	15.16	32.34	0.10
12:11 PM	15.17	32.25	0.10
Average	15.17	32.27	0.09

Signature 
 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Run # : 3
 Date: June 17, 2024
 Location: H-3703
 Start time: 12:12 PM
 Finish time: 12:32 PM
 O₂ instrument Model: AMI 70
 Serial No.: 071023-47
 NO_x instrument Model: Teledyne 200 EM
 Serial No.: 433
 SO₂ instrument Model: API 100 AH
 Serial No.: 118
 Fuel Type: Natural Gas
 Test Operator: Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
12:12 PM	15.16	32.23	0.10
12:13 PM	15.18	32.10	0.08
12:14 PM	15.16	32.18	0.08
12:15 PM	15.17	32.27	0.08
12:16 PM	15.18	32.16	0.08
12:17 PM	15.16	32.16	0.08
12:18 PM	15.16	32.14	0.08
12:19 PM	15.18	32.06	0.08
12:20 PM	15.18	32.08	0.08
12:21 PM	15.16	32.25	0.08
12:22 PM	15.17	32.23	0.08
12:23 PM	15.16	32.09	0.08
12:24 PM	15.16	32.02	0.08
12:25 PM	15.16	32.10	0.08
12:26 PM	15.18	32.07	0.10
12:27 PM	15.18	32.13	0.10
12:28 PM	15.21	32.13	0.10
12:29 PM	15.19	32.08	0.10
12:30 PM	15.21	32.09	0.10
12:31 PM	15.20	32.02	0.10
12:32 PM	15.19	32.04	0.10
Average	15.18	32.13	0.09

Signature 
 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : 224007_Cen-Stack/PM_Apr 24

Branch 2, Power Plant SAMPLING DATE : 19/04/2024

SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 22-23/04/2024

RECEIVED DATE : 20/04/2024 SAMPLE CONDITION : Normal

REPORT DATE : 28/04/2024 FUEL TYPE : Natural Gas

SOURCE DESCRIPTION : Combustion STACK LOCATION : H-3704

OPERATOR : Mr. Kittipong Thakoengsuk

STACK DESCRIPTION

Height : 30.0 m Gas Velocity : 15.2 m/s
Diameter : 3.60 m Flow Rate* : 6,529 Nm³/min
Temperature : 104.6 °C Excess Oxygen : 14.9 %

PARAMETER	UNITS	RESULTS*			REFERENCE
		14.9%O ₂	7%O ₂	7%O ₂	
Particulate Matter	mg/Ncu.m	1.68	3.88	60	US, EPA Method 5

Phatchara Samanchan
(Miss Phatchara Samanchan)

Analyst

REG.NO.7-239-0-0021

Mairisa Poowanapetch
(Miss Narisa Poowanapetch)

Technical Management Team

REG.NO.7-239-0-0010

Remark : 1. Reported analysis refers to submitted sample only.

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3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^U Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment, B.E.2549.

The Monitoring Result of Emission Concentration H-3704

PTT Global Chemical Public Co., Ltd.

(Branch 2 : Power Plant I-1)

April 19, 2024

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O ₂	Corrected Gas Conc @7% O ₂
1	14.79	14.84	3.12	3.09	7.09
2	14.83	14.89	3.13	3.10	7.17
3	14.86	14.93	3.12	3.09	7.19
Average	14.83	14.89	3.12	3.09	7.15

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O ₂	Corrected Gas Conc @7% O ₂
1	14.79	14.84	0.17	0.13	0.30
2	14.83	14.89	0.15	0.10	0.23
3	14.86	14.93	0.19	0.14	0.33
Average	14.83	14.89	0.17	0.12	0.29

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Run # : 1
 Date: April 19, 2024
 Start time: 10:30 AM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: API 200 AH
 SO₂ instrument Model: API 100 AH
 Fuel Type: Natural Gas
 Location: H-3704
 Finish time: 10:50 AM
 Serial No.: 111117-2
 Serial No.: 441
 Serial No.: 060
 Test Operator: Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
10:30 AM	14.74	3.04	0.12
10:31 AM	14.78	3.05	0.18
10:32 AM	14.78	3.05	0.22
10:33 AM	14.78	3.05	0.15
10:34 AM	14.78	3.08	0.15
10:35 AM	14.78	3.08	0.19
10:36 AM	14.78	3.06	0.19
10:37 AM	14.79	3.11	0.16
10:38 AM	14.78	3.11	0.17
10:39 AM	14.79	3.17	0.20
10:40 AM	14.80	3.11	0.19
10:41 AM	14.81	3.11	0.17
10:42 AM	14.80	3.11	0.15
10:43 AM	14.81	3.16	0.21
10:44 AM	14.81	3.20	0.23
10:45 AM	14.81	3.17	0.17
10:46 AM	14.81	3.17	0.14
10:47 AM	14.81	3.20	0.13
10:48 AM	14.81	3.18	0.11
10:49 AM	14.81	3.13	0.15
10:50 AM	14.81	3.13	0.13
Average	14.79	3.12	0.17

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Run # : 2
 Date: April 19, 2024
 Start time: 10:51 AM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: API 200 AH
 SO₂ instrument Model: API 100 AH
 Fuel Type: Natural Gas
 Location: H-3704
 Finish time: 11:11 AM
 Serial No.: 111117-2
 Serial No.: 441
 Serial No.: 060
 Test Operator: Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
10:51 AM	14.81	3.17	0.13
10:52 AM	14.81	3.16	0.12
10:53 AM	14.81	3.11	0.15
10:54 AM	14.81	3.11	0.19
10:55 AM	14.81	3.11	0.16
10:56 AM	14.83	3.12	0.21
10:57 AM	14.82	3.12	0.19
10:58 AM	14.82	3.10	0.17
10:59 AM	14.83	3.09	0.19
11:00 AM	14.82	3.15	0.22
11:01 AM	14.83	3.14	0.13
11:02 AM	14.81	3.14	0.13
11:03 AM	14.83	3.14	0.17
11:04 AM	14.84	3.15	0.15
11:05 AM	14.83	3.12	0.16
11:06 AM	14.83	3.10	0.14
11:07 AM	14.84	3.10	0.09
11:08 AM	14.85	3.16	0.10
11:09 AM	14.84	3.16	0.14
11:10 AM	14.84	3.14	0.13
11:11 AM	14.84	3.08	0.12
Average	14.83	3.13	0.15

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 19, 2024 Run #: 3
 Start time: 11:12 AM Location: H-3704
 O₂ instrument Model: AMI 70 Finish time: 11:32 AM
 NO_x instrument Model: API 200 AH Serial No.: 111117-2
 SO₂ instrument Model: API 100 AH Serial No.: 441
 Fuel Type: Natural Gas Serial No.: 060
 Test Operator: Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
11:12 AM	14.85	3.17	0.13
11:13 AM	14.83	3.15	0.10
11:14 AM	14.85	3.16	0.13
11:15 AM	14.84	3.14	0.20
11:16 AM	14.83	3.14	0.24
11:17 AM	14.85	3.12	0.19
11:18 AM	14.86	3.09	0.22
11:19 AM	14.86	3.10	0.21
11:20 AM	14.87	3.10	0.20
11:21 AM	14.87	3.10	0.22
11:22 AM	14.86	3.10	0.19
11:23 AM	14.86	3.10	0.19
11:24 AM	14.87	3.10	0.18
11:25 AM	14.86	3.11	0.14
11:26 AM	14.86	3.10	0.23
11:27 AM	14.85	3.05	0.19
11:28 AM	14.88	3.16	0.19
11:29 AM	14.87	3.15	0.25
11:30 AM	14.88	3.18	0.19
11:31 AM	14.88	3.13	0.21
11:32 AM	14.88	3.12	0.19
Average	14.86	3.12	0.19

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



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SECOT CO., LTD.

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : 224007_Cert-Stack/PM_Apr 24
 Branch 2, Power Plant SAMPLING DATE : 18/04/2024
 SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 22-23/04/2024
 RECEIVED DATE : 19/04/2024 SAMPLE CONDITION : Normal
 REPORT DATE : 28/04/2024 FUEL TYPE : Natural Gas
 SOURCE DESCRIPTION : Combustion STACK LOCATION : H-3705
 OPERATOR : Mr. Kittipong Thakoengsuk
 STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 15.3	m/s
Diameter	: 3.60	m	Flow Rate*	: 6,649	Ncu.m/min
Temperature	: 102.8	°C	Excess Oxygen	: 14.6	%

PARAMETER	UNITS	RESULTS*		STANDARDS ^{1/}	REFERENCE
		14.6%O ₂	7%O ₂	7%O ₂	METHODS
Particulate Matter	mg/Ncu.m.	1.62	3.59	60	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO. 7-239-0-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 7-239-0-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment, B.E.2549.

**The Monitoring Result of Emission Concentration
H-3705**

PTT Global Chemical Public Co., Ltd.

(Branch 2 : Power Plant I-1)

April 18, 2024

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	14.52	14.63	3.83	3.75	8.31
2	14.53	14.64	3.77	3.70	8.22
3	14.53	14.64	3.83	3.76	8.35
Average	14.52	14.64	3.81	3.74	8.29

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	14.52	14.63	0.11	0.13	0.29
2	14.53	14.64	0.10	0.12	0.27
3	14.53	14.64	0.10	0.12	0.27
Average	14.52	14.64	0.10	0.12	0.27

**PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT**

Date: April 18, 2024
 Start time: 1:30 PM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: API 200 AH
 SO₂ instrument Model: API 100 AH
 Fuel Type : Natural Gas

Run # : 1
 Location : H-3705
 Finish time : 1:50 PM
 Serial No.: 111117-2
 Serial No.: 441
 Serial No.: 060
 Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
1:30 PM	14.42	3.31	0.12
1:31 PM	14.41	3.73	0.12
1:32 PM	14.43	3.97	0.12
1:33 PM	14.47	3.89	0.12
1:34 PM	14.52	3.78	0.12
1:35 PM	14.51	3.72	0.12
1:36 PM	14.54	3.68	0.12
1:37 PM	14.54	3.76	0.12
1:38 PM	14.53	3.98	0.12
1:39 PM	14.55	3.79	0.11
1:40 PM	14.53	3.94	0.11
1:41 PM	14.53	3.90	0.11
1:42 PM	14.55	3.78	0.11
1:43 PM	14.52	3.91	0.11
1:44 PM	14.54	3.98	0.11
1:45 PM	14.53	3.96	0.11
1:46 PM	14.55	3.81	0.11
1:47 PM	14.56	3.81	0.11
1:48 PM	14.56	3.82	0.11
1:49 PM	14.54	3.85	0.11
1:50 PM	14.54	3.98	0.11
Average	14.52	3.83	0.11

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 18, 2024 Run # : 2
 Start time: 1:51 PM Location : H-3705
 O₂ instrument Model: AMI 70 Finish time : 2:11 PM
 NO_x instrument Model: API 200 AH Serial No.: 111117-2
 SO₂ instrument Model: API 100 AH Serial No.: 441
 Fuel Type : Natural Gas Serial No.: 060
 Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
1:51 PM	14.54	3.81	0.11
1:52 PM	14.50	4.00	0.11
1:53 PM	14.49	3.89	0.10
1:54 PM	14.52	3.79	0.10
1:55 PM	14.52	3.91	0.10
1:56 PM	14.56	3.79	0.10
1:57 PM	14.49	3.78	0.10
1:58 PM	14.54	3.85	0.10
1:59 PM	14.54	3.74	0.10
2:00 PM	14.51	3.91	0.10
2:01 PM	14.56	3.49	0.10
2:02 PM	14.54	3.74	0.10
2:03 PM	14.55	3.83	0.10
2:04 PM	14.55	3.72	0.10
2:05 PM	14.52	3.80	0.10
2:06 PM	14.55	3.65	0.10
2:07 PM	14.53	3.67	0.10
2:08 PM	14.49	3.70	0.10
2:09 PM	14.53	3.75	0.10
2:10 PM	14.55	3.58	0.10
2:11 PM	14.52	3.87	0.10
Average	14.53	3.77	0.10

Signature 
 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 18, 2024 Run # : 3
 Start time: 2:12 PM Location : H-3705
 O₂ instrument Model: AMI 70 Finish time : 2:32 PM
 NO_x instrument Model: API 200 AH Serial No.: 111117-2
 SO₂ instrument Model: API 100 AH Serial No.: 441
 Fuel Type : Natural Gas Serial No.: 060
 Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
2:12 PM	14.56	3.56	0.10
2:13 PM	14.53	3.80	0.10
2:14 PM	14.54	3.65	0.10
2:15 PM	14.52	3.80	0.10
2:16 PM	14.53	3.89	0.10
2:17 PM	14.54	3.78	0.09
2:18 PM	14.53	3.94	0.09
2:19 PM	14.53	3.81	0.10
2:20 PM	14.54	3.70	0.10
2:21 PM	14.49	3.99	0.10
2:22 PM	14.54	3.82	0.10
2:23 PM	14.54	3.78	0.10
2:24 PM	14.54	3.77	0.10
2:25 PM	14.48	3.87	0.10
2:26 PM	14.50	3.88	0.10
2:27 PM	14.55	3.61	0.10
2:28 PM	14.53	3.84	0.10
2:29 PM	14.52	3.89	0.10
2:30 PM	14.51	4.06	0.10
2:31 PM	14.54	3.97	0.10
2:32 PM	14.53	3.93	0.10
Average	14.53	3.83	0.10

Signature 
 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : 224007_Cert-Stack/PM_Apr 24
Branch 2, Power Plant SAMPLING DATE : 19/04/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 22-23/04/2024
RECEIVED DATE : 20/04/2024 SAMPLE CONDITION : Normal
REPORT DATE : 28/04/2024 FUEL TYPE : Natural Gas
SOURCE DESCRIPTION : Combustion STACK LOCATION : H-3706
OPERATOR : Mr. Kittipong Thakoengsuk
STACK DESCRIPTION

Height : 35.0 m Gas Velocity : 5.4 m/s
Diameter : 1.80 m Flow Rate* : 522 Ncu.m/min
Temperature : 144.3 °C Excess Oxygen : 3.5 %

PARAMETER	UNITS	RESULTS*		STANDARDS ¹¹	REFERENCE
		3.5%O ₂	7%O ₂	7%O ₂	METHODS
Particulate Matter	mg/Ncu.m.	1.29	1.03	60	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO. 7-239-9-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 7-239-R-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ¹¹ Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment, B.E.2549.

The Monitoring Result of Emission Concentration

H-3706

PTT Global Chemical Public Co., Ltd.

(Branch 2 : Power Plant I-1)

April 19, 2024

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	3.45	3.44	29.67	29.66	23.61
2	3.50	3.48	29.98	29.97	23.91
3	3.51	3.49	30.38	30.37	24.25
Average	3.49	3.47	30.01	30.00	23.92

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	3.45	3.44	0.48	0.43	0.34
2	3.50	3.48	0.54	0.49	0.39
3	3.51	3.49	0.62	0.57	0.46
Average	3.49	3.47	0.55	0.50	0.40

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 19, 2024 Run # : 1
 Start time: 1:20 PM Location : H-3706
 O₂ instrument Model: AMI 70 Finish time : 1:40 PM
 NO_x instrument Model: API 200 AH Serial No.: 111117-2
 SO₂ instrument Model: API 100 AH Serial No.: 441
 Fuel Type : Natural Gas Serial No.: 060
 Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
1:20 PM	3.52	29.83	0.45
1:21 PM	3.49	29.79	0.43
1:22 PM	3.47	29.53	0.46
1:23 PM	3.43	29.42	0.48
1:24 PM	3.50	29.40	0.47
1:25 PM	3.51	29.68	0.43
1:26 PM	3.51	29.86	0.45
1:27 PM	3.48	29.90	0.48
1:28 PM	3.49	29.97	0.47
1:29 PM	3.42	30.07	0.52
1:30 PM	3.39	29.82	0.45
1:31 PM	3.38	29.52	0.51
1:32 PM	3.43	29.72	0.60
1:33 PM	3.46	28.97	0.54
1:34 PM	3.40	29.06	0.48
1:35 PM	3.41	29.38	0.50
1:36 PM	3.43	29.66	0.49
1:37 PM	3.43	29.93	0.45
1:38 PM	3.41	29.81	0.51
1:39 PM	3.45	29.83	0.49
1:40 PM	3.43	30.01	0.50
Average	3.45	29.67	0.48

Signature 
 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 19, 2024 Run # : 2
 Start time: 1:41 PM Location : H-3706
 O₂ instrument Model: AMI 70 Finish time : 2:01 PM
 NO_x instrument Model: API 200 AH Serial No.: 111117-2
 SO₂ instrument Model: API 200 AH Serial No.: 441
 Fuel Type : Natural Gas Serial No.: 060
 Test Operator : Aekkawat S.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
1:41 PM	3.41	30.00	0.50
1:42 PM	3.52	29.87	0.53
1:43 PM	3.47	29.86	0.56
1:44 PM	3.47	29.72	0.54
1:45 PM	3.59	29.90	0.56
1:46 PM	3.61	30.45	0.53
1:47 PM	3.53	30.43	0.53
1:48 PM	3.56	30.21	0.55
1:49 PM	3.55	30.23	0.52
1:50 PM	3.51	30.13	0.51
1:51 PM	3.49	29.68	0.50
1:52 PM	3.49	30.04	0.44
1:53 PM	3.51	29.99	0.56
1:54 PM	3.52	30.06	0.58
1:55 PM	3.50	29.99	0.57
1:56 PM	3.49	29.84	0.58
1:57 PM	3.47	29.52	0.58
1:58 PM	3.45	29.86	0.60
1:59 PM	3.47	29.99	0.58
2:00 PM	3.51	29.80	0.58
2:01 PM	3.48	29.97	0.53
Average	3.50	29.98	0.54

Signature 
 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)

EMISSION TEST RESULT

Date: April 19, 2024
Start time: 2:02 PM
O₂ instrument Model: AMI 70
NO_x instrument Model: API 200 AH
SO₂ instrument Model: API 100 AH
Fuel Type : Natural Gas

Run # : 3
Location : H-3706
Finish time : 2:22 PM
Serial No.: 111117-2
Serial No.: 441
Serial No.: 060
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
2:02 PM	3.49	30.24	0.63
2:03 PM	3.50	30.49	0.63
2:04 PM	3.51	30.46	0.60
2:05 PM	3.50	30.55	0.67
2:06 PM	3.51	30.46	0.62
2:07 PM	3.53	30.48	0.57
2:08 PM	3.57	30.59	0.63
2:09 PM	3.60	30.51	0.57
2:10 PM	3.59	30.64	0.58
2:11 PM	3.48	30.62	0.58
2:12 PM	3.48	30.30	0.62
2:13 PM	3.52	30.31	0.58
2:14 PM	3.52	30.16	0.59
2:15 PM	3.56	30.39	0.65
2:16 PM	3.62	30.66	0.68
2:17 PM	3.56	30.57	0.71
2:18 PM	3.52	30.46	0.63
2:19 PM	3.48	30.23	0.61
2:20 PM	3.44	30.10	0.56
2:21 PM	3.39	29.94	0.65
2:22 PM	3.36	29.73	0.57
Average	3.51	30.38	0.62

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. **REF. NO. :** 224007_Cert-Stack/PM_Apr 24
Branch 2, Power Plant **SAMPLING DATE :** 19/04/2024
SAMPLING BY : SECOT Co., Ltd. **ANALYTICAL DATE :** 22-23/04/2024
RECEIVED DATE : 20/04/2024 **SAMPLE CONDITION :** Normal
REPORT DATE : 28/04/2024 **FUEL TYPE :** Natural Gas
SOURCE DESCRIPTION : Combustion **STACK LOCATION :** H-3707
OPERATOR : Mr. Kittipong Thakoengsuk
STACK DESCRIPTION

Height : 35.0 m **Gas Velocity :** 5.4 m/s
Diameter : 1.80 m **Flow Rate* :** 512 Ncu.m/min
Temperature : 150.3 °C **Excess Oxygen :** 5.9 %

PARAMETER	UNITS	RESULTS*		STANDARDS ^{1/}	REFERENCE
		5.9%O ₂	7%O ₂	7%O ₂	METHODS
Particulate Matter	mg/Ncu.m.	1.80	1.67	60	US, EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.7-239-ท-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.7-239-ท-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment, B.E.2549.

**The Monitoring Result of Emission Concentration
H-3707**

PTT Global Chemical Public Co., Ltd.

(Branch 2 : Power Plant I-1)

April 19, 2024

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	5.89	5.91	27.13	27.11	25.14
2	5.90	5.92	27.01	26.99	25.04
3	5.92	5.94	26.98	26.97	25.06
Average	5.90	5.92	27.04	27.02	25.08

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	5.89	5.91	0.33	0.37	0.34
2	5.90	5.92	0.21	0.24	0.22
3	5.92	5.94	0.09	0.11	0.10
Average	5.90	5.92	0.21	0.24	0.22

**PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT**

Date: April 19, 2024
 Start time: 1:20 PM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: TELEDYNE 200 EM
 SO₂ instrument Model: API 100 AH
 Fuel Type : Natural Gas

Run # : 1
 Location : H-3707
 Finish time : 1:40 PM
 Serial No.: 071023-47
 Serial No.: 433
 Serial No.: 118
 Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
1:20 PM	5.93	27.15	0.31
1:21 PM	5.89	27.15	0.32
1:22 PM	5.89	27.06	0.33
1:23 PM	5.86	26.96	0.42
1:24 PM	5.89	26.90	0.36
1:25 PM	5.90	27.10	0.31
1:26 PM	5.94	27.23	0.31
1:27 PM	5.89	27.32	0.31
1:28 PM	5.90	27.34	0.36
1:29 PM	5.85	27.21	0.35
1:30 PM	5.83	27.03	0.35
1:31 PM	5.84	26.85	0.30
1:32 PM	5.92	26.92	0.26
1:33 PM	5.88	27.13	0.29
1:34 PM	5.86	27.21	0.34
1:35 PM	5.88	27.14	0.33
1:36 PM	5.88	27.18	0.31
1:37 PM	5.91	27.30	0.35
1:38 PM	5.89	27.25	0.28
1:39 PM	5.89	27.21	0.34
1:40 PM	5.89	27.15	0.30
Average	5.89	27.13	0.33

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 19, 2024
Start time: 1:41 PM
O₂ instrument Model: AMI 70
NO_x instrument Model: TELEDYNE 200 EM
SO₂ instrument Model: API 100 AH
Fuel Type : Natural Gas

Run # : 2
Location : H-3707
Finish time : 2:01 PM
Serial No.: 071023-47
Serial No.: 433
Serial No.: 118
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
1:41 PM	5.90	27.24	0.29
1:42 PM	5.90	27.15	0.19
1:43 PM	5.88	27.07	0.30
1:44 PM	5.86	27.01	0.24
1:45 PM	5.91	27.09	0.14
1:46 PM	5.94	27.28	0.19
1:47 PM	5.91	27.32	0.21
1:48 PM	5.91	27.25	0.21
1:49 PM	5.89	27.10	0.18
1:50 PM	5.91	27.11	0.17
1:51 PM	5.91	27.06	0.20
1:52 PM	5.95	27.07	0.27
1:53 PM	5.91	27.07	0.22
1:54 PM	5.91	26.95	0.19
1:55 PM	5.87	26.83	0.26
1:56 PM	5.85	26.64	0.16
1:57 PM	5.85	26.57	0.20
1:58 PM	5.86	26.65	0.24
1:59 PM	5.93	26.82	0.18
2:00 PM	5.92	26.91	0.14
2:01 PM	5.93	27.00	0.20
Average	5.90	27.01	0.21

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 19, 2024
Start time: 2:02 PM
O₂ instrument Model: AMI 70
NO_x instrument Model: TELEDYNE 200 EM
SO₂ instrument Model: API 100 AH
Fuel Type : Natural Gas

Run # : 3
Location : H-3707
Finish time : 2:22 PM
Serial No.: 071023-47
Serial No.: 433
Serial No.: 118
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
2:02 PM	5.93	26.98	0.17
2:03 PM	5.92	26.97	0.16
2:04 PM	5.93	26.99	0.12
2:05 PM	5.94	27.02	0.16
2:06 PM	5.93	27.00	0.20
2:07 PM	5.92	26.99	0.15
2:08 PM	5.93	27.03	0.09
2:09 PM	5.93	27.02	0.12
2:10 PM	5.95	27.03	0.11
2:11 PM	5.91	27.00	0.06
2:12 PM	5.94	27.02	0.07
2:13 PM	5.95	27.03	0.05
2:14 PM	5.94	27.10	0.05
2:15 PM	5.94	27.13	0.04
2:16 PM	5.95	27.16	0.01
2:17 PM	5.93	27.13	0.06
2:18 PM	5.92	26.98	0.04
2:19 PM	5.91	26.96	0.08
2:20 PM	5.88	26.86	0.03
2:21 PM	5.85	26.68	0.01
2:22 PM	5.84	26.44	0.05
Average	5.92	26.98	0.09

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : 224007_Cert-Stack/PM_Apr 24
Branch 2, Power Plant SAMPLING DATE : 20/04/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 22-23/04/2024
RECEIVED DATE : 22/04/2024 SAMPLE CONDITION : Normal
REPORT DATE : 28/04/2024 FUEL TYPE : Natural Gas
SOURCE DESCRIPTION : Combustion STACK LOCATION : H-3708
OPERATOR : Mr. Kitipong Thakoengsuk
STACK DESCRIPTION
Height : 35.0 m Gas Velocity : 21.0 m/s
Diameter : 3.26 m Flow Rate* : 6,606 Ncu.m/min
Temperature : 146.7 °C Excess Oxygen : 14.4 %

PARAMETER	UNITS	RESULTS*		STANDARDS ^U	REFERENCE
		14.4%O ₂	7%O ₂	7%O ₂	METHODS
Particulate Matter	mg/Ncu.m.	1.68	3.60	60	US, EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO. 2-239-9-0021

Mairisa Poowasanpet

(Miss Narisa Poowasanpet)

Technical Management Team

REG.NO. 2-239-9-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^U Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment, B.E.2549.

The Monitoring Result of Emission Concentration H-3708

PTT Global Chemical Public Co., Ltd.

(Branch 2 : Power Plant I-1)

April 20, 2024

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	14.41	14.48	2.80	2.74	5.93
2	14.37	14.44	2.88	2.82	6.07
3	14.27	14.34	2.81	2.74	5.81
Average	14.35	14.42	2.83	2.77	5.93

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	14.41	14.48	0.47	0.43	0.93
2	14.37	14.44	0.47	0.43	0.93
3	14.27	14.34	0.46	0.42	0.89
Average	14.35	14.42	0.46	0.43	0.92

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 20, 2024
 Start time: 11:00 AM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: TELEDYNE 200 EM
 SO₂ instrument Model: API 100 AH
 Fuel Type: Natural Gas

Run #: 1
 Location: H-3708
 Finish time: 11:20 AM
 Serial No.: 071023-47
 Serial No.: 433
 Serial No.: 118
 Test Operator: Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
11:00 AM	14.26	2.67	0.46
11:01 AM	14.42	2.71	0.46
11:02 AM	14.28	2.72	0.46
11:03 AM	14.23	2.79	0.46
11:04 AM	14.24	2.83	0.46
11:05 AM	14.28	2.84	0.47
11:06 AM	14.20	2.98	0.47
11:07 AM	14.33	3.01	0.46
11:08 AM	14.43	2.87	0.47
11:09 AM	14.41	2.87	0.47
11:10 AM	14.41	2.89	0.47
11:11 AM	14.40	2.93	0.47
11:12 AM	14.43	2.88	0.47
11:13 AM	14.48	2.86	0.47
11:14 AM	14.73	2.81	0.47
11:15 AM	14.69	2.66	0.47
11:16 AM	14.56	2.66	0.46
11:17 AM	14.57	2.68	0.47
11:18 AM	14.40	2.69	0.46
11:19 AM	14.43	2.71	0.46
11:20 AM	14.41	2.75	0.46
Average	14.41	2.80	0.47

Signature 
 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 20, 2024
 Start time: 11:21 AM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: TELEDYNE 200 EM
 SO₂ instrument Model: API 100 AH
 Fuel Type: Natural Gas

Run #: 2
 Location: H-3708
 Finish time: 11:41 AM
 Serial No.: 071023-47
 Serial No.: 433
 Serial No.: 118
 Test Operator: Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
11:21 AM	14.48	2.75	0.46
11:22 AM	14.34	2.74	0.46
11:23 AM	14.25	2.88	0.46
11:24 AM	14.33	2.88	0.46
11:25 AM	14.35	2.82	0.46
11:26 AM	14.24	2.90	0.46
11:27 AM	14.43	2.96	0.46
11:28 AM	14.53	2.83	0.47
11:29 AM	14.48	2.71	0.47
11:30 AM	14.59	2.73	0.47
11:31 AM	14.49	2.75	0.47
11:32 AM	14.58	2.76	0.47
11:33 AM	14.41	2.79	0.47
11:34 AM	14.42	2.86	0.47
11:35 AM	14.24	2.92	0.47
11:36 AM	14.26	3.01	0.47
11:37 AM	14.23	3.05	0.47
11:38 AM	14.29	3.03	0.47
11:39 AM	14.24	3.06	0.47
11:40 AM	14.34	3.05	0.47
11:41 AM	14.32	2.98	0.47
Average	14.37	2.88	0.47

Signature 
 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)

EMISSION TEST RESULT

Date: April 20, 2024
Start time: 11:42 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: TELEDYNE 200 EM
SO₂ instrument Model: API 100 AH
Fuel Type: Natural Gas

Run # : 3
Location : H-3708
Finish time : 12:02 PM
Serial No.: 071023-47
Serial No.: 433
Serial No.: 118
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
11:42 AM	14.50	2.93	0.46
11:43 AM	14.78	2.79	0.46
11:44 AM	14.78	2.60	0.46
11:45 AM	14.61	2.59	0.46
11:46 AM	14.54	2.67	0.46
11:47 AM	14.43	2.70	0.46
11:48 AM	13.87	2.78	0.46
11:49 AM	13.74	2.86	0.46
11:50 AM	13.87	2.83	0.46
11:51 AM	13.91	2.88	0.46
11:52 AM	14.02	2.93	0.46
11:53 AM	14.15	2.93	0.46
11:54 AM	14.24	2.85	0.46
11:55 AM	14.22	2.89	0.46
11:56 AM	14.14	2.94	0.46
11:57 AM	14.31	2.89	0.46
11:58 AM	14.49	2.75	0.46
11:59 AM	14.29	2.74	0.46
12:00 PM	14.28	2.82	0.46
12:01 PM	14.27	2.83	0.46
12:02 PM	14.29	2.86	0.46
Average	14.27	2.81	0.46

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. **REF. NO. :** 224007_Cert-Stack/PM_Apr 24
Branch 2, Power Plant
SAMPLING BY : SECOT Co., Ltd. **SAMPLING DATE :** 20/04/2024
RECEIVED DATE : 22/04/2024 **ANALYTICAL DATE :** 22-23/04/2024
REPORT DATE : 28/04/2024 **SAMPLE CONDITION :** Normal
SOURCE DESCRIPTION : Combustion **FUEL TYPE :** Natural Gas
STACK LOCATION : H-3709
OPERATOR : Mr. Kittipong Thakoengsuk
STACK DESCRIPTION
Height : 35.0 m **Gas Velocity :** 29.4 m/s
Diameter : 3.26 m **Flow Rate* :** 9,094 Ncu.m/min
Temperature : 166.0 °C **Excess Oxygen :** 14.3 %

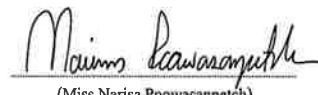
PARAMETER	UNITS	RESULTS*		STANDARDS ^{1/}		REFERENCE
		14.3%O ₂	7%O ₂	7%O ₂		
Particulate Matter	mg/Ncu.m.	1.55	3.27	60		US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO. 2-239-0-0021



(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 2-239-R-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment, B.E.2549.

**The Monitoring Result of Emission Concentration
H-3709**

PTT Global Chemical Public Co., Ltd.

(Branch 2 : Power Plant I-1)

April 20, 2024

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	14.18	14.25	4.15	4.11	8.59
2	14.21	14.29	4.24	4.20	8.83
3	14.23	14.32	4.34	4.29	9.06
Average	14.20	14.29	4.25	4.20	8.83

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	14.18	14.25	0.09	0.09	0.19
2	14.21	14.29	0.09	0.09	0.19
3	14.23	14.32	0.09	0.09	0.19
Average	14.20	14.29	0.09	0.09	0.19

**PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT**

Date: April 20, 2024

Start time: 11:00 AM

O₂ instrument Model: AMI 70

NO_x instrument Model: API 200 AH

SO₂ instrument Model: API 100 AH

Fuel Type : Natural Gas

Run # : 1

Location : H-3709

Finish time : 11:20 AM

Serial No.: 111117-2

Serial No.: 441

Serial No.: 060

Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
11:00 AM	14.13	4.01	0.09
11:01 AM	14.16	4.05	0.09
11:02 AM	14.13	3.88	0.09
11:03 AM	14.17	3.96	0.09
11:04 AM	14.17	4.16	0.09
11:05 AM	14.18	4.07	0.09
11:06 AM	14.15	4.10	0.09
11:07 AM	14.20	4.30	0.09
11:08 AM	14.18	4.19	0.09
11:09 AM	14.16	4.12	0.09
11:10 AM	14.17	4.19	0.09
11:11 AM	14.23	4.33	0.09
11:12 AM	14.18	4.26	0.09
11:13 AM	14.19	4.12	0.09
11:14 AM	14.19	4.28	0.09
11:15 AM	14.19	4.25	0.09
11:16 AM	14.19	4.21	0.09
11:17 AM	14.21	4.27	0.09
11:18 AM	14.18	4.09	0.09
11:19 AM	14.19	4.16	0.09
11:20 AM	14.20	4.23	0.09
Average	14.18	4.15	0.09

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 20, 2024
Start time: 11:21 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: API 200 AH
SO₂ instrument Model: API 100 AH
Fuel Type : Natural Gas

Run # : 2
Location : H-3709
Finish time : 11:41 AM
Serial No.: 111117-2
Serial No.: 441
Serial No.: 060
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
11:21 AM	14.19	4.24	0.09
11:22 AM	14.19	4.12	0.09
11:23 AM	14.20	4.15	0.09
11:24 AM	14.21	4.23	0.09
11:25 AM	14.20	4.15	0.09
11:26 AM	14.19	4.10	0.09
11:27 AM	14.22	4.33	0.09
11:28 AM	14.21	4.28	0.09
11:29 AM	14.20	4.18	0.09
11:30 AM	14.20	4.17	0.09
11:31 AM	14.22	4.14	0.09
11:32 AM	14.23	4.33	0.09
11:33 AM	14.20	4.31	0.09
11:34 AM	14.23	4.26	0.09
11:35 AM	14.19	4.28	0.09
11:36 AM	14.22	4.25	0.09
11:37 AM	14.21	4.19	0.09
11:38 AM	14.22	4.31	0.09
11:39 AM	14.19	4.28	0.09
11:40 AM	14.23	4.44	0.09
11:41 AM	14.22	4.35	0.09
Average	14.21	4.24	0.09

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 20, 2024
Start time: 11:42 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: API 200 AH
SO₂ instrument Model: API 100 AH
Fuel Type : Natural Gas

Run # : 3
Location : H-3709
Finish time : 12:02 PM
Serial No.: 111117-2
Serial No.: 441
Serial No.: 060
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
11:42 AM	14.21	4.35	0.09
11:43 AM	14.21	4.35	0.09
11:44 AM	14.21	4.36	0.09
11:45 AM	14.24	4.38	0.09
11:46 AM	14.20	4.41	0.09
11:47 AM	14.23	4.32	0.09
11:48 AM	14.21	4.17	0.09
11:49 AM	14.22	4.36	0.09
11:50 AM	14.24	4.24	0.09
11:51 AM	14.20	4.32	0.09
11:52 AM	14.25	4.33	0.09
11:53 AM	14.22	4.32	0.09
11:54 AM	14.21	4.18	0.09
11:55 AM	14.26	4.26	0.09
11:56 AM	14.21	4.45	0.09
11:57 AM	14.28	4.53	0.09
11:58 AM	14.21	4.39	0.09
11:59 AM	14.24	4.34	0.09
12:00 PM	14.23	4.44	0.09
12:01 PM	14.24	4.37	0.09
12:02 PM	14.23	4.33	0.09
Average	14.23	4.34	0.09

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



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SECOT CO., LTD.

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : 224007_Cert-Stack/PM_Apr 24
Branch 2, Power Plant SAMPLING DATE : 20/04/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 22-23/04/2024
RECEIVED DATE : 22/04/2024 SAMPLE CONDITION : Normal
REPORT DATE : 28/04/2024 FUEL TYPE : Natural Gas
SOURCE DESCRIPTION : Combustion STACK LOCATION : H-3710
OPERATOR : Mr. Kittipong Thakoengsuk

STACK DESCRIPTION

Height : 35.0 m Gas Velocity : 22.8 m/s
Diameter : 3.26 m Flow Rate* : 6,748 Ncu.m/min
Temperature : 173.0 °C Excess Oxygen : 14.4 %

PARAMETER	UNITS	RESULTS*			REFERENCE
		14.4%O ₂	7%O ₂	7%O ₂	
Particulate Matter	mg/Ncu.m.	1.70	3.67	60	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.2-239-0-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.2-239-0-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ¹¹ Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment, B.E.2549.

The Monitoring Result of Emission Concentration H-3710

PTT Global Chemical Public Co., Ltd.

(Branch 2 : Power Plant I-1)

April 20, 2024

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O ₂	Corrected Gas Conc @7% O ₂
1	14.35	14.43	5.84	5.78	12.42
2	14.35	14.44	5.74	5.68	12.22
3	14.36	14.46	5.80	5.73	12.37
Average	14.35	14.44	5.79	5.73	12.34

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O ₂	Corrected Gas Conc @7% O ₂
1	14.35	14.43	0.44	0.40	0.86
2	14.35	14.44	0.44	0.40	0.86
3	14.36	14.46	0.44	0.40	0.86
Average	14.35	14.44	0.44	0.40	0.86

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 20, 2024 **Run # : 1**
Start time: 2:20 PM **Location :** H-3710
O₂ instrument Model: AMI 70 **Finish time :** 2:40 PM
NO_x instrument Model: Teledyne 200 EM **Serial No.:** 071023-47
SO₂ instrument Model: API 100 AH **Serial No.:** 433
Fuel Type : Natural Gas **Serial No.:** 365
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
2:20 PM	14.34	5.81	0.38
2:21 PM	14.33	5.82	0.44
2:22 PM	14.33	5.68	0.45
2:23 PM	14.33	5.75	0.41
2:24 PM	14.36	5.91	0.43
2:25 PM	14.35	5.78	0.44
2:26 PM	14.36	5.65	0.42
2:27 PM	14.36	5.75	0.44
2:28 PM	14.35	5.77	0.45
2:29 PM	14.35	5.81	0.47
2:30 PM	14.35	5.74	0.45
2:31 PM	14.37	6.10	0.48
2:32 PM	14.34	5.59	0.41
2:33 PM	14.36	6.00	0.41
2:34 PM	14.39	6.11	0.43
2:35 PM	14.35	6.04	0.47
2:36 PM	14.34	5.87	0.49
2:37 PM	14.35	5.90	0.45
2:38 PM	14.34	5.93	0.47
2:39 PM	14.33	5.80	0.46
2:40 PM	14.34	5.79	0.47
Average	14.35	5.84	0.44

Signature 

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 20, 2024 **Run # : 2**
Start time: 2:41 PM **Location :** H-3710
O₂ instrument Model: AMI 70 **Finish time :** 3:01 PM
NO_x instrument Model: Teledyne 200 EM **Serial No.:** 071023-47
SO₂ instrument Model: API 100 AH **Serial No.:** 433
Fuel Type : Natural Gas **Serial No.:** 365
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
2:41 PM	14.31	5.69	0.47
2:42 PM	14.37	5.71	0.45
2:43 PM	14.34	5.80	0.44
2:44 PM	14.36	5.79	0.45
2:45 PM	14.33	5.75	0.49
2:46 PM	14.35	5.72	0.49
2:47 PM	14.31	5.67	0.48
2:48 PM	14.36	5.70	0.45
2:49 PM	14.34	5.72	0.47
2:50 PM	14.35	5.92	0.43
2:51 PM	14.36	5.87	0.47
2:52 PM	14.35	5.69	0.40
2:53 PM	14.35	5.75	0.43
2:54 PM	14.36	5.83	0.43
2:55 PM	14.33	5.77	0.46
2:56 PM	14.36	5.67	0.41
2:57 PM	14.33	5.77	0.38
2:58 PM	14.34	5.79	0.43
2:59 PM	14.35	5.64	0.46
3:00 PM	14.34	5.55	0.38
3:01 PM	14.36	5.74	0.41
Average	14.35	5.74	0.44

Signature 

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)

EMISSION TEST RESULT

Date: April 20, 2024
Start time: 3:02 PM
O₂ instrument Model: AMI 70
NO_x instrument Model: Teledyne 200 EM
SO₂ instrument Model: API 100 AH
Fuel Type : Natural Gas

Run # : 3
Location : H-3710
Finish time : 3:22 PM
Serial No.: 071023-47
Serial No.: 433
Serial No.: 365
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
3:02 PM	14.34	5.78	0.45
3:03 PM	14.35	5.66	0.43
3:04 PM	14.37	5.72	0.40
3:05 PM	14.34	5.81	0.42
3:06 PM	14.36	5.77	0.46
3:07 PM	14.34	5.65	0.47
3:08 PM	14.38	6.08	0.47
3:09 PM	14.35	5.64	0.41
3:10 PM	14.37	5.59	0.39
3:11 PM	14.35	5.76	0.39
3:12 PM	14.38	6.05	0.47
3:13 PM	14.37	5.65	0.50
3:14 PM	14.36	5.72	0.45
3:15 PM	14.37	5.88	0.41
3:16 PM	14.36	5.97	0.44
3:17 PM	14.36	5.90	0.45
3:18 PM	14.36	5.81	0.46
3:19 PM	14.36	5.85	0.45
3:20 PM	14.36	5.88	0.50
3:21 PM	14.36	5.75	0.46
3:22 PM	14.39	5.85	0.43
Average	14.36	5.80	0.44

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนวิเศษนครประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. **REF. NO.** : 224007_Cert-Stack/PM_Apr 24
Branch 2, Power Plant **SAMPLING DATE** : 20/04/2024
SAMPLING BY : SECOT Co., Ltd. **ANALYTICAL DATE** : 22-23/04/2024
RECEIVED DATE : 22/04/2024 **SAMPLE CONDITION** : Normal
REPORT DATE : 28/04/2024 **FUEL TYPE** : Natural Gas
SOURCE DESCRIPTION : Combustion **STACK LOCATION** : H-3711
OPERATOR : Mr. Kittipong Thakoengsuk
STACK DESCRIPTION

Height : 35.0 m **Gas Velocity** : 23.3 m/s
Diameter : 3.26 m **Flow Rate*** : 7,324 Ncu.m/min
Temperature : 142.6 °C **Excess Oxygen** : 13.8 %

PARAMETER	UNITS	RESULTS*		STANDARDS ^{1/}	REFERENCE METHODS
		13.8%O ₂	7%O ₂	7%O ₂	
Particulate Matter	mg/Ncu.m.	2.51	4.92	60	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO. 3-239-0-0021

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 3-239-0-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment, B.E.2549.

**The Monitoring Result of Emission Concentration
H-3711**

PTT Global Chemical Public Co., Ltd.

(Branch 2 : Power Plant I-1)

April 20, 2024

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	13.74	13.82	4.47	4.41	8.66
2	13.72	13.80	4.44	4.39	8.59
3	13.72	13.80	4.46	4.41	8.63
Average	13.73	13.81	4.46	4.40	8.63

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	13.74	13.82	0.10	0.10	0.20
2	13.72	13.80	0.10	0.10	0.20
3	13.72	13.80	0.09	0.08	0.16
Average	13.73	13.81	0.10	0.09	0.18

**PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT**

Date: April 20, 2024

Start time: 2:20 PM

O₂ instrument Model: AMI 70

NO_x instrument Model: API 200 AH

SO₂ instrument Model: API 100 AH

Fuel Type : Natural Gas

Run # : 1

Location : H-3711

Finish time : 2:40 PM

Serial No.: 111117-2

Serial No.: 441

Serial No.: 060

Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
2:20 PM	13.73	3.85	0.10
2:21 PM	13.74	4.01	0.10
2:22 PM	13.77	3.95	0.10
2:23 PM	13.75	4.00	0.10
2:24 PM	13.75	4.07	0.10
2:25 PM	13.77	4.15	0.10
2:26 PM	13.78	4.13	0.10
2:27 PM	13.78	4.13	0.10
2:28 PM	13.78	4.19	0.10
2:29 PM	13.78	4.30	0.10
2:30 PM	13.79	4.27	0.10
2:31 PM	13.78	4.31	0.10
2:32 PM	13.79	4.29	0.10
2:33 PM	13.69	4.45	0.10
2:34 PM	13.69	5.02	0.10
2:35 PM	13.71	5.17	0.10
2:36 PM	13.70	5.24	0.10
2:37 PM	13.70	5.15	0.10
2:38 PM	13.70	5.18	0.10
2:39 PM	13.70	5.08	0.10
2:40 PM	13.70	4.90	0.10
Average	13.74	4.47	0.10

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 20, 2024
 Start time: 2:41 PM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: API 200 AH
 SO₂ instrument Model: API 100 AH
 Fuel Type : Natural Gas

Run # : 2
 Location : H-3711
 Finish time : 3:01 PM
 Serial No.: 111117-2
 Serial No.: 441
 Serial No.: 060
 Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
2:41 PM	13.69	4.73	0.10
2:42 PM	13.71	4.67	0.10
2:43 PM	13.72	4.71	0.10
2:44 PM	13.72	4.64	0.10
2:45 PM	13.71	4.51	0.10
2:46 PM	13.73	4.52	0.10
2:47 PM	13.71	4.54	0.10
2:48 PM	13.71	4.51	0.10
2:49 PM	13.72	4.41	0.10
2:50 PM	13.73	4.32	0.10
2:51 PM	13.74	4.33	0.10
2:52 PM	13.73	4.36	0.10
2:53 PM	13.72	4.35	0.10
2:54 PM	13.73	4.32	0.10
2:55 PM	13.73	4.36	0.10
2:56 PM	13.73	4.35	0.10
2:57 PM	13.72	4.33	0.10
2:58 PM	13.71	4.33	0.10
2:59 PM	13.70	4.27	0.09
3:00 PM	13.72	4.36	0.09
3:01 PM	13.71	4.36	0.09
Average	13.72	4.44	0.10

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Co., Ltd. (Branch 2 : Power Plant I-1)
EMISSION TEST RESULT

Date: April 20, 2024
 Start time: 3:02 PM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: API 200 AH
 SO₂ instrument Model: API 100 AH
 Fuel Type : Natural Gas

Run # : 3
 Location : H-3711
 Finish time : 3:22 PM
 Serial No.: 111117-2
 Serial No.: 441
 Serial No.: 060
 Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)
3:02 PM	13.72	4.38	0.09
3:03 PM	13.71	4.42	0.09
3:04 PM	13.73	4.44	0.09
3:05 PM	13.73	4.42	0.09
3:06 PM	13.72	4.41	0.09
3:07 PM	13.72	4.47	0.09
3:08 PM	13.71	4.41	0.09
3:09 PM	13.74	4.44	0.09
3:10 PM	13.74	4.52	0.09
3:11 PM	13.73	4.47	0.09
3:12 PM	13.74	4.47	0.09
3:13 PM	13.72	4.47	0.09
3:14 PM	13.72	4.54	0.09
3:15 PM	13.72	4.50	0.09
3:16 PM	13.72	4.53	0.09
3:17 PM	13.73	4.53	0.09
3:18 PM	13.72	4.48	0.09
3:19 PM	13.71	4.45	0.09
3:20 PM	13.71	4.45	0.09
3:21 PM	13.71	4.40	0.09
3:22 PM	13.72	4.52	0.09
Average	13.72	4.46	0.09

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

ภาคผนวก ง.2

ใบรับรองผลการตรวจวิเคราะห์คุณภาพอากาศในบรรยากาศ



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC, Branch 2 (Power Plant)

Location : North Fence Monitor period : 17-24 Apr 2024

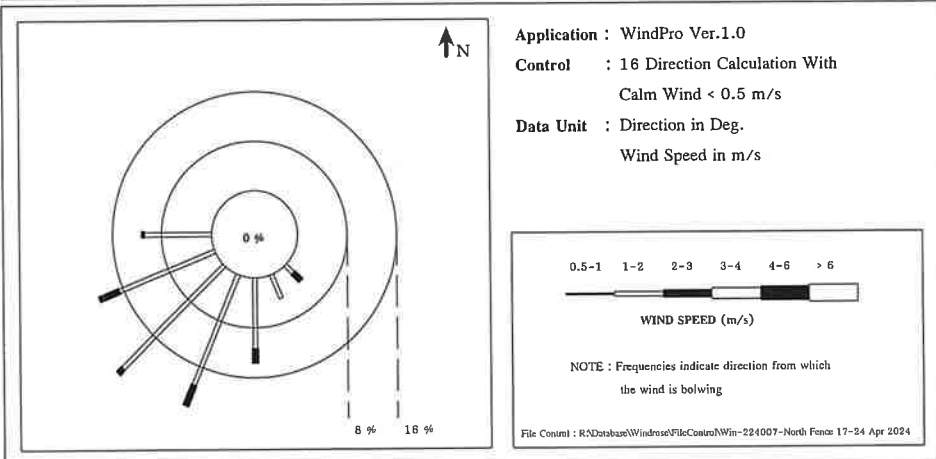
Wind Speed Model : Scarlet WS-21

Serial No : AD:06

Wind Direction Model : Scarlet WS-21

Serial No : AD:06

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0179	0.0179	0.0000	0.0000	0.0000	0.0357
SSE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
S	0.0000	0.1131	0.0238	0.0000	0.0000	0.0000	0.1369
SSW	0.0000	0.1905	0.0357	0.0000	0.0000	0.0000	0.2262
SW	0.0000	0.2321	0.0119	0.0000	0.0000	0.0000	0.2440
WSW	0.0000	0.1667	0.0357	0.0000	0.0000	0.0000	0.2024
W	0.0000	0.1071	0.0060	0.0000	0.0000	0.0000	0.1131
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0000						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC, Branch 2 (Power Plant)

Location : North Fence

Monitor period : 17-24 Apr 2024

Wind Speed Model : Scarlet WS-21

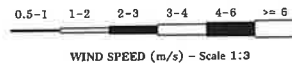
Serial No : AD:06

Wind Direction Model : Scarlet WS-21

Serial No : AD:06

Time	17-18 Apr 2024		18-19 Apr 2024		19-20 Apr 2024		20-21 Apr 2024	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
15:00 - 16:00	2.2	S	1.7	SSW	1.8	SSW	1.7	SSW
16:00 - 17:00	2.1	S	1.7	SW	1.7	WSW	1.6	WSW
17:00 - 18:00	1.4	SE	1.5	SSW	1.6	WSW	1.7	SSW
18:00 - 19:00	1.4	SSE	1.5	SSW	1.4	WSW	2.6	SE
19:00 - 20:00	1.4	SSE	1.5	SW	1.4	W	1.9	SE
20:00 - 21:00	1.4	SSE	1.4	SW	1.4	SSW	1.5	SW
21:00 - 22:00	1.4	SSE	1.4	SSW	1.4	WSW	1.6	W
22:00 - 23:00	1.7	SSE	1.5	SW	1.4	SW	1.5	W
23:00 - 24:00	1.9	S	1.8	W	1.6	SSW	1.5	WSW
00:00 - 01:00	1.7	S	1.4	W	1.5	SSW	1.9	SSW
01:00 - 02:00	1.7	S	1.4	SW	1.5	S	1.5	W
02:00 - 03:00	1.6	S	1.5	WSW	1.5	SSW	1.6	W
03:00 - 04:00	1.6	S	1.6	SW	1.6	SW	1.6	WSW
04:00 - 05:00	2.0	S	1.9	S	1.6	WSW	1.6	W
05:00 - 06:00	1.6	S	1.7	SW	2.0	WSW	1.7	SW
06:00 - 07:00	1.6	S	1.6	WSW	1.9	WSW	1.8	SSW
07:00 - 08:00	2.0	S	1.6	SW	1.5	WSW	2.0	SSW
08:00 - 09:00	2.3	SSW	1.6	SSW	2.0	WSW	2.1	SSW
09:00 - 10:00	1.8	SSE	1.7	S	1.9	SSW	2.2	SSW
10:00 - 11:00	2.0	SW	2.1	W	1.9	WSW	1.9	W
11:00 - 12:00	1.9	SW	1.8	S	1.6	SW	1.9	SSW
12:00 - 13:00	1.9	SW	2.0	WSW	2.0	SSW	2.0	WSW
13:00 - 14:00	1.8	S	1.9	WSW	1.8	SW	1.9	SW
14:00 - 15:00	1.7	W	1.8	SSW	1.8	WSW	1.6	SSW

Wind Rose



File Control: R:\Database\Windrose\FileControl\Win-224007-North Fence 17-24 Apr 2024

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC, Branch 2 (Power Plant)

Location : North Fence

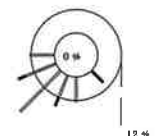
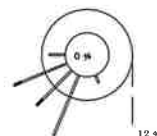
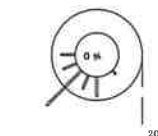
Monitor period : 17-24 Apr 2024

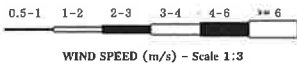
Wind Speed Model : Scarlet WS-21

Serial No : AD:06

Wind Direction Model : Scarlet WS-21

Serial No : AD:06

Time	21-22 Apr 2024		22-23 Apr 2024		23-24 Apr 2024		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
15:00 - 16:00	1.6	S	1.7	WSW	1.8	SSW	
16:00 - 17:00	1.5	WSW	1.5	SW	1.8	S	
17:00 - 18:00	1.7	W	1.6	WSW	1.6	SW	
18:00 - 19:00	2.6	SE	1.4	SSW	1.6	SW	
19:00 - 20:00	2.2	SE	1.6	SSE	1.8	SSW	
20:00 - 21:00	2.1	WSW	1.5	SSW	1.4	S	
21:00 - 22:00	1.3	W	1.4	SSW	1.6	S	
22:00 - 23:00	1.4	WSW	1.4	SSW	1.5	SW	
23:00 - 24:00	1.5	S	1.4	SSW	1.5	W	
00:00 - 01:00	1.5	SW	1.4	SW	1.5	S	
01:00 - 02:00	1.5	SW	1.7	WSW	1.4	WSW	
02:00 - 03:00	1.4	SSW	1.7	SSW	1.4	SW	
03:00 - 04:00	1.7	SW	1.8	WSW	1.4	W	
04:00 - 05:00	1.7	SW	1.7	WSW	1.3	SW	
05:00 - 06:00	1.5	S	1.8	WSW	1.3	SE	
06:00 - 07:00	1.8	WSW	2.0	SW	1.5	SW	
07:00 - 08:00	1.9	SSW	1.9	W	1.5	W	
08:00 - 09:00	1.9	SSW	1.9	SSW	1.7	SW	
09:00 - 10:00	2.0	SSW	2.1	WSW	1.7	WSW	
10:00 - 11:00	1.8	SW	1.9	SSW	1.8	SSW	
11:00 - 12:00	1.9	SW	1.8	SW	1.9	SW	
12:00 - 13:00	1.6	SW	1.8	W	1.9	WSW	
13:00 - 14:00	1.8	W	1.9	SW	1.9	SW	
14:00 - 15:00	1.8	WSW	1.9	SW	1.9	SW	
Wind Rose							



File Control : R:\Database\Windrose\FileControl\Win-224007-North Fence 17-24 Apr 2024

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC, Branch 2 (Power Plant)

Location : South Fence

Monitor period : 17-24 Apr 2024

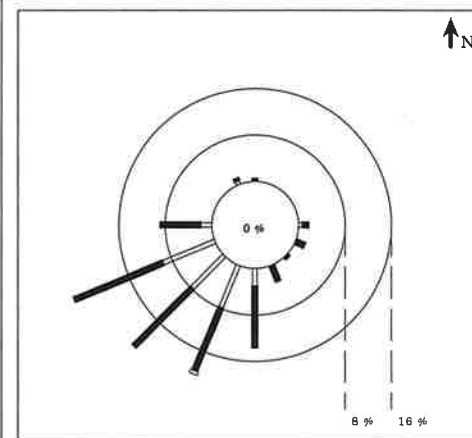
Wind Speed Model : Scarlet WS-21

Serial No : AD:37

Wind Direction Model : Scarlet WS-21

Serial No : AD:37

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0060	0.0000	0.0000	0.0000	0.0060
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0060	0.0119	0.0000	0.0000	0.0000	0.0179
ESE	0.0000	0.0000	0.0179	0.0000	0.0000	0.0000	0.0179
SE	0.0000	0.0000	0.0060	0.0000	0.0000	0.0000	0.0060
SSE	0.0000	0.0000	0.0298	0.0000	0.0000	0.0000	0.0298
S	0.0000	0.0298	0.1071	0.0000	0.0000	0.0000	0.1369
SSW	0.0000	0.0774	0.1190	0.0060	0.0000	0.0000	0.2024
SW	0.0000	0.0774	0.1429	0.0000	0.0000	0.0000	0.2202
WSW	0.0000	0.0952	0.1667	0.0000	0.0000	0.0000	0.2619
W	0.0000	0.0179	0.0714	0.0000	0.0000	0.0000	0.0893
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0060	0.0060	0.0000	0.0000	0.0000	0.0119
CALM	0.0000						



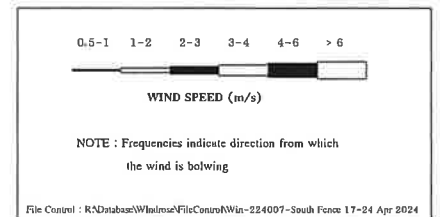
Application : WindPro Ver.1.0

Control : 16 Direction Calculation With

Calm Wind < 0.5 m/s

Data Unit : Direction in Deg.

Wind Speed in m/s



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



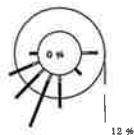
Meteorological Monitoring Results : Wind Rose

MTR-PTTGC, Branch 2 (Power Plant)

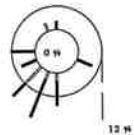
Location : South Fence Monitor period : 17-24 Apr 2024
 Wind Speed Model : Scarlet WS-21 Serial No : AD:37
 Wind Direction Model : Scarlet WS-21 Serial No : AD:37

Time	17-18 Apr 2024		18-19 Apr 2024		19-20 Apr 2024		20-21 Apr 2024	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
13:00 - 14:00	2.4	WSW	2.7	S	2.6	SW	2.4	SW
14:00 - 15:00	2.5	SW	2.6	SSW	2.6	WSW	2.4	SW
15:00 - 16:00	2.7	S	2.7	W	2.6	WSW	2.6	E
16:00 - 17:00	2.5	SW	2.3	W	2.4	W	2.2	SSE
17:00 - 18:00	2.6	SW	2.3	S	2.4	WSW	1.9	SW
18:00 - 19:00	2.1	S	2.1	SSW	1.9	W	2.4	W
19:00 - 20:00	2.2	WSW	1.9	SW	2.0	SW	2.6	SSW
20:00 - 21:00	2.1	SSW	2.1	WSW	2.0	WSW	2.0	SW
21:00 - 22:00	1.8	S	1.9	SSW	1.7	WSW	2.0	S
22:00 - 23:00	2.0	E	2.3	SSW	1.9	SW	2.1	SSW
23:00 - 24:00	1.8	E	2.0	SSW	1.7	SW	2.3	S
00:00 - 01:00	2.2	SE	1.9	NNW	2.0	WSW	1.9	SW
01:00 - 02:00	2.0	WSW	2.0	N	2.0	WSW	1.9	SW
02:00 - 03:00	2.1	SW	1.7	SW	2.3	SSW	1.8	SSW
03:00 - 04:00	2.2	SSW	2.0	SW	2.3	WSW	1.9	WSW
04:00 - 05:00	1.9	SW	1.6	S	2.0	WSW	2.1	S
05:00 - 06:00	2.0	SSW	1.6	SW	2.0	SSW	1.9	WSW
06:00 - 07:00	1.7	SSW	2.0	SW	1.7	W	1.9	SSW
07:00 - 08:00	1.9	WSW	2.2	S	2.1	SW	1.9	SW
08:00 - 09:00	2.0	W	2.5	WSW	1.9	SSW	2.1	W
09:00 - 10:00	2.1	S	2.5	W	2.0	WSW	2.3	SW
10:00 - 11:00	2.4	SSW	2.3	ESE	2.3	SW	2.0	WSW
11:00 - 12:00	2.2	SSW	2.7	ESE	2.4	S	2.1	WSW
12:00 - 13:00	2.4	SSW	2.4	SSW	2.6	SSW	2.4	W

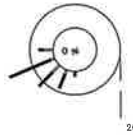
Wind Rose



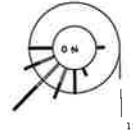
12 %



12 %



20 %



12 %



WIND SPEED (m/s) - Scale 1:3

File Control :R:\Database\Windrose\FileControl\Win-224007-South Fence 17-24 Apr 2024

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



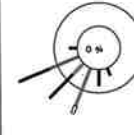
Meteorological Monitoring Results : Wind Rose

MTR-PTTGC, Branch 2 (Power Plant)

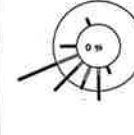
Location : South Fence Monitor period : 17-24 Apr 2024
 Wind Speed Model : Scarlet WS-21 Serial No : AD:37
 Wind Direction Model : Scarlet WS-21 Serial No : AD:37

Time	21-22 Apr 2024		22-23 Apr 2024		23-24 Apr 2024	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
13:00 - 14:00	2.4	WSW	2.7	SW	2.6	SW
14:00 - 15:00	2.6	WSW	2.4	SW	2.6	W
15:00 - 16:00	2.5	S	2.4	W	2.4	WSW
16:00 - 17:00	2.3	SSE	2.5	SSE	2.2	SSW
17:00 - 18:00	2.0	W	2.5	SW	2.1	ESE
18:00 - 19:00	2.5	WSW	2.3	SSW	2.7	S
19:00 - 20:00	3.1	SSW	2.3	WSW	2.2	WSW
20:00 - 21:00	2.5	S	2.2	WSW	2.0	WSW
21:00 - 22:00	1.7	SSW	1.9	WSW	1.6	WSW
22:00 - 23:00	1.6	SSW	2.1	W	1.9	WSW
23:00 - 24:00	1.6	SSW	2.1	WSW	1.7	S
00:00 - 01:00	1.9	SW	2.1	S	1.8	S
01:00 - 02:00	2.1	SW	1.7	WSW	1.9	WSW
02:00 - 03:00	1.9	WSW	1.9	SW	2.0	SSE
03:00 - 04:00	1.8	SSW	1.7	SSW	1.9	WSW
04:00 - 05:00	1.6	SW	1.8	WSW	1.8	SSW
05:00 - 06:00	1.8	SSW	1.7	SSW	1.4	WSW
06:00 - 07:00	1.7	WSW	1.7	S	1.7	W
07:00 - 08:00	1.8	WSW	2.1	S	2.3	SW
08:00 - 09:00	1.9	WSW	2.4	NNW	2.4	SSW
09:00 - 10:00	2.4	SW	2.3	SW	2.6	SSE
10:00 - 11:00	2.5	SW	2.4	WSW	2.5	S
11:00 - 12:00	2.7	WSW	2.9	WSW	2.5	SSW
12:00 - 13:00	2.4	SW	2.7	S	2.6	S

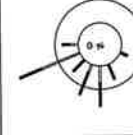
Wind Rose



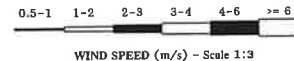
12 %



12 %



12 %



WIND SPEED (m/s) - Scale 1:3

File Control :R:\Database\Windrose\FileControl\Win-224007-South Fence 17-24 Apr 2024

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team

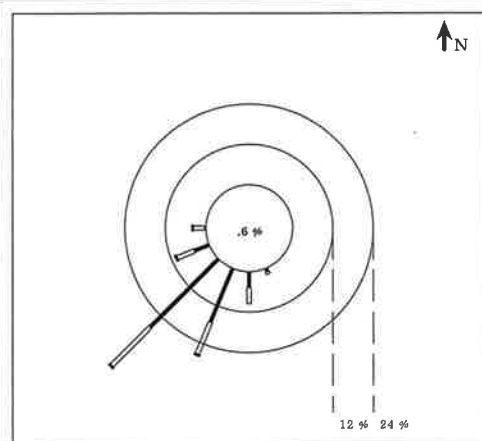


Meteorological Monitoring Results : Wind Rose

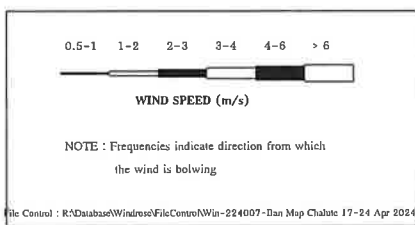
MTR-PTTGC, Branch 2 (Power Plant)

Location : Ban Map Chalute Monitor period : 17-24 Apr 2024
 Wind Speed Model : Novalynx NL-32 Serial No : 1205
 Wind Direction Model : Novalynx NL-32 Serial No : 1205

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	Total
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0119	0.0060	0.0000	0.0000	0.0000	0.0000	0.0179
S	0.0476	0.0476	0.0000	0.0000	0.0000	0.0000	0.0952
SSW	0.1726	0.1012	0.0060	0.0000	0.0000	0.0000	0.2798
SW	0.2857	0.1607	0.0060	0.0000	0.0000	0.0000	0.4524
WSW	0.0476	0.0536	0.0060	0.0000	0.0000	0.0000	0.1071
W	0.0060	0.0298	0.0060	0.0000	0.0000	0.0000	0.0417
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0060						



Application : WindPro Ver.1.0
 Control : 16 Direction Calculation With
 Calm Wind < 0.5 m/s
 Data Unit : Direction in Deg.
 Wind Speed in m/s



(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

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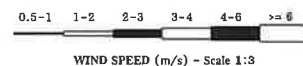
Meteorological Monitoring Results : Wind Rose

MTR-PTTGC, Branch 2 (Power Plant)

Location : Ban Map Chalute Monitor period : 17-24 Apr 2024
 Wind Speed Model : Novalynx NL-32 Serial No : 1205
 Wind Direction Model : Novalynx NL-32 Serial No : 1205

Time	17-18 Apr 2024		18-19 Apr 2024		19-20 Apr 2024		20-21 Apr 2024	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
12:00 - 13:00	1.6	WSW	1.2	SSW	1.3	SW	1.2	SW
13:00 - 14:00	2.1	SW	1.2	SW	1.3	SW	1.1	SW
14:00 - 15:00	2.1	SSW	1.3	SW	1.3	SSW	1.1	SW
15:00 - 16:00	2.1	WSW	1.2	SW	1.2	SSW	1.2	SSW
16:00 - 17:00	1.6	WSW	1.1	SSW	1.2	SSW	0.9	SSW
17:00 - 18:00	1.5	W	1.0	SSW	0.8	SW	1.0	S
18:00 - 19:00	1.4	WSW	0.9	SW	0.9	S	0.7	SSW
19:00 - 20:00	1.4	SW	0.7	SSW	1.0	S	0.7	S
20:00 - 21:00	1.4	SSW	0.9	SSW	0.7	SW	0.9	SSW
21:00 - 22:00	1.4	S	0.7	SSW	0.5	SSW	0.9	S
22:00 - 23:00	1.4	WSW	0.7	SW	0.7	SSW	0.9	S
23:00 - 24:00	1.4	W	0.9	SW	0.7	SW	0.9	SSW
00:00 - 01:00	1.5	W	0.9	SW	0.9	SW	0.9	SW
01:00 - 02:00	0.9	SSW	0.8	SW	0.8	SW	0.9	SW
02:00 - 03:00	0.9	SW	0.9	SW	0.9	SW	0.9	SW
03:00 - 04:00	0.9	WSW	0.7	SW	0.8	SW	0.8	SW
04:00 - 05:00	0.9	WSW	0.9	SW	1.0	SW	0.9	SW
05:00 - 06:00	0.9	W	0.9	SW	0.9	SW	0.8	SW
06:00 - 07:00	0.9	SSW	0.8	SW	0.9	WSW	0.9	SW
07:00 - 08:00	0.9	WSW	0.9	SW	0.8	WSW	0.8	SW
08:00 - 09:00	1.5	WSW	1.1	SSW	0.7	WSW	1.0	WSW
09:00 - 10:00	1.6	SSW	1.1	SW	1.1	WSW	1.0	SW
10:00 - 11:00	1.5	SSW	1.1	SW	1.0	SW	1.0	SSW
11:00 - 12:00	1.0	SW	1.3	SW	1.2	SW	1.0	SW

Wind Rose



File Control : R:\Database\Windrose\FileControl\Win-224007-Ban Map Chalute 17-24 Apr 2024

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 Environmental Scientist




(Miss Preeda Somjai)
 Technical Management Team

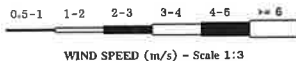


Meteorological Monitoring Results : Wind Rose

MTR-PTTGC, Branch 2 (Power Plant)

Location : Ban Map Chalute Monitor period : 17-24 Apr 2024
 Wind Speed Model : Novalynx NL-32 Serial No : 1205
 Wind Direction Model : Novalynx NL-32 Serial No : 1205

Time	21-22 Apr 2024		22-23 Apr 2024		23-24 Apr 2024		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
12:00 - 13:00	1.0	SW	1.1	SSW	1.3	SSW	
13:00 - 14:00	1.0	SW	1.2	SW	1.2	SSW	
14:00 - 15:00	1.1	SSW	1.2	SW	1.4	S	
15:00 - 16:00	0.9	SW	1.1	SW	1.4	S	
16:00 - 17:00	0.8	SSW	1.1	SW	1.2	S	
17:00 - 18:00	0.7	SSW	1.1	SSW	1.1	S	
18:00 - 19:00	0.7	SSW	0.9	SSW	1.0	SSW	
19:00 - 20:00	1.2	SSE	1.3	S	0.5	SW	
20:00 - 21:00	0.9	SSE	1.0	SSW	0.4	SSW	
21:00 - 22:00	0.5	S	0.8	SSW	0.6	SSW	
22:00 - 23:00	0.8	S	0.8	SSW	0.6	SSW	
23:00 - 24:00	0.8	S	0.8	SSW	1.4	SW	
00:00 - 01:00	0.8	SSW	0.7	SSW	1.5	W	
01:00 - 02:00	0.7	SSW	0.8	SW	1.4	SW	
02:00 - 03:00	0.7	SW	0.8	WSW	1.4	SW	
03:00 - 04:00	0.8	SW	0.8	SW	1.4	S	
04:00 - 05:00	0.8	SW	0.7	SW	0.9	SSW	
05:00 - 06:00	0.7	SW	0.8	SW	0.9	SSE	
06:00 - 07:00	0.7	SW	0.7	SW	0.9	SSW	
07:00 - 08:00	0.8	SW	1.0	WSW	1.4	WSW	
08:00 - 09:00	0.9	SW	0.9	SW	1.5	WSW	
09:00 - 10:00	1.0	SW	1.0	SW	1.6	SSW	
10:00 - 11:00	1.0	SW	1.1	SW	1.5	W	
11:00 - 12:00	1.1	SW	1.3	SSW	2.1	W	
Wind Rose							



File Control : R:\Database\Windrose\Win-224007-Ban Map Chalute 17-24 Apr 2024

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Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team

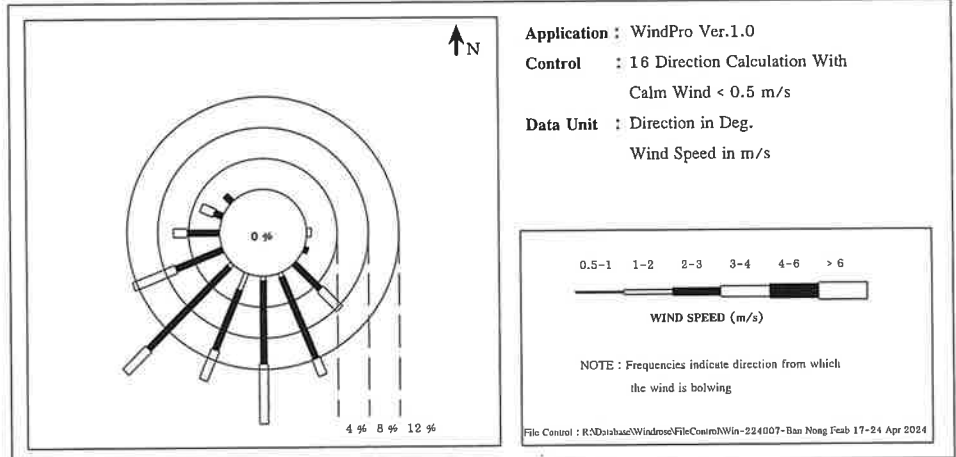


Meteorological Monitoring Results : Wind Rose

MTR-PTTGC, Branch 2 (Power Plant)

Location : Ban Nong Feab Monitor period : 17-24 Apr 2024
 Wind Speed Model : Campbell CR510 Serial No : 10693
 Wind Direction Model : Campbell CR510 Serial No : 10693

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0060	0.0000	0.0000	0.0060
ESE	0.0000	0.0000	0.0060	0.0000	0.0000	0.0000	0.0060
SE	0.0000	0.0000	0.0476	0.0357	0.0000	0.0000	0.0833
SSE	0.0000	0.0060	0.1131	0.0238	0.0000	0.0000	0.1429
S	0.0000	0.0060	0.1071	0.0774	0.0000	0.0000	0.1905
SSW	0.0000	0.0238	0.0833	0.0417	0.0000	0.0000	0.1488
SW	0.0000	0.0060	0.1488	0.0417	0.0000	0.0000	0.1964
WSW	0.0000	0.0000	0.0655	0.0595	0.0000	0.0000	0.1250
W	0.0000	0.0000	0.0417	0.0179	0.0000	0.0000	0.0595
WNW	0.0000	0.0000	0.0119	0.0179	0.0000	0.0000	0.0298
NW	0.0000	0.0000	0.0119	0.0000	0.0000	0.0000	0.0119
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0000						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
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Meteorological Monitoring Results : Wind Rose

MTR-PTTGC, Branch 2 (Power Plant)

Location : Ban Nong Feab

Monitor period : 17-24 Apr 2024

Wind Speed Model : Campbell CR510

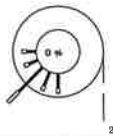
Serial No : 10693

Wind Direction Model : Campbell CR510

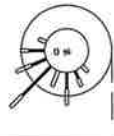
Serial No : 10693

Time	17-18 Apr 2024		18-19 Apr 2024		19-20 Apr 2024		20-21 Apr 2024	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
12:00 - 13:00	3.2	SW	3.0	W	3.4	SSE	2.9	NW
13:00 - 14:00	3.4	S	3.3	WSW	3.6	WSW	3.0	WSW
14:00 - 15:00	3.1	SW	3.4	SSW	3.1	S	3.1	WSW
15:00 - 16:00	3.1	WSW	3.2	SW	3.1	WSW	3.0	SSW
16:00 - 17:00	2.9	SSW	2.9	WSW	2.7	SSE	2.7	ESE
17:00 - 18:00	2.7	SSW	2.8	S	2.8	SE	2.9	SSE
18:00 - 19:00	2.7	W	2.4	SSE	2.6	SSW	2.9	SE
19:00 - 20:00	3.0	W	2.2	S	2.8	SE	2.8	SSE
20:00 - 21:00	2.6	SW	2.4	SW	2.2	SSW	2.6	S
21:00 - 22:00	2.2	SW	2.5	SW	2.0	SSW	2.6	SW
22:00 - 23:00	2.4	S	2.9	W	2.6	SSW	2.6	S
23:00 - 24:00	2.5	SW	3.1	SW	2.5	SSW	3.0	WSW
00:00 - 01:00	2.6	S	3.2	W	2.9	SW	2.8	WSW
01:00 - 02:00	2.8	SW	2.9	WSW	2.9	SSW	3.0	WSW
02:00 - 03:00	3.1	SSW	2.8	SW	3.4	WSW	3.1	SW
03:00 - 04:00	3.1	SW	2.7	SW	3.3	W	3.3	S
04:00 - 05:00	2.9	W	2.7	SW	3.4	SSW	3.3	WNW
05:00 - 06:00	2.7	SW	3.2	SSW	2.9	SW	2.7	SSE
06:00 - 07:00	2.1	S	3.2	WNW	1.5	SW	2.6	SSE
07:00 - 08:00	2.2	WSW	3.0	S	2.2	WSW	2.0	SW
08:00 - 09:00	2.2	SW	3.2	S	2.0	SSW	1.9	SSW
09:00 - 10:00	2.5	WSW	3.3	SE	2.2	SSE	2.4	S
10:00 - 11:00	2.8	SW	3.1	SSE	2.9	S	2.6	SSW
11:00 - 12:00	2.8	SSW	3.2	WSW	2.8	SW	2.9	W

Wind Rose



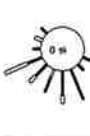
20 %



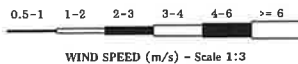
12 %



12 %



12 %



File Control : R:\Database\Windrose\FileControl\Win-224007-Ban Nong Feab 17-24 Apr 2024

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC, Branch 2 (Power Plant)

Location : Ban Nong Feab

Monitor period : 17-24 Apr 2024

Wind Speed Model : Campbell CR510

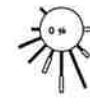
Serial No : 10693

Wind Direction Model : Campbell CR510

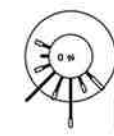
Serial No : 10693

Time	21-22 Apr 2024		22-23 Apr 2024		23-24 Apr 2024	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
12:00 - 13:00	2.9	SSE	3.0	SSE	3.2	S
13:00 - 14:00	3.2	SSW	3.6	SE	3.6	SE
14:00 - 15:00	3.1	SSW	3.6	SSW	3.7	SSE
15:00 - 16:00	3.1	S	3.5	SE	3.4	S
16:00 - 17:00	3.0	S	3.2	WNW	2.9	S
17:00 - 18:00	2.6	S	2.8	SE	3.2	SE
18:00 - 19:00	2.8	SSE	3.1	SSE	3.2	S
19:00 - 20:00	3.3	SE	3.2	S	2.7	SSE
20:00 - 21:00	3.1	E	2.9	S	2.5	SE
21:00 - 22:00	2.5	SSE	2.4	SW	2.4	SSE
22:00 - 23:00	2.3	SE	2.5	S	2.5	SE
23:00 - 24:00	2.4	SSE	2.4	SW	2.5	SSE
00:00 - 01:00	2.3	SSW	2.6	WNW	2.2	SSE
01:00 - 02:00	2.8	NW	2.4	SW	2.4	SSE
02:00 - 03:00	2.9	S	2.3	WSW	2.4	SSW
03:00 - 04:00	2.9	W	2.6	W	2.3	SE
04:00 - 05:00	2.4	WSW	2.8	S	2.0	S
05:00 - 06:00	2.5	SSE	2.9	S	1.9	SSE
06:00 - 07:00	2.7	SW	2.6	SSW	1.9	SSW
07:00 - 08:00	2.3	SW	2.4	S	2.6	SSE
08:00 - 09:00	2.4	WSW	2.8	SW	2.6	WNW
09:00 - 10:00	2.8	WSW	2.8	SSW	3.0	S
10:00 - 11:00	2.7	SW	2.9	SW	3.2	SW
11:00 - 12:00	2.7	S	3.2	WSW	3.5	S

Wind Rose



12 %



12 %



File Control : R:\Database\Windrose\FileControl\Win-224007-Ban Nong Feab 17-24 Apr 2024

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd.
Branch 2, Power Plant
REFERENCE NO. : 224007 Amb (Cert.)/TSP/Apr 2024
SAMPLING DATE : 17-24/04/2024
SAMPLING BY : SECOT Co., Ltd.
ANALYTICAL DATE : 29/04/2024-02/05/2024
RECEIVED DATE : 29/04/2024
SAMPLE CONDITION : Normal
REPORT DATE : 13/05/2024
SITE OPERATOR : Mr. Siwanon Kulawong
LOCATION DESCRIPTIO : 1. Ban Map Chalute
2. Ban Nong Feab

PARAMETER	SAMPLING DATE	UNITS	RESULTS		STANDARD*	REFERENCE METHODS
			1	2		
TSP (24 hr)	17-18/04/2024	mg/m ³	0.095	0.039	0.330	High Volume Air
	18-19/04/2024	mg/m ³	0.074	0.042		Sampler/Gravimetric
	19-20/04/2024	mg/m ³	0.064	0.043		Method
	20-21/04/2024	mg/m ³	0.074	0.047		
	21-22/04/2024	mg/m ³	0.088	0.046		
	22-23/04/2024	mg/m ³	0.081	0.110		
	23-24/04/2024	mg/m ³	0.078	0.030		

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

Maia Poowasanpet

(Miss Narisa Poowasanpet)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. * Notification of National Environment Board, No.24, B.E.2547 (2004).



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TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd.
Branch 2, Power Plant
REFERENCE NO. : 224007 Amb (Cert.)/PM-10/Apr 2024
SAMPLING DATE : 17-24/04/2024
SAMPLING BY : SECOT Co., Ltd.
ANALYTICAL DATE : 29/04/2024-02/05/2024
RECEIVED DATE : 29/04/2024
SAMPLE CONDITION : Normal
REPORT DATE : 13/05/2024
SITE OPERATOR : Mr. Siwanon Kulawong
LOCATION DESCRIPTIO : 1. Ban Map Chalute
2. Ban Nong Feab

PARAMETER	SAMPLING DATE	UNITS	RESULTS		STANDARD*	REFERENCE METHODS
			1	2		
PM-10 (24 hr)	17-18/04/2024	mg/m ³	0.032	0.039	0.120	High Volume Air Sampler
	18-19/04/2024	mg/m ³	0.034	0.036		(Hi-Vol PM-10 Size
	19-20/04/2024	mg/m ³	0.036	0.038		Selective Inlet)/
	20-21/04/2024	mg/m ³	0.044	0.041		Gravimetric Method
	21-22/04/2024	mg/m ³	0.048	0.020		
	22-23/04/2024	mg/m ³	0.036	0.050		
	23-24/04/2024	mg/m ³	0.030	0.025		

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

Maia Poowasanpet

(Miss Narisa Poowasanpet)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. * Notification of National Environment Board, No.24, B.E.2547 (2004).



Ambient Air Monitoring Results : Sulfur dioxide MTR-PTTGC, Branch 2 (Power Plant)

Location : Ban Map Chalute Monitor Period : 17-24 Apr 2024
Analyzer Model : Thermo 43C Station No : SS2-01
Serial No : 0607415773 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E Serial No : 587
Calibration Gas Cylinder I.D. : EB0102326
Certified Date : 04 Jan 2024 Cal Concentration (ppb) : 0,100,200,400
Expire Date : 03 Jan 2025

Time	SO2 Concentration (ppm)						
	17-18 Apr 2024	18-19 Apr 2024	19-20 Apr 2024	20-21 Apr 2024	21-22 Apr 2024	22-23 Apr 2024	23-24 Apr 2024
13:00 - 14:00	0.0050	0.0080	0.0044	0.0026	0.0044	0.0047	0.0065
14:00 - 15:00	0.0038	0.0064	0.0050	0.0031	0.0069	0.0034	0.0055
15:00 - 16:00	0.0048	0.0048	0.0062	0.0072	0.0046	0.0061	0.0050
16:00 - 17:00	0.0063	0.0086	0.0033	0.0076	0.0051	0.0072	0.0049
17:00 - 18:00	0.0074	0.0070	0.0062	0.0069	0.0066	0.0049	0.0053
18:00 - 19:00	0.0054	0.0072	0.0037	0.0038	0.0050	0.0062	0.0069
19:00 - 20:00	0.0036	0.0042	0.0058	0.0048	0.0062	0.0045	0.0071
20:00 - 21:00	0.0031	0.0045	0.0059	0.0060	0.0044	0.0034	0.0065
21:00 - 22:00	0.0044	0.0059	0.0073	0.0070	0.0069	0.0045	0.0064
22:00 - 23:00	0.0050	0.0061	0.0068	0.0059	0.0047	0.0053	0.0034
23:00 - 00:00	0.0047	0.0010	0.0049	0.0061	0.0028	0.0073	0.0036
00:00 - 01:00	0.0065	0.0065	0.0065	0.0048	0.0060	0.0033	0.0036
01:00 - 02:00	0.0050	0.0049	0.0039	0.0043	0.0061	0.0047	0.0037
02:00 - 03:00	0.0061	0.0036	0.0049	0.0046	0.0074	0.0065	0.0042
03:00 - 04:00	0.0042	0.0072	0.0055	0.0074	0.0043	0.0063	0.0068
04:00 - 05:00	0.0068	0.0078	0.0043	0.0048	0.0062	0.0056	0.0044
05:00 - 06:00	0.0065	0.0037	0.0075	0.0065	0.0038	0.0048	0.0063
06:00 - 07:00	0.0068	0.0064	0.0062	0.0080	0.0033	0.0031	0.0058
07:00 - 08:00	0.0065	0.0060	0.0074	0.0075	0.0058	0.0038	0.0061
08:00 - 09:00	0.0070	0.0047	0.0070	0.0040	0.0062	0.0074	0.0060
09:00 - 10:00	0.0035	0.0075	0.0061	0.0047	0.0058	0.0059	0.0057
10:00 - 11:00	0.0078	0.0052	0.0041	0.0051	0.0043	0.0052	0.0063
11:00 - 12:00	0.0068	0.0035	0.0067	0.0051	0.0050	0.0079	0.0070
12:00 - 13:00	0.0078	0.0046	0.0038	0.0047	0.0053	0.0065	0.0072
Average-24Hr*	0.0056	0.0056	0.0056	0.0054	0.0053	0.0054	0.0056
Max-1Hr	0.0078	0.0080	0.0075	0.0076	0.0074	0.0079	0.0072
Min-1Hr	0.0031	0.0010	0.0033	0.0026	0.0028	0.0031	0.0034
Standard-1Hr	0.30 ppm(780 ug/cu.m)						
Standard-24Hr	0.12 ppm(300 ug/cu.m)						

Remark : * Average time between 13:00-13:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Sulfur dioxide MTR-PTTGC, Branch 2 (Power Plant)

Location : Ban Nong Feab Monitor Period : 17-24 Apr 2024
Analyzer Model : Thermo 43C Station No : Shelter 19
Serial No : 60771-328-2 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E Serial No : 587
Calibration Gas Cylinder I.D. : EB0102326
Certified Date : 04 Jan 2024 Cal Concentration (ppb) : 0,100,200,400
Expire Date : 03 Jan 2025

Time	SO2 Concentration (ppm)						
	17-18 Apr 2024	18-19 Apr 2024	19-20 Apr 2024	20-21 Apr 2024	21-22 Apr 2024	22-23 Apr 2024	23-24 Apr 2024
13:00 - 14:00	0.0050	0.0061	0.0024	0.0018	0.0025	0.0033	0.0047
14:00 - 15:00	0.0029	0.0046	0.0042	0.0028	0.0051	0.0020	0.0037
15:00 - 16:00	0.0036	0.0045	0.0047	0.0061	0.0032	0.0047	0.0035
16:00 - 17:00	0.0037	0.0075	0.0014	0.0069	0.0039	0.0056	0.0033
17:00 - 18:00	0.0061	0.0062	0.0050	0.0050	0.0063	0.0035	0.0036
18:00 - 19:00	0.0039	0.0055	0.0014	0.0018	0.0044	0.0045	0.0054
19:00 - 20:00	0.0020	0.0031	0.0057	0.0040	0.0054	0.0036	0.0057
20:00 - 21:00	0.0016	0.0025	0.0054	0.0081	0.0034	0.0028	0.0054
21:00 - 22:00	0.0033	0.0044	0.0069	0.0053	0.0056	0.0049	0.0052
22:00 - 23:00	0.0030	0.0041	0.0056	0.0052	0.0043	0.0049	0.0022
23:00 - 00:00	0.0031	0.0013	0.0035	0.0057	0.0027	0.0063	0.0027
00:00 - 01:00	0.0055	0.0061	0.0061	0.0031	0.0055	0.0024	0.0025
01:00 - 02:00	0.0039	0.0041	0.0021	0.0035	0.0051	0.0037	0.0027
02:00 - 03:00	0.0042	0.0020	0.0034	0.0043	0.0066	0.0055	0.0031
03:00 - 04:00	0.0022	0.0056	0.0035	0.0062	0.0039	0.0054	0.0055
04:00 - 05:00	0.0049	0.0063	0.0026	0.0034	0.0053	0.0047	0.0036
05:00 - 06:00	0.0048	0.0024	0.0059	0.0046	0.0031	0.0052	0.0049
06:00 - 07:00	0.0049	0.0061	0.0056	0.0044	0.0027	0.0028	0.0048
07:00 - 08:00	0.0049	0.0063	0.0065	0.0061	0.0050	0.0028	0.0048
08:00 - 09:00	0.0047	0.0034	0.0060	0.0037	0.0056	0.0066	0.0050
09:00 - 10:00	0.0022	0.0086	0.0042	0.0036	0.0052	0.0045	0.0045
10:00 - 11:00	0.0068	0.0038	0.0019	0.0032	0.0031	0.0035	0.0050
11:00 - 12:00	0.0051	0.0017	0.0046	0.0026	0.0036	0.0060	0.0052
12:00 - 13:00	0.0072	0.0030	0.0017	0.0035	0.0040	0.0050	0.0056
Average-24Hr*	0.0041	0.0046	0.0042	0.0044	0.0044	0.0043	0.0043
Max-1Hr	0.0072	0.0086	0.0069	0.0081	0.0066	0.0066	0.0057
Min-1Hr	0.0016	0.0013	0.0014	0.0018	0.0025	0.0020	0.0022
Standard-1Hr	0.30 ppm(780 ug/cu.m)						
Standard-24Hr	0.12 ppm(300 ug/cu.m)						

Remark : * Average time between 13:00-13:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide MTR-PTTGC, Branch 2 (Power Plant)

Location : North Fence Monitor Period : 17-24 Apr 2024
Analyzer Model : API 200A Station No : Mobile 18
Serial No : 2386 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E Serial No : 587
Calibration Gas Cylinder I.D. : EB0102326
Certified Date : 05 Jan 2024 Cal Concentration (ppb) : 0,100,200,400
Expire Date : 04 Jan 2025

Time	NO2 Concentration (ppm)						
	17-18 Apr 2024	18-19 Apr 2024	19-20 Apr 2024	20-21 Apr 2024	21-22 Apr 2024	22-23 Apr 2024	23-24 Apr 2024
12:00 - 13:00	0.0063	0.0094	0.0088	0.0082	0.0078	0.0144	0.0116
13:00 - 14:00	0.0052	0.0078	0.0102	0.0093	0.0082	0.0123	0.0104
14:00 - 15:00	0.0088	0.0072	0.0086	0.0111	0.0074	0.0114	0.0104
15:00 - 16:00	0.0077	0.0095	0.0110	0.0109	0.0096	0.0121	0.0114
16:00 - 17:00	0.0071	0.0099	0.0100	0.0110	0.0120	0.0070	0.0152
17:00 - 18:00	0.0063	0.0138	0.0131	0.0111	0.0118	0.0071	0.0122
18:00 - 19:00	0.0076	0.0118	0.0095	0.0112	0.0107	0.0073	0.0015
19:00 - 20:00	0.0062	0.0108	0.0118	0.0091	0.0081	0.0015	0.0055
20:00 - 21:00	0.0047	0.0106	0.0097	0.0084	0.0061	0.0046	0.0051
21:00 - 22:00	0.0037	0.0049	0.0082	0.0074	0.0084	0.0044	0.0036
22:00 - 23:00	0.0036	0.0059	0.0049	0.0090	0.0086	0.0042	0.0046
23:00 - 00:00	0.0040	0.0047	0.0109	0.0094	0.0092	0.0042	0.0081
00:00 - 01:00	0.0006	0.0042	0.0036	0.0035	0.0049	0.0023	0.0016
01:00 - 02:00	0.0068	0.0086	0.0103	0.0081	0.0105	0.0066	0.0047
02:00 - 03:00	0.0045	0.0083	0.0095	0.0055	0.0083	0.0083	0.0077
03:00 - 04:00	0.0058	0.0104	0.0098	0.0049	0.0085	0.0085	0.0062
04:00 - 05:00	0.0057	0.0092	0.0101	0.0081	0.0095	0.0082	0.0057
05:00 - 06:00	0.0080	0.0104	0.0117	0.0100	0.0124	0.0077	0.0067
06:00 - 07:00	0.0089	0.0063	0.0100	0.0089	0.0083	0.0077	0.0068
07:00 - 08:00	0.0074	0.0095	0.0117	0.0098	0.0104	0.0061	0.0058
08:00 - 09:00	0.0108	0.0083	0.0092	0.0098	0.0140	0.0065	0.0068
09:00 - 10:00	0.0102	0.0094	0.0078	0.0093	0.0109	0.0055	0.0058
10:00 - 11:00	0.0100	0.0124	0.0105	0.0067	0.0095	0.0127	0.0086
11:00 - 12:00	0.0091	0.0080	0.0096	0.0062	0.0113	0.0137	0.0091
Average-24Hr*	0.0066	0.0088	0.0096	0.0086	0.0094	0.0077	0.0073
Max-1Hr	0.0108	0.0138	0.0131	0.0112	0.0140	0.0144	0.0152
Min-1Hr	0.0006	0.0042	0.0036	0.0035	0.0049	0.0015	0.0015
Standard-1Hr	0.17 ppm(320 ug/cu.m)						
Standard-24Hr							

Remark : * Average time between 12:00-12:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide MTR-PTTGC, Branch 2 (Power Plant)

Location : South Fence Monitor Period : 17-24 Apr 2024
Analyzer Model : API 200A Station No : SS2-05
Serial No : 2365 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E Serial No : 587
Calibration Gas Cylinder I.D. : EB0102326
Certified Date : 05 Jan 2024 Cal Concentration (ppb) : 0,100,200,400
Expire Date : 04 Jan 2025

Time	NO2 Concentration (ppm)						
	17-18 Apr 2024	18-19 Apr 2024	19-20 Apr 2024	20-21 Apr 2024	21-22 Apr 2024	22-23 Apr 2024	23-24 Apr 2024
12:00 - 13:00	0.0133	0.0059	0.0102	0.0115	0.0065	0.0090	0.0110
13:00 - 14:00	0.0078	0.0059	0.0073	0.0104	0.0092	0.0127	0.0095
14:00 - 15:00	0.0080	0.0053	0.0095	0.0128	0.0118	0.0126	0.0097
15:00 - 16:00	0.0077	0.0047	0.0117	0.0088	0.0132	0.0143	0.0108
16:00 - 17:00	0.0086	0.0125	0.0121	0.0092	0.0120	0.0134	0.0118
17:00 - 18:00	0.0088	0.0140	0.0127	0.0100	0.0133	0.0159	0.0176
18:00 - 19:00	0.0111	0.0134	0.0131	0.0109	0.0139	0.0173	0.0014
19:00 - 20:00	0.0153	0.0096	0.0090	0.0084	0.0096	0.0084	0.0054
20:00 - 21:00	0.0096	0.0073	0.0093	0.0079	0.0082	0.0114	0.0049
21:00 - 22:00	0.0111	0.0113	0.0076	0.0066	0.0083	0.0073	0.0034
22:00 - 23:00	0.0107	0.0046	0.0063	0.0093	0.0069	0.0064	0.0044
23:00 - 00:00	0.0102	0.0061	0.0135	0.0094	0.0132	0.0089	0.0080
00:00 - 01:00	0.0072	0.0046	0.0064	0.0050	0.0065	0.0074	0.0015
01:00 - 02:00	0.0131	0.0090	0.0106	0.0090	0.0122	0.0119	0.0045
02:00 - 03:00	0.0096	0.0093	0.0100	0.0064	0.0128	0.0148	0.0075
03:00 - 04:00	0.0091	0.0111	0.0093	0.0063	0.0117	0.0136	0.0060
04:00 - 05:00	0.0100	0.0102	0.0095	0.0068	0.0123	0.0129	0.0099
05:00 - 06:00	0.0111	0.0105	0.0109	0.0087	0.0112	0.0114	0.0104
06:00 - 07:00	0.0131	0.0095	0.0117	0.0094	0.0137	0.0144	0.0119
07:00 - 08:00	0.0122	0.0102	0.0102	0.0093	0.0145	0.0137	0.0123
08:00 - 09:00	0.0157	0.0107	0.0081	0.0071	0.0141	0.0124	0.0109
09:00 - 10:00	0.0128	0.0123	0.0064	0.0086	0.0104	0.0093	0.0099
10:00 - 11:00	0.0086	0.0145	0.0093	0.0068	0.0105	0.0097	0.0090
11:00 - 12:00	0.0069	0.0090	0.0108	0.0085	0.0091	0.0116	0.0092
Average-24Hr*	0.0105	0.0092	0.0098	0.0086	0.0110	0.0117	0.0084
Max-1Hr	0.0157	0.0145	0.0135	0.0128	0.0145	0.0173	0.0176
Min-1Hr	0.0069	0.0046	0.0063	0.0050	0.0055	0.0064	0.0014
Standard-1Hr	0.17 ppm(320 ug/cu.m)						
Standard-24Hr							

Remark : * Average time between 12:00-12:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide MTR-PTTGC, Branch 2 (Power Plant)

Location : Ban Map Chalute Monitor Period : 17-24 Apr 2024
Analyzer Model : API 200A Station No : SS2-01
Serial No : 1528 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E Serial No : 587
Calibration Gas Cylinder I.D. : EB0102326
Certified Date : 05 Jan 2024 Cal Concentration (ppb) : 0,100,200,400
Expire Date : 04 Jan 2025

Time	NO2 Concentration (ppm)						
	17-18 Apr 2024	18-19 Apr 2024	19-20 Apr 2024	20-21 Apr 2024	21-22 Apr 2024	22-23 Apr 2024	23-24 Apr 2024
13:00 - 14:00	0.0059	0.0061	0.0054	0.0037	0.0032	0.0046	0.0049
14:00 - 15:00	0.0056	0.0062	0.0051	0.0039	0.0039	0.0046	0.0035
15:00 - 16:00	0.0080	0.0059	0.0050	0.0038	0.0039	0.0044	0.0043
16:00 - 17:00	0.0070	0.0065	0.0062	0.0046	0.0049	0.0053	0.0074
17:00 - 18:00	0.0083	0.0078	0.0076	0.0055	0.0055	0.0058	0.0075
18:00 - 19:00	0.0093	0.0087	0.0079	0.0072	0.0061	0.0079	0.0125
19:00 - 20:00	0.0102	0.0087	0.0084	0.0085	0.0055	0.0082	0.0101
20:00 - 21:00	0.0082	0.0061	0.0073	0.0076	0.0037	0.0021	0.0113
21:00 - 22:00	0.0071	0.0056	0.0063	0.0063	0.0013	0.0052	0.0094
22:00 - 23:00	0.0064	0.0054	0.0048	0.0033	0.0031	0.0029	0.0078
23:00 - 00:00	0.0064	0.0039	0.0039	0.0042	0.0061	0.0023	0.0071
00:00 - 01:00	0.0061	0.0026	0.0092	0.0054	0.0104	0.0022	0.0091
01:00 - 02:00	0.0027	0.0023	0.0017	0.0027	0.0021	0.0017	0.0027
02:00 - 03:00	0.0080	0.0084	0.0069	0.0074	0.0085	0.0057	0.0073
03:00 - 04:00	0.0071	0.0067	0.0068	0.0048	0.0058	0.0069	0.0091
04:00 - 05:00	0.0079	0.0066	0.0063	0.0027	0.0068	0.0084	0.0075
05:00 - 06:00	0.0084	0.0067	0.0055	0.0038	0.0060	0.0091	0.0082
06:00 - 07:00	0.0101	0.0081	0.0070	0.0048	0.0064	0.0089	0.0103
07:00 - 08:00	0.0113	0.0059	0.0093	0.0063	0.0081	0.0107	0.0095
08:00 - 09:00	0.0072	0.0051	0.0056	0.0043	0.0073	0.0103	0.0074
09:00 - 10:00	0.0066	0.0053	0.0045	0.0032	0.0054	0.0098	0.0086
10:00 - 11:00	0.0058	0.0046	0.0058	0.0037	0.0047	0.0100	0.0049
11:00 - 12:00	0.0055	0.0047	0.0037	0.0030	0.0046	0.0109	0.0043
12:00 - 13:00	0.0054	0.0047	0.0038	0.0039	0.0041	0.0089	0.0020
Average-24Hr*	0.0073	0.0059	0.0060	0.0048	0.0053	0.0065	0.0073
Max-1Hr	0.0113	0.0087	0.0093	0.0085	0.0104	0.0109	0.0125
Min-1Hr	0.0027	0.0023	0.0017	0.0027	0.0013	0.0017	0.0020
Standard-1Hr	0.17 ppm(320 ug/cu.m)						
Standard-24Hr							

Remark : * Average time between 13:00-13:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide MTR-PTTGC, Branch 2 (Power Plant)

Location : Ban Nong Feab Monitor Period : 17-24 Apr 2024
Analyzer Model : API 200A Station No : Shelter 19
Serial No : 1505 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E Serial No : 587
Calibration Gas Cylinder I.D. : EB0102326
Certified Date : 05 Jan 2024 Cal Concentration (ppb) : 0,100,200,400
Expire Date : 04 Jan 2025

Time	NO2 Concentration (ppm)						
	17-18 Apr 2024	18-19 Apr 2024	19-20 Apr 2024	20-21 Apr 2024	21-22 Apr 2024	22-23 Apr 2024	23-24 Apr 2024
13:00 - 14:00	0.0044	0.0055	0.0054	0.0056	0.0046	0.0067	0.0054
14:00 - 15:00	0.0040	0.0070	0.0048	0.0066	0.0042	0.0076	0.0048
15:00 - 16:00	0.0058	0.0057	0.0056	0.0064	0.0050	0.0073	0.0054
16:00 - 17:00	0.0050	0.0061	0.0057	0.0065	0.0044	0.0079	0.0064
17:00 - 18:00	0.0061	0.0058	0.0066	0.0065	0.0051	0.0071	0.0066
18:00 - 19:00	0.0075	0.0084	0.0075	0.0090	0.0060	0.0092	0.0081
19:00 - 20:00	0.0077	0.0074	0.0083	0.0084	0.0054	0.0077	0.0020
20:00 - 21:00	0.0072	0.0061	0.0072	0.0064	0.0050	0.0020	0.0062
21:00 - 22:00	0.0053	0.0064	0.0052	0.0063	0.0019	0.0058	0.0055
22:00 - 23:00	0.0040	0.0058	0.0038	0.0026	0.0029	0.0047	0.0037
23:00 - 00:00	0.0034	0.0035	0.0013	0.0051	0.0053	0.0040	0.0046
00:00 - 01:00	0.0049	0.0021	0.0095	0.0060	0.0078	0.0038	0.0083
01:00 - 02:00	0.0013	0.0015	0.0015	0.0023	0.0021	0.0017	0.0017
02:00 - 03:00	0.0067	0.0076	0.0061	0.0079	0.0069	0.0064	0.0047
03:00 - 04:00	0.0057	0.0074	0.0063	0.0048	0.0052	0.0081	0.0075
04:00 - 05:00	0.0073	0.0073	0.0062	0.0036	0.0059	0.0085	0.0062
05:00 - 06:00	0.0082	0.0066	0.0063	0.0040	0.0068	0.0077	0.0058
06:00 - 07:00	0.0094	0.0074	0.0069	0.0048	0.0068	0.0075	0.0070
07:00 - 08:00	0.0090	0.0060	0.0083	0.0048	0.0076	0.0084	0.0071
08:00 - 09:00	0.0057	0.0053	0.0063	0.0051	0.0075	0.0070	0.0056
09:00 - 10:00	0.0069	0.0056	0.0057	0.0051	0.0069	0.0075	0.0072
10:00 - 11:00	0.0067	0.0056	0.0052	0.0057	0.0065	0.0058	0.0060
11:00 - 12:00	0.0057	0.0063	0.0058	0.0053	0.0064	0.0056	0.0058
12:00 - 13:00	0.0066	0.0050	0.0064	0.0051	0.0060	0.0055	0.0056
Average-24Hr*	0.0060	0.0059	0.0059	0.0056	0.0055	0.0064	0.0057
Max-1Hr	0.0094	0.0084	0.0095	0.0090	0.0078	0.0092	0.0083
Min-1Hr	0.0013	0.0015	0.0013	0.0023	0.0019	0.0017	0.0017
Standard-1Hr	0.17 ppm(320 ug/cu.m)						
Standard-24Hr							

Remark : * Average time between 13:00-13:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team

ภาคผนวก ง.3

ใบรับรองผลการตรวจวัดระดับเสียงทั่วไป



Noise Monitoring Result : Community Noise

MTR-PTTGC, Branch 2 (Power Plant)

Location : The North of Fence Monitor Period : 17-24 Apr 2024

SLM Model : Cirrus CR162B Serial No : G302237

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 92.2/1.5

Expire Date : 03 Sep 2024

Cal Sheet No. : CR-515-2024-102

Time	Equivalent Sound Pressure Level (dB(A))						
	17-18 Apr 2024	18-19 Apr 2024	19-20 Apr 2024	20-21 Apr 2024	21-22 Apr 2024	22-23 Apr 2024	23-24 Apr 2024
15:00 - 16:00	67.7	67.7	67.3	67.0	66.6	67.2	67.3
16:00 - 17:00	67.9	68.2	67.7	67.4	67.3	68.2	67.9
17:00 - 18:00	68.1	68.3	67.8	67.9	67.2	68.3	68.4
18:00 - 19:00	67.8	68.3	67.6	67.8	67.6	67.9	68.3
19:00 - 20:00	67.8	68.0	67.4	67.4	67.3	67.3	67.8
20:00 - 21:00	67.7	67.9	67.2	67.3	67.3	67.1	67.7
21:00 - 22:00	67.3	67.6	67.0	66.8	66.8	66.8	67.2
22:00 - 23:00	67.3	67.5	66.9	66.7	67.1	66.5	66.9
23:00 - 00:00	67.3	67.4	66.8	66.5	66.7	66.4	66.7
00:00 - 01:00	67.2	67.3	66.8	66.4	66.4	66.5	66.6
01:00 - 02:00	67.1	67.3	66.8	66.4	66.5	66.4	66.6
02:00 - 03:00	67.2	67.2	66.7	66.4	66.5	66.3	66.8
03:00 - 04:00	67.1	67.2	66.7	66.6	66.3	66.2	66.6
04:00 - 05:00	67.2	67.3	67.1	66.4	66.2	66.4	66.7
05:00 - 06:00	67.4	67.6	68.2	66.7	66.6	66.7	67.3
06:00 - 07:00	69.0	69.0	68.4	67.8	68.2	68.7	68.8
07:00 - 08:00	68.7	69.0	67.7	68.1	68.5	68.6	69.1
08:00 - 09:00	68.4	68.0	67.5	67.7	68.2	68.2	68.0
09:00 - 10:00	68.0	67.9	67.9	67.1	67.5	67.6	67.6
10:00 - 11:00	67.9	67.1	68.2	67.0	67.7	67.7	67.4
11:00 - 12:00	68.0	66.8	67.7	66.9	67.3	67.5	67.8
12:00 - 13:00	67.4	66.6	67.0	66.4	67.0	67.4	67.4
13:00 - 14:00	67.5	66.8	67.1	66.1	67.0	67.3	67.4
14:00 - 15:00	67.4	67.3	67.4	66.6	67.3	67.3	68.1

Leq(24)*	67.7	67.7	67.4	67.0	67.2	67.3	67.6
Ldn	73.9	74.0	73.7	73.2	73.3	73.3	73.6
Lmax **	86.2	89.3	87.5	89.9	88.9	90.1	90.6

Standard-24Hr 70 dB(A)
Standard-Max 115 dB(A)

Remark : * Average time between 15:00-15:00

** Maximum Sound Pressure Level between 15:00-15:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise

MTR-PTTGC, Branch 2 (Power Plant)

Location : The North of Fence

Monitor Period : 17-24 Apr 2024

SLM Model : Cirrus CR162B

Serial No : G302237

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 92.2/1.5

Expire Date : 03 Sep 2024

Cal Sheet No. : CR-515-2024-102

Time	L90 (dB(A))						
	17-18 Apr 2024	18-19 Apr 2024	19-20 Apr 2024	20-21 Apr 2024	21-22 Apr 2024	22-23 Apr 2024	23-24 Apr 2024
15:00 - 16:00	66.3	66.4	66.2	65.6	64.9	65.4	65.8
16:00 - 17:00	66.4	66.7	66.4	65.8	65.5	65.7	66.0
17:00 - 18:00	66.6	66.7	66.6	65.9	65.6	66.1	66.3
18:00 - 19:00	66.5	66.7	66.4	66.1	65.8	66.0	66.3
19:00 - 20:00	66.5	66.9	66.5	65.9	66.0	65.8	66.1
20:00 - 21:00	66.7	66.7	66.4	65.9	65.9	65.7	66.4
21:00 - 22:00	66.6	66.8	66.4	66.1	65.7	65.8	66.3
22:00 - 23:00	66.7	66.8	66.4	65.9	65.9	65.6	66.2
23:00 - 00:00	66.7	66.8	66.4	65.9	65.8	65.5	66.0
00:00 - 01:00	66.6	66.8	66.3	65.9	65.8	65.6	66.0
01:00 - 02:00	66.5	66.8	66.3	65.8	65.7	65.7	66.0
02:00 - 03:00	66.6	66.8	66.2	65.8	65.5	65.7	66.1
03:00 - 04:00	66.5	66.7	66.2	65.9	65.5	65.6	66.0
04:00 - 05:00	66.5	66.7	66.3	65.8	65.5	65.7	66.0
05:00 - 06:00	66.6	66.8	66.9	65.9	65.5	65.8	66.2
06:00 - 07:00	67.2	67.1	66.8	66.0	66.0	66.3	66.7
07:00 - 08:00	66.9	66.5	66.2	66.2	66.0	66.4	66.7
08:00 - 09:00	66.6	65.9	66.0	65.7	65.7	66.0	66.0
09:00 - 10:00	66.5	65.9	66.3	65.0	65.5	65.7	65.8
10:00 - 11:00	66.6	65.9	67.0	65.4	65.4	65.7	65.7
11:00 - 12:00	66.4	65.7	65.8	65.2	65.4	65.7	65.8
12:00 - 13:00	66.2	65.6	65.7	64.7	65.4	65.8	65.6
13:00 - 14:00	66.1	65.7	65.5	64.6	65.4	65.7	65.7
14:00 - 15:00	66.2	66.0	65.6	64.9	65.4	65.8	65.7

L90(avg)*	66.5	66.5	66.3	65.7	65.6	65.8	66.1
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Remark : * Average time between 15:00-15:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Community Noise MTR-PTTGC, Branch 2 (Power Plant)

Location : The South of Fence Monitor Period : 17-24 Apr 2024
SLM Model : Cirrus CR162B Serial No : G302738
Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515 Serial No : 97097
Calibration Ref dB(A) : 94.0 Certified Date : 04 Sep 2023
SLM Reading / Adjust dB(A) : 92.9/0.8 Expire Date : 03 Sep 2024
Cal Sheet No. : CR-515-2024-102

Time	Equivalent Sound Pressure Level (dB(A))						
	17-18 Apr 2024	18-19 Apr 2024	19-20 Apr 2024	20-21 Apr 2024	21-22 Apr 2024	22-23 Apr 2024	23-24 Apr 2024
16:00 - 17:00	60.6	61.5	63.2	60.1	61.0	62.7	61.8
17:00 - 18:00	61.1	63.4	61.5	60.9	61.0	63.6	63.7
18:00 - 19:00	60.8	61.4	60.8	60.4	61.4	62.9	61.8
19:00 - 20:00	60.5	60.4	61.1	60.2	61.7	61.6	61.4
20:00 - 21:00	60.8	60.3	60.7	60.5	60.9	60.3	61.0
21:00 - 22:00	61.1	60.1	60.3	60.2	61.0	60.6	60.7
22:00 - 23:00	60.5	60.1	60.2	60.1	61.1	60.2	61.4
23:00 - 00:00	61.0	60.2	60.0	60.3	60.9	60.3	61.6
00:00 - 01:00	60.8	60.1	60.2	60.2	60.8	60.1	61.4
01:00 - 02:00	60.5	60.2	59.9	60.1	61.1	60.3	61.7
02:00 - 03:00	60.5	60.1	60.2	60.3	60.8	60.5	61.1
03:00 - 04:00	60.6	59.9	60.7	60.2	61.2	60.2	61.2
04:00 - 05:00	60.7	59.9	60.7	60.4	61.0	60.2	61.5
05:00 - 06:00	60.6	60.0	61.7	60.6	61.1	60.5	61.1
06:00 - 07:00	61.9	61.0	61.6	61.4	61.8	61.1	61.8
07:00 - 08:00	64.7	64.2	61.9	61.9	63.3	64.1	64.6
08:00 - 09:00	63.2	62.2	61.4	61.3	62.9	63.4	62.1
09:00 - 10:00	61.5	63.1	60.7	61.3	63.0	63.0	62.4
10:00 - 11:00	61.3	62.3	61.3	61.9	62.9	61.7	62.1
11:00 - 12:00	61.1	60.6	60.8	60.9	62.9	61.4	62.0
12:00 - 13:00	60.9	61.1	60.8	59.6	62.9	60.1	59.7
13:00 - 14:00	61.7	61.3	60.2	60.5	77.7	61.5	60.4
14:00 - 15:00	60.8	60.7	60.0	62.1	63.6	61.6	61.0
15:00 - 16:00	61.2	62.7	62.2	61.2	62.4	61.7	61.8

Leq(24)*	61.3	61.3	61.0	60.7	65.9	61.6	61.8
Ldn	67.3	66.9	67.1	66.9	69.2	67.1	67.9
Lmax **	84.0	88.5	92.1	80.3	93.5	88.3	82.9

Standard-24Hr 70 dB(A)
Standard-Max 115 dB(A)

Remark : * Average time between 16:00-16:00

** Maximum Sound Pressure Level between 16:00-16:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise MTR-PTTGC, Branch 2 (Power Plant)

Location : The South of Fence Monitor Period : 17-24 Apr 2024
SLM Model : Cirrus CR162B Serial No : G302738
Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515 Serial No : 97097
Calibration Ref dB(A) : 94.0 Certified Date : 04 Sep 2023
SLM Reading / Adjust dB(A) : 92.9/0.8 Expire Date : 03 Sep 2024
Cal Sheet No. : CR-515-2024-102

Time	L90 (dB(A))						
	17-18 Apr 2024	18-19 Apr 2024	19-20 Apr 2024	20-21 Apr 2024	21-22 Apr 2024	22-23 Apr 2024	23-24 Apr 2024
16:00 - 17:00	59.8	59.2	59.5	59.0	59.9	60.7	60.0
17:00 - 18:00	59.9	59.3	59.4	59.3	60.0	60.9	60.5
18:00 - 19:00	59.9	59.6	59.5	59.2	60.2	61.5	60.5
19:00 - 20:00	59.8	59.2	59.5	59.0	60.1	60.0	60.1
20:00 - 21:00	59.9	59.3	59.4	59.5	60.1	59.5	60.2
21:00 - 22:00	59.9	59.3	59.3	59.4	60.3	59.5	60.0
22:00 - 23:00	59.9	59.3	59.4	59.4	60.3	59.5	60.3
23:00 - 00:00	60.3	59.6	59.3	59.6	60.2	59.6	60.6
00:00 - 01:00	60.2	59.5	59.6	59.6	60.1	59.5	60.4
01:00 - 02:00	60.0	59.4	59.3	59.6	60.5	59.6	60.8
02:00 - 03:00	59.9	59.3	59.6	59.7	60.3	59.8	60.3
03:00 - 04:00	60.0	59.2	60.1	59.7	60.4	59.6	60.4
04:00 - 05:00	60.0	59.3	60.0	59.8	60.4	59.6	60.3
05:00 - 06:00	60.0	59.3	60.8	59.9	60.5	59.8	60.2
06:00 - 07:00	60.5	59.6	60.6	60.1	60.7	59.8	60.4
07:00 - 08:00	60.4	59.7	60.6	59.7	60.6	59.9	60.5
08:00 - 09:00	60.4	60.4	59.9	59.9	60.4	60.1	59.5
09:00 - 10:00	59.8	59.8	59.5	59.3	60.6	60.0	59.4
10:00 - 11:00	59.6	60.1	59.7	59.5	60.6	59.7	60.1
11:00 - 12:00	59.8	59.3	59.5	59.0	61.2	59.3	59.1
12:00 - 13:00	59.6	59.8	59.8	58.7	62.1	59.2	58.7
13:00 - 14:00	59.7	59.3	59.1	59.1	62.5	59.7	58.9
14:00 - 15:00	59.9	59.4	58.7	59.5	61.4	60.0	59.0
15:00 - 16:00	59.5	59.5	59.1	59.7	60.6	59.7	59.4

L90(avg)*	60.0	59.5	59.7	59.5	60.6	59.9	60.0
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Remark : * Average time between 16:00-16:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team

ภาคผนวก ง.4

ใบรับรองผลการตรวจวิเคราะห์คุณภาพน้ำ



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL. (662) 959-3600 FAX (662) 959-3535 Website: secot.co.th E-mail: envserv@secot.co.th

WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PIT Global Chemical Public Company Limited ,	REQUEST SERVICE No.	: 0059/67
	Branch 2 (Power Plant)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 08:55
SAMPLING DATE	: 11/01/2024	ANALYTICAL DATE	: 12-18/01/2024
RECEIVED DATE	: 12/01/2024	SITE OPERATOR	: Miss Thipsuda Wannakran
REPORT DATE	: 19/01/2024	FILE CODE	: 224007_WW_January
SAMPLE CONDITION	: Normal		

LOCATION DESCRIPTION : 1 = ก่อนปล่อยลงสู่คลองระบายน้ำทิ้งของนิคมฯ (Final Check Basin)

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION I	STANDARD ¹⁾
Temperature	°C	2550 B	< 0.5	31.5	≤ 40
pH	-	4500-11 B	< 0.10	7.99	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1.702	34,060 ²⁾
Total Suspended Solids	mg/l	2540 D	< 5	9	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD ₅	mg/l	5210 B	< 1.0	1.3	≤ 20
COD	mg/l	5220 C	< 15.00	30.85	≤ 120
Free Cl ₂	mg/l	4500-Cl G	< 0.01	0.04	≤ 1
Nitrate	mg/l	4500-NO ₃ -E	< 0.02	0.29	≤ 10
TKN	mg/l	4500-Norg B	< 0.20	1.2	≤ 100
Copper (Cu)	mg/l	3120 B	< 0.001	< 0.02	≤ 2
Iron (Fe)	mg/l	3500-Fe B	< 0.05	0.63	≤ 1
Zinc (Zn)	mg/l	3120 B	< 0.003	0.60	≤ 5

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemsuda Insom

(Miss Khemsuda Insom)

Analyst

REG. NO. 7-239-N-0005

Araya Tipparak

(Mrs. Araya Tipparak)

Technical Management Team

REG. NO. 7-239-N-0004

Remark : 1. Reported analysis refers to submitted sample only.

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3. ¹⁾ Notification of the Ministry of Natural Resources and Environment B.E.2565 (2022).

4. ²⁾ In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on January 11, 2024 found to be 29,060 mg/l therefore the Standard of TDS found to be 34,060 mg/l).

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Company Limited ,	REQUEST SERVICE No.	: 0060/67
	Branch 2 (Power Plant)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 09:05
SAMPLING DATE	: 11/01/2024	ANALYTICAL DATE	: 12-17/01/2024
RECEIVED DATE	: 12/01/2024	SITE OPERATOR	: Miss Thipsuda Wannakran
REPORT DATE	: 18/01/2024	FILE CODE	: 224007_SW_January
SAMPLE CONDITION	: Normal		

LOCATION DESCRIPTION : 1 = คลองระบายน้ำทิ้งของนิคมฯ ก่อนจุดปล่อยน้ำของโรงโม่หิน

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION I	STANDARD ¹⁾
Temperature	°C	2550 B	< 0.5	32.1	2)
pH	-	4500-11 B	< 0.10	8.73	2)
Total Dissolved Solids	mg/l	2540 C	< 50	7.736	2)
Total Suspended Solids	mg/l	2540 D	< 5	11	2)
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	2)
Phenols	mg/l	5530 B,C	< 0.001	ND	2)
BOD ₅	mg/l	5210 B	< 1.0	2.4	2)
COD	mg/l	5220 C	< 15.00	19.28	2)

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemsuda Insom

(Miss Khemsuda Insom)

Analyst

Araya Tipparak

(Mrs. Araya Tipparak)

Technical Management Team

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3. ¹⁾ Notification of the National Environment Board No.8 B.E.2537 (1994).

Subject Determining water quality standards in Surface Water Sources for Surface Water Class 5.

4. ²⁾ No standard.

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTI Global Chemical Public Company Limited , REQUEST SERVICE No. : 0060/67
Branch 2 (Power Plant) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 09:15
SAMPLING DATE : 11/01/2024 ANALYTICAL DATE : 12-17/01/2024
RECEIVED DATE : 12/01/2024 SITE OPERATOR : Miss Thipsuda Wannakran
REPORT DATE : 18/01/2024 FILE CODE : 224007_SW_January
SAMPLE CONDITION : Normal
LOCATION DESCRIPTION : 2 = คลองระบายน้ำทิ้งของนิคมฯ หลังจุดปล่อยน้ำของโรงโหล่หินสี่

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION 2	STANDARD ^{1/}
Temperature	°C	2550 B	< 0.5	30.4	2/
pH	-	4500-H ⁺ B	< 0.10	7.52	2/
Total Dissolved Solids	mg/l	2540 C	< 50	576	2/
Total Suspended Solids	mg/l	2540 D	< 5	9	2/
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	2/
Phenols	mg/l	5530 B,C	< 0.001	ND	2/
BOD ₅	mg/l	5210 B	< 1.0	2.0	2/
COD	mg/l	5220 C	< 15.00	15.42	2/

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)



(Miss Khemchuda Insom)

Analyst



(Mrs. Araya Tipparuk)

Technical Management Team

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3. ^{1/} Notification of the National Environment Board No.8 B.E.2537 (1994).

Subject Determining water quality standards in Surface Water Sources for Surface Water Class 5.

4. ^{2/} No standard.

5. - Not available.



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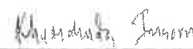
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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Company Limited , REQUEST SERVICE No. : 0243/67
Branch 2 (Power Plant) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 09:58
SAMPLING DATE : 08/02/2024 ANALYTICAL DATE : 09-15/02/2024
RECEIVED DATE : 09/02/2024 SITE OPERATOR : Mr. Watcharukan Pramokhate
REPORT DATE : 15/02/2024 FILE CODE : 224007_WW_February
SAMPLE CONDITION : Normal
LOCATION DESCRIPTION : 1 = ก่อนปล่อยของตู้คูลลิ่งระบายน้ำทิ้งของนิคมฯ (Final Check Basin)

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION 1	STANDARD ^{1/}
Temperature	°C	2550 B	< 0.5	33.1	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.72	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	2,906	25,660 ^{2/}
Total Suspended Solids	mg/l	2540 D	< 5	5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD ₅	mg/l	5210 B	< 1.0	1.0	≤ 20
COD	mg/l	5220 C	< 15.00	44.54	≤ 120
Free Cl ₂	mg/l	4500-Cl G	< 0.01	0.04	≤ 1
Nitrate	mg/l	4500-NO ₃ -E	< 0.02	0.32	≤ 10
TKN	mg/l	4500-Norg B	< 0.20	2.2	≤ 100
Copper (Cu)	mg/l	3120 B	< 0.001	< 0.02	≤ 2
Iron (Fe)	mg/l	3500-Fe B	< 0.05	0.30	≤ 1
Zinc (Zn)	mg/l	3120 B	< 0.003	0.36	≤ 5

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)



(Miss Khemchuda Insom)

Analyst

REG. NO. 2-239-R-0005



(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-R-0004

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3. ^{1/} Notification of the Ministry of Natural Resources and Environment B.E.2565 (2022).

4. ^{2/} In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on February 08, 2024 found to be 20,660 mg/l therefore the Standard of TDS found to be 25,660 mg/l).

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Company Limited , REQUEST SERVICE No. : 0242/67
Branch 2 (Power Plant) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 10:33
SAMPLING DATE : 08/02/2024 ANALYTICAL DATE : 09-15/02/2024
RECEIVED DATE : 09/02/2024 SITE OPERATOR : Mr. Watcharakon Pramakhate
REPORT DATE : 15/02/2024 FILE CODE : 224007_SW_February
SAMPLE CONDITION : Normal
LOCATION DESCRIPTION : 1 = ถังรองรับน้ำทิ้งของนิคมฯ ก่อนจุดปล่อยน้ำของโรงโม่หินสี

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				1	
Temperature	°C	2550 B	< 0.5	35.1	2/
pH	-	4500-H B	< 0.10	8.51	2/
Total Dissolved Solids	mg/l	2540 C	< 50	9,530	2/
Total Suspended Solids	mg/l	2540 D	< 5	48	2/
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	2/
Phenols	mg/l	5530 B,C	< 0.001	ND	2/
BOD ₅	mg/l	5210 B	< 1.0	2.2	2/
COD	mg/l	5220 C	< 15.00	18.56	2/

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER, 21st ED. 2017 (AWWA, APHA, WEF)

(Miss Khemchuda Insorn)
Analyst

(Mrs. Araya Tipparak)
Technical Management Team

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3. ^{1/} Notification of the National Environment Board No.8 B.E.2537 (1994).

Subject Determining water quality standards in Surface Water Sources for Surface Water Class 5.

4. ^{2/} No standard.

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Company Limited , REQUEST SERVICE No. : 0242/67
Branch 2 (Power Plant) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 10:45
SAMPLING DATE : 08/02/2024 ANALYTICAL DATE : 09-15/02/2024
RECEIVED DATE : 09/02/2024 SITE OPERATOR : Mr. Watcharakon Pramakhate
REPORT DATE : 15/02/2024 FILE CODE : 224007_SW_February
SAMPLE CONDITION : Normal
LOCATION DESCRIPTION : 2 = คลองระบายน้ำทิ้งของนิคมฯ หลังจุดปล่อยน้ำของโรงโม่หินสี

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				2	
Temperature	°C	2550 B	< 0.5	33.1	2/
pH	-	4500-H B	< 0.10	7.52	2/
Total Dissolved Solids	mg/l	2540 C	< 50	1,500	2/
Total Suspended Solids	mg/l	2540 D	< 5	7	2/
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	2/
Phenols	mg/l	5530 B,C	< 0.001	ND	2/
BOD ₅	mg/l	5210 B	< 1.0	1.7	2/
COD	mg/l	5220 C	< 15.00	18.56	2/

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER, 21st ED. 2017 (AWWA, APHA, WEF)

(Miss Khemchuda Insorn)
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Subject Determining water quality standards in Surface Water Sources for Surface Water Class 5.

4. ^{2/} No standard.

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	PTT Global Chemical Public Company Limited	REQUEST SERVICE No.	0502/67
	Branch 2 (Power Plant)	SAMPLING METHOD	Grab
SAMPLING BY	SECOT Co., Ltd.	SAMPLING TIME	15:13
SAMPLING DATE	14/03/2024	ANALYTICAL DATE	15-22/03/2024
RECEIVED DATE	15/03/2024	SITE OPERATOR	Miss Salisa Aimee
REPORT DATE	23/03/2024	FILE CODE	224007_WW_March
SAMPLE CONDITION	Normal		

LOCATION DESCRIPTION : 1 = ก่อนปล่อยลงสู่คลองระบองมน้ำทิ้งของนิคมฯ (Final Check Basin)


PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				1	STANDARD ^{1/}
Temperature	°C	2550 B	< 0.5	36.2	≤ 40
pH		4500-H ¹ B	< 0.10	8.21	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	2,440	36.020 ^{2/}
Total Suspended Solids	mg/l	2540 D	< 5	6	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD ₅	mg/l	5210 B	< 1.0	1.2	≤ 20
COD	mg/l	5220 C	< 15.00	55.18	≤ 120
Free Cl ₂	mg/l	4500-Cl G	< 0.01	0.02	≤ 1
Nitrate	mg/l	4500-NO ₃ -E	< 0.02	0.14	≤ 10
TKN	mg/l	4500-Norg B	< 0.20	3.5	≤ 100
Copper (Cu)	mg/l	3120 B	< 0.001	< 0.02	≤ 2
Iron (Fe)	mg/l	3500-Fe B	< 0.05	0.22	≤ 1
Zinc (Zn)	mg/l	3120 B	< 0.003	0.82	≤ 5

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 22nd ED. 2012 (AWWA, APHA, WEF)


(Miss Khemchuda Insom)

Analyst

REG. NO. 2-239-ก-0005


(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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4. ^{2/} In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on March 14, 2024 found to be 31,020 mg/l therefore the Standard of TDS found to be 36,020 mg/l).

5. - Not available.



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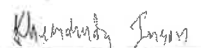
WATER AND WASTEWATER ANALYSIS REPORT


CLIENT NAME	PTT Global Chemical Public Company Limited	REQUEST SERVICE No.	0501/67
	Branch 2 (Power Plant)	SAMPLING METHOD	Grab
SAMPLING BY	SECOT Co., Ltd.	SAMPLING TIME	14:49
SAMPLING DATE	14/03/2024	ANALYTICAL DATE	15-22/03/2024
RECEIVED DATE	15/03/2024	SITE OPERATOR	Miss Wiraya Patchimboon
REPORT DATE	23/03/2024	FILE CODE	224007_SW_March
SAMPLE CONDITION	Normal		

LOCATION DESCRIPTION : 1 = คลองระบายน้ำทิ้งของนิคมฯ ก่อนปล่อยลงสู่คลองโรงโกลนเสไฟฟ้า

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				1	STANDARD ^{1/}
Temperature	°C	2550 B	< 0.5	35.9	2/
pH		4500-H ¹ B	< 0.10	8.95	2/
Total Dissolved Solids	mg/l	2540 C	< 50	8.864	2/
Total Suspended Solids	mg/l	2540 D	< 5	56	2/
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	2/
Phenols	mg/l	5530 B,C	< 0.001	ND	2/
BOD ₅	mg/l	5210 B	< 1.0	2.3	2/
COD	mg/l	5220 C	< 15.00	36.56	2/

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 22nd ED. 2012 (AWWA, APHA, WEF)


(Miss Khemchuda Insom)
Analyst


(Mrs. Araya Tipparuk)
Technical Management Team

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3. ^{1/} Notification of the National Environment Board No.8 B.E.2537 (1994).

Subject Determining water quality standards in Surface Water Sources for Surface Water Class 5.

4. ^{2/} No standard.

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Company Limited , REQUEST SERVICE No. : 0501/67
Branch 2 (Power Plant) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 14:58
SAMPLING DATE : 14/03/2024 ANALYTICAL DATE : 15-22/03/2024
RECEIVED DATE : 15/03/2024 SITE OPERATOR : Miss Wiraya Patchimboon
REPORT DATE : 23/03/2024 FILE CODE : 224007_SW_March
SAMPLE CONDITION : Normal
LOCATION DESCRIPTION : 2 = คลองระบายน้ำทิ้งของนิคมฯ บางซื่อปล่อยน้ำของโรงโม่หินสี

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ¹⁾
		METHODS	(non-detectable)	2	
Temperature	°C	2550 B	< 0.5	35.3	2)
pH	-	4500-H ¹⁾ B	< 0.10	7.99	2)
Total Dissolved Solids	mg/l	2540 C	< 50	1,444	2)
Total Suspended Solids	mg/l	2540 D	< 5	14	2)
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	2)
Phenols	mg/l	5530 B,C	< 0.001	ND	2)
BOD ₅	mg/l	5210 B	< 1.0	2.5	2)
COD	mg/l	5220 C	< 15.00	49.86	2)

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER, 21st ED., 2017 (AWWA, APHA, WEF)

(Miss Khemchuda Insorn)

Analyst

(Mrs. Araya Tipparuk)

Technical Management Team

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Subject Determining water quality standards in Surface Water Sources for Surface Water Class 5.

4. ²⁾ No standard.

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Company Limited , REQUEST SERVICE No. : 0724/67
Branch 2 (Power Plant) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 10:54
SAMPLING DATE : 11/04/2024 ANALYTICAL DATE : 12-22/04/2024
RECEIVED DATE : 12/04/2024 SITE OPERATOR : Miss Wiraya Patchimboon
REPORT DATE : 23/04/2024 FILE CODE : 224007_WW_April
SAMPLE CONDITION : Normal
LOCATION DESCRIPTION : 1 = ถังปล่อยน้ำทิ้งของระบบบำบัดน้ำทิ้งของนิคมฯ (Final Check Basin)

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ¹⁾
		METHODS	(non-detectable)	1	
Temperature	°C	2550 B	< 0.5	35.8	≤ 40
pH	-	4500-H ¹⁾ B	< 0.10	8.02	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	2,508	35,080 ²⁾
Total Suspended Solids	mg/l	2540 D	< 5	5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD ₅	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	33.61	≤ 120
Free Cl ₂	mg/l	4500-Cl ¹⁾ G	< 0.01	ND	≤ 1
Nitrate	mg/l	4500-NO ₃ ¹⁾ E	< 0.02	ND	≤ 10
TKN	mg/l	4500-Norg B	< 0.20	3.7	≤ 100
Copper (Cu)	mg/l	3120 B	< 0.001	< 0.02	≤ 2
Iron (Fe)	mg/l	3500-Fe B	< 0.05	0.24	≤ 1
Zinc (Zn)	mg/l	3120 B	< 0.003	0.92	≤ 5

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER, 21st ED., 2017 (AWWA, APHA, WEF)

(Miss Khemchuda Insorn)

Analyst

REG. NO. 1-239-n-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 1-239-n-0004

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. ¹⁾ Notification of the Ministry of Natural Resources and Environment B.E.2565 (2022).

4. ²⁾ In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on April 11, 2024 found to be 30,080 mg/l therefore the Standard of TDS found to be 35,080 mg/l).

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Company Limited , REQUEST SERVICE No. : 0726/67
Branch 2 (Power Plant) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 14:19
SAMPLING DATE : 11/04/2024 ANALYTICAL DATE : 12-20/04/2024
RECEIVED DATE : 12/04/2024 SITE OPERATOR : Miss Wiraya Patchimboon
REPORT DATE : 22/04/2024 FILE CODE : 224007_SW_April
SAMPLE CONDITION : Normal
LOCATION DESCRIPTION : 1 = กองขยะบ้านพักของนิคมฯ ก่อนจุดปล่อยน้ำของโรงโม่หิน

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION 1	STANDARD ^{1/}
Temperature	C	2550 B	< 0.5	32.1	2/
pH		4500-H B	< 0.10	8.57	2/
Total Dissolved Solids	mg/l	2540 C	< 50	6,556	2/
Total Suspended Solids	mg/l	2540 D	< 5	15	2/
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	2/
Phenols	mg/l	5530 B.C	< 0.001	ND	2/
BOD ₅	mg/l	5210 B	< 1.0	1.7	2/
COD	mg/l	5220 C	< 15.00	23.60	2/

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER, 21ST ED., 2017 (AWWA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

Araya Tipparak

(Mrs. Araya Tipparak)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. ^{1/} Notification of the National Environment Board No.8 B.E.2537 (1994).

Subject Determining water quality standards in Surface Water Sources for Surface Water Class 5.

4. ^{2/} No standard.

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Company Limited , REQUEST SERVICE No. : 0726/67
Branch 2 (Power Plant) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 14:28
SAMPLING DATE : 11/04/2024 ANALYTICAL DATE : 12-20/04/2024
RECEIVED DATE : 12/04/2024 SITE OPERATOR : Miss Wiraya Patchimboon
REPORT DATE : 22/04/2024 FILE CODE : 224007_SW_April
SAMPLE CONDITION : Normal
LOCATION DESCRIPTION : 2 = กองขยะบ้านพักของนิคมฯ หลังจุดปล่อยน้ำของโรงโม่หิน

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION 2	STANDARD ^{1/}
Temperature	C	2550 B	< 0.5	31.2	2/
pH		4500-H B	< 0.10	7.36	2/
Total Dissolved Solids	mg/l	2540 C	< 50	1,148	2/
Total Suspended Solids	mg/l	2540 D	< 5	8	2/
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	2/
Phenols	mg/l	5530 B.C	< 0.001	ND	2/
BOD ₅	mg/l	5210 B	< 1.0	1.3	2/
COD	mg/l	5220 C	< 15.00	19.31	2/

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER, 21ST ED., 2017 (AWWA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

Araya Tipparak

(Mrs. Araya Tipparak)

Technical Management Team

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Subject Determining water quality standards in Surface Water Sources for Surface Water Class 5.

4. ^{2/} No standard.

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Company Limited, REQUEST SERVICE No. : 0897/67
Branch 2 (Power Plant) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 12:46
SAMPLING DATE : 09/05/2024 ANALYTICAL DATE : 10-18/05/2024
RECEIVED DATE : 10/05/2024 SITE OPERATOR : Mr. Baworn Dechhaiya
REPORT DATE : 18/05/2024 FILE CODE : 224007_WW_May
SAMPLE CONDITION : Normal
LOCATION DESCRIPTION : 1 = ก่อนปล่อยลงสู่คลองระบายน้ำทิ้งของนิคมฯ (Final Check Basin)

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				I	STANDARD ^{1/}
Temperature	°C	2550 B	< 0.5	36.1	≤ 40
pH	-	4500-H ¹ B	< 0.10	7.98	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	3.456	30,650 ^{2/}
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD ₅	mg/l	5210 B	< 1.0	3.2	≤ 20
COD	mg/l	5220 C	< 15.00	40.68	≤ 120
Free Cl ₂	mg/l	4500-Cl G	< 0.01	ND	≤ 1
Nitrate	mg/l	4500-NO ₃ -E	< 0.02	ND	≤ 10
TKN	mg/l	4500-Norg B	< 0.20	4.1	≤ 100
Copper (Cu)	mg/l	3120 B	< 0.001	< 0.02	≤ 2
Iron (Fe)	mg/l	3500-Fe B	< 0.05	0.30	≤ 1
Zinc (Zn)	mg/l	3120 B	< 0.003	0.47	≤ 5

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 22nd ED. (2012) (AWWA APHA WEF)

(Miss Purnmapa Budthum)

Analyst

REG. NO. 7-239-B-0013

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-B-0004

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3. ^{1/} Notification of the Ministry of Natural Resources and Environment B.E.2565 (2022).

4. ^{2/} In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on May 09, 2024 found to be 25,650 mg/l therefore the Standard of TDS found to be 30,650 mg/l).

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Company Limited, REQUEST SERVICE No. : 0982/67
Branch 2 (Power Plant) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 08:54
SAMPLING DATE : 18/05/2024 ANALYTICAL DATE : 19-24/05/2024
RECEIVED DATE : 19/05/2024 SITE OPERATOR : Miss Wiraya Patchimhoon
REPORT DATE : 27/05/2024 FILE CODE : 224007_SW_May
SAMPLE CONDITION : Normal
LOCATION DESCRIPTION : 1 = คลองระบายน้ำทิ้งของนิคมฯ ก่อนจุดปล่อยน้ำของโรงโม่หิน

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				I	STANDARD ^{1/}
Temperature	°C	2550 B	< 0.5	35.0	41
pH	-	4500-H ¹ B	< 0.10	9.23	21
Total Dissolved Solids	mg/l	2540 C	< 50	4.980	11
Total Suspended Solids	mg/l	2540 D	< 5	46	21
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	21
Phenols	mg/l	5530 B,C	< 0.001	ND	21
BOD ₅	mg/l	5210 B	< 1.0	4.6	21
COD	mg/l	5220 C	< 15.00	38.97	21

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 22nd ED. (2012) (AWWA APHA WEF)

(Miss Khemchuda Insorn)

Analyst

(Mrs. Araya Tipparuk)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

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3. ^{1/} Notification of the National Environment Board No.8 B.E.2537 (1994).

Subject Determining water quality standards in Surface Water Sources for Surface Water Class 5.

4. ^{2/} No standard.

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Company Limited , REQUEST SERVICE No. : 0982/67
Branch 2 (Power Plant) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 10:10
SAMPLING DATE : 18/05/2024 ANALYTICAL DATE : 19-24/05/2024
RECEIVED DATE : 19/05/2024 SITE OPERATOR : Miss Winaya Patchimboon
REPORT DATE : 27/05/2024 FILE CODE : 224007_SW_May
SAMPLE CONDITION : Normal
LOCATION DESCRIPTION : 2 = คลองระบายน้ำทิ้งของนิคมฯ หลังถูกปล่อยน้ำของโรงโม่หิน

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				2	STANDARD ^{1/}
Temperature	°C	2550 B	< 0.5	33.7	ND
pH		4500-H ⁺ B	< 0.10	8.12	ND
Total Dissolved Solids	mg/l	2540 C	< 50	1,594	ND
Total Suspended Solids	mg/l	2540 D	< 5	7	ND
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	ND
Phenols	mg/l	5530 B,C	< 0.001	ND	ND
BOD ₅	mg/l	5210 B	< 1.0	3.1	ND
COD	mg/l	5220 C	< 15.00	32.82	ND

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER, 21st ED., 2017 (APHA, AWWA, WEF)

Kheenchuda Insorn

(Miss Kheenchuda Insorn)

Analyst

Araya Tipparak

(Mrs. Araya Tipparak)

Technical Management Team

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4. ^{2/} No standard.
5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Company Limited , REQUEST SERVICE No. : 1205/67
Branch 2 (Power Plant) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 09:35
SAMPLING DATE : 13/06/2024 ANALYTICAL DATE : 14-21/06/2024
RECEIVED DATE : 14/06/2024 SITE OPERATOR : Miss Thipsuda Wannakran
REPORT DATE : 21/06/2024 FILE CODE : 224007_WW_June
SAMPLE CONDITION : Normal
LOCATION DESCRIPTION : 1 = ก่อนปล่อยลงสู่คลองระบายน้ำทิ้งของนิคมฯ (Final Check Basin)

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				1	STANDARD ^{1/}
Temperature	°C	2550 B	< 0.5	34.0	≤ 40
pH		4500-H ⁺ B	< 0.10	7.31	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	3,452	35,720 ^{2/}
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD ₅	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	54.94	≤ 120
Free Cl ₂	mg/l	4500-Cl G	< 0.01	ND	≤ 1
Nitrate	mg/l	4500-NO ₃ -E	< 0.02	ND	≤ 10
TKN	mg/l	4500-Norg B	< 0.20	4.8	≤ 100
Copper (Cu)	mg/l	3120 B	< 0.001	< 0.02	≤ 2
Iron (Fe)	mg/l	3500-Fe B	< 0.05	0.70	≤ 1
Zinc (Zn)	mg/l	3120 B	< 0.003	1.20	≤ 5

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER, 21st ED., 2017 (APHA, AWWA, WEF)

Pornnapa Buddhim

(Miss Pornnapa Buddhim)

Analyst

REG. NO. 7-239-3-0018

Araya Tipparak

(Mrs. Araya Tipparak)

Technical Management Team

REG. NO. 7-239-n-0004

- Remark : 1. Reported analysis refers to submitted sample only.
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3. ^{1/} Notification of the Ministry of Natural Resources and Environment B.E.2565 (2022).
4. ^{2/} In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on June 13, 2024 found to be 30,720 mg/l therefore the Standard of TDS found to be 35,720 mg/l).
5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Company Limited , REQUEST SERVICE No. : 1204/67
Branch 2 (Power Plant) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 10:15
SAMPLING DATE : 13/06/2024 ANALYTICAL DATE : 14-20/06/2024
RECEIVED DATE : 14/06/2024 SITE OPERATOR : Mr.Chanapon Oakkharaplon
REPORT DATE : 21/06/2024 FILE CODE : 224007_SW_June
SAMPLE CONDITION : Normal
LOCATION DESCRIPTION : 1 = คลองระบายน้ำทิ้งของนิคมฯ ก่อนจุดปล่อยน้ำของโรงโม่หินสี

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION 1	STANDARD ^{1/}
Temperature	°C	2550 B	< 0.5	34.0	2/
pH		4500-H ⁺ B	< 0.10	8.84	2/
Total Dissolved Solids	mg/l	2540 C	< 50	5,800	2/
Total Suspended Solids	mg/l	2540 D	< 5	61	2/
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	2/
Phenols	mg/l	5530 B,C	< 0.001	ND	2/
BOD ₅	mg/l	5210 B	< 1.0	2.3	2/
COD	mg/l	5220 C	< 15.00	< 15.00	2/

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED., 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

Araya Tipparak

(Mrs. Araya Tipparak)

Technical Management Team

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3. ^{1/} Notification of the National Environment Board No.8 B.E.2537 (1994).
Subject Determining water quality standards in Surface Water Sources for Surface Water Class 5.
4. ^{2/} No standard.
5. - Not available.



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CLIENT NAME : PTT Global Chemical Public Company Limited , REQUEST SERVICE No. : 1204/67
Branch 2 (Power Plant) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 10:25
SAMPLING DATE : 13/06/2024 ANALYTICAL DATE : 14-20/06/2024
RECEIVED DATE : 14/06/2024 SITE OPERATOR : Mr.Chanapon Oakkharaplon
REPORT DATE : 21/06/2024 FILE CODE : 224007_SW_June
SAMPLE CONDITION : Normal
LOCATION DESCRIPTION : 2 = คลองระบายน้ำทิ้งของนิคมฯ หลังจุดปล่อยน้ำของโรงโม่หินสี

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION 2	STANDARD ^{1/}
Temperature	°C	2550 B	< 0.5	33.0	2/
pH		4500-H ⁺ B	< 0.10	7.93	2/
Total Dissolved Solids	mg/l	2540 C	< 50	1,626	2/
Total Suspended Solids	mg/l	2540 D	< 5	8	2/
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	2/
Phenols	mg/l	5530 B,C	< 0.001	ND	2/
BOD ₅	mg/l	5210 B	< 1.0	1.7	2/
COD	mg/l	5220 C	< 15.00	31.39	2/

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED., 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

Araya Tipparak

(Mrs. Araya Tipparak)

Technical Management Team

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4. ^{2/} No standard.
5. - Not available.

ภาคผนวก ง.5

ใบรับรองผลการตรวจวัดระดับเสียงในพื้นที่ทำงาน




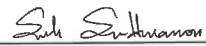
Noise Monitoring Result : Working Noise MTR-PTTGC, Branch 2 (Power Plant)

Location : Air Intake		Monitor Period : Feb 06, 2024	
SLM Model : SCARLET ST-21D		Serial No : 820725	
Site Operator : Miss Wiraya Patchimboon			
Calibrator Model : Cirrus CR:515		Serial No : 97097	
Calibration Ref dB(A) : 94.0		Certified Date : Sep 04, 2023	
SLM Reading / Adjust dB(A) : 94.0/-0.2		Expire Date : Sep 03, 2024	
Cal Sheet No. : CR-515-2024-031			
Time	Equivalent Sound Pressure Level (dB(A))		
	Feb 06, 2024		
00:00 - 01:00			
01:00 - 02:00			
02:00 - 03:00			
03:00 - 04:00			
04:00 - 05:00			
05:00 - 06:00			
06:00 - 07:00			
07:00 - 08:00	79.9		
08:00 - 09:00	80.4		
09:00 - 10:00	81.2		
10:00 - 11:00	79.9		
11:00 - 12:00	78.9		
12:00 - 13:00	78.7		
13:00 - 14:00	78.7		
14:00 - 15:00	78.6		
15:00 - 16:00	78.7		
16:00 - 17:00	79.5		
17:00 - 18:00	80.1		
18:00 - 19:00	80.2		
19:00 - 20:00			
20:00 - 21:00			
21:00 - 22:00			
22:00 - 23:00			
23:00 - 24:00			
Leq(12)*	79.6		
Lmax **	98.8		
Standard-12Hr	87 dB(A)		
Standard-Max	140 dB(A)		

Remark : * Average time between 07:00-19:00

** Maximum Sound Pressure Level between 07:00-19:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team




Noise Monitoring Result : Working Noise MTR-PTTGC, Branch 2 (Power Plant)

Location : Turbine		Monitor Period : Feb 06, 2024	
SLM Model : SCARLET ST-21D		Serial No : 820726	
Site Operator : Miss Wiraya Patchimboon			
Calibrator Model : Cirrus CR:515		Serial No : 97097	
Calibration Ref dB(A) : 94.0		Certified Date : Sep 04, 2023	
SLM Reading / Adjust dB(A) : 93.9/-0.1		Expire Date : Sep 03, 2024	
Cal Sheet No. : CR-515-2024-031			
Time	Equivalent Sound Pressure Level (dB(A))		
	Feb 06, 2024		
00:00 - 01:00			
01:00 - 02:00			
02:00 - 03:00			
03:00 - 04:00			
04:00 - 05:00			
05:00 - 06:00			
06:00 - 07:00			
07:00 - 08:00			
08:00 - 09:00	76.8		
09:00 - 10:00	76.8		
10:00 - 11:00	76.7		
11:00 - 12:00	76.5		
12:00 - 13:00	76.5		
13:00 - 14:00	76.5		
14:00 - 15:00	76.7		
15:00 - 16:00	77.0		
16:00 - 17:00	76.7		
17:00 - 18:00	76.7		
18:00 - 19:00	76.7		
19:00 - 20:00	76.8		
20:00 - 21:00			
21:00 - 22:00			
22:00 - 23:00			
23:00 - 24:00			
Leq(12)*	76.7		
Lmax **	85.5		
Standard-12Hr	87 dB(A)		
Standard-Max	140 dB(A)		

Remark : * Average time between 08:00-20:00

** Maximum Sound Pressure Level between 08:00-20:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-PTTGC, Branch 2 (Power Plant)

Location : Air Intake Monitor Period : May 08, 2024
SLM Model : SCARLET ST-21D Serial No : 820729
Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515 Serial No : 97097
Calibration Ref dB(A) : 94.0 Certified Date : Sep 04, 2023
SLM Reading / Adjust dB(A) : 93.7/0.1 Expire Date : Sep 03, 2024
Cal Sheet No. : CR-515-2024-114

Time	Equivalent Sound Pressure Level (dB(A))	
	May 08, 2024	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00	84.4	
08:00 - 09:00	84.2	
09:00 - 10:00	83.6	
10:00 - 11:00	84.6	
11:00 - 12:00	84.4	
12:00 - 13:00	84.5	
13:00 - 14:00	84.7	
14:00 - 15:00	84.8	
15:00 - 16:00	84.8	
16:00 - 17:00	85.0	
17:00 - 18:00	84.3	
18:00 - 19:00	83.6	
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	84.4	
Lmax **	90.4	
Standard-12Hr	87 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 07:00-19:00
 ** Maximum Sound Pressure Level between 07:00-19:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-PTTGC, Branch 2 (Power Plant)

Location : Turbine Monitor Period : May 08, 2024
SLM Model : SCARLET ST-21D Serial No : 820726
Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515 Serial No : 97097
Calibration Ref dB(A) : 94.0 Certified Date : Sep 04, 2023
SLM Reading / Adjust dB(A) : 93.8/0.0 Expire Date : Sep 03, 2024
Cal Sheet No. : CR-515-2024-114

Time	Equivalent Sound Pressure Level (dB(A))	
	May 08, 2024	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00	77.6	
08:00 - 09:00	77.3	
09:00 - 10:00	77.3	
10:00 - 11:00	77.0	
11:00 - 12:00	78.0	
12:00 - 13:00	77.0	
13:00 - 14:00	77.0	
14:00 - 15:00	77.0	
15:00 - 16:00	76.9	
16:00 - 17:00	76.8	
17:00 - 18:00	76.8	
18:00 - 19:00	76.9	
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	77.1	
Lmax **	92.5	
Standard-12Hr	87 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 07:00-19:00
 ** Maximum Sound Pressure Level between 07:00-19:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team

ภาคผนวก จ

ใบแสดงการตรวจเทียบเครื่องมือ

Sheet No. : CAL-M5009/01/24



CONTROL UNIT CALIBRATION

(Metric units, mm)

Date 6 Jan 24

Barometric press, Pb

Initial Final Average

759 759 759

mmHg

Dry Gas Meter Data

Console No. M50-09

Metering System ID

DGM Number 333249

DGM Model ES-110

Calibrated by : Montri P.

Reference Dry Gas Meter Data

Serial No. 358794

Model S110

Correction factor (Yr) 1.0068

Last Calibration Date 26 Oct 23

Orifice manometer setting, ΔH mm H2O	Ref. DGM Volume V _r Liters	DGM Volume V _m Liters	Temperature (°C)			Time ⊖ min	DGM Correction factor (Y)	ΔH@ mm	
			Ref DGM T _r	Dry Gas Meter					
				Inlet T _i	Outlet T _o				Avg T _m
12.5	100.3	99.0	25	25	24	24.5	8.53	1.0165	41.1799
25.0	100.0	99.5	25	25	24	24.5	6.08	1.0073	42.0742
50.0	100.1	99.8	25	25	24	24.5	4.47	1.0041	45.2483
76.0	100.4	99.1	25	25	24	24.5	3.55	1.0114	43.2112
100.0	100.1	99.4	25	25	24	24.5	3.55	1.0024	44.6038
150.0	100.1	98.9	25	25	24	24.5	2.57	1.0022	44.8941

Average 1.0073 43.5352

Approved by :

Sheet No. : CAL-PI-PS20-02/2024



PITOT TUBE CALIBRATION

Calibration Location: SECOT

Calibration Duct No.: CD-0123

Calibration Standard Pitot tube data

Pitot No. : Std-02

Type S Pitot No. : PS20-02

Calibration Date : 09-01-2024

Coefficient (Cp) : 0.99

Calibrated by : Mr. Montri P.

A Side Calibration

Run No.	ΔPstd (mm H ₂ O)	ΔPs (mm H ₂ O)	Cp(s)	Deviation, δ Cp(s) - Cp(A)
1	15.00	21.00	0.8367	-0.0068
2	15.00	20.50	0.8468	0.0034
3	15.00	20.50	0.8468	0.0034

C_{P(A)} avg 0.8435

B Side Calibration

Run No.	ΔPstd (mm H ₂ O)	ΔPs (mm H ₂ O)	Cp(s)	Deviation, δ Cp(s) - Cp(B)
1	15.00	21.00	0.8367	0.0000
2	15.00	21.00	0.8367	0.0000
3	15.00	21.00	0.8367	0.0000

C_{P(B)} avg 0.8367

| CP(A) - CP(B) | = 0.0068

C_{P(Avg)} = 0.8401

Approved by :

*** δ must be ≤ 0.01 for the test to be acceptable ***
*** | CP(A) - CP(B) | must also be < 0.01 if average of CP(A) and CP(B) is to be used ***



PITOT TUBE CALIBRATION

Calibration Location: SECOT

Calibration Date : 09-01-2024

Calibration Duct No.: CD-0123

Calibration Standard Pitot tube data

Pitot No. : Std-02

Coefficient (Cp) : 0.99

Type S Pitot No. : PS20-01

Calibrated by : Mr. Montri P.

A Side Calibration

Run No.	ΔP_{std} (mm H ₂ O)	ΔP_s (mm H ₂ O)	Cp(s)	Deviation, δ Cp(s) - Cp(A)
1	15.00	21.50	0.8269	-0.0065
2	15.00	21.00	0.8367	0.0033
3	15.00	21.00	0.8367	0.0033

 $C_{P(A),avg}$ 0.8334

B Side Calibration

Run No.	ΔP_{std} (mm H ₂ O)	ΔP_s (mm H ₂ O)	Cp(s)	Deviation, δ Cp(s) - Cp(B)
1	15.00	21.00	0.8367	0.0065
2	15.00	21.50	0.8269	-0.0033
3	15.00	21.50	0.8269	-0.0033

 $C_{P(B),avg}$ 0.8302

|CP(A)-CP(B)| = 0.0033

 $C_{P(Avg)}$ = 0.8318Approved by : 

*** δ must be ≤ 0.01 for the test to be acceptable ***
 *** |CP(A)-CP(B)| must also be < 0.01 if average of Cp(A) and Cp(B) is or be used ***

CONTROL UNIT CALIBRATION
(Metric units, mm)

Date 12 Jan 24

Barometric press, Pb

Initial	Final	Average
758	758	758

 mmHg

Dry Gas Meter Data

Console No. M50-07

Serial No. 358794

Metering System ID

Model S110

DGM Number 90331

Correction factor (Yr) 1.0068

DGM Model MST-C2-1

Last Calibration Date 26 Oct 23

Calibrated by Montri P.

Reference Dry Gas Meter Data

Orifice manometer setting, ΔH mm H ₂ O	Ref. DGM Volume V _r Liters	DGM Volume V _m Liters	Temperature (°C)				Time Ⓢ min	DGM Correction factor (Y)	ΔH@ mm
			Ref DGM T _r	Dry Gas Meter					
				Inlet T _i	Outlet T _o	Avg T _m			
12.5	100.0	100.6	25	25	24	24.5	9.72	0.9981	53.7523
25.0	100.2	100.2	25	25	24	24.5	6.48	1.0029	47.6709
50.0	100.0	100.8	25	25	24	24.5	4.77	0.9919	51.7327
76.0	100.2	100.9	25	25	24	24.5	3.90	0.9908	52.4606
100.0	100.1	99.6	25	25	24	24.5	3.90	1.0005	53.0627
150.0	100.2	98.9	25	25	24	24.5	2.82	1.0032	54.0289

Average 0.9979 52.1180

Approved by : 



PITOT TUBE CALIBRATION

Calibration Location: SECOT

Calibration Date : 09-01-2024

Calibration Duct No.: CD-0123

Calibration Standard Pitot tube data

Pitot No. : Std-02

Coefficient (Cp) : 0.99

Type S Pitot No. : PS10-01

Calibrated by : Mr. Montri P.

A Side Calibration

Run No.	ΔP_{std} (mm H ₂ O)	ΔP_s (mm H ₂ O)	Cp(s)	Deviation, δ Cp(s) - Cp(A)
1	15.00	21.00	0.8367	0.0000
2	15.00	21.00	0.8367	0.0000
3	15.00	21.00	0.8367	0.0000

$C_{P(A),avg}$ 0.8367

B Side Calibration

Run No.	ΔP_{std} (mm H ₂ O)	ΔP_s (mm H ₂ O)	Cp(s)	Deviation, δ Cp(s) - Cp(B)
1	15.00	21.00	0.8367	0.0000
2	15.00	21.00	0.8367	0.0000
3	15.00	21.00	0.8367	0.0000

$C_{P(B),avg}$ 0.8367

$|CP(A) - CP(B)| = 0.0000$

$C_{P(AVB)} = 0.8367$

Approved by :



High Volume TSP & PM-10 Calibration Data Sheet

Calibration Location : SECOT Co.,Ltd.

Calibration Date : Dec 28, 2023

Hi-Vol Pump No. : BH-027

Indicator No. : CM-01

Amb. Temp (°C) : 33

Press (mmHg) : 761

Calibration by : Mr. Suphanut I.

Plate	Indicate (X) (cm.)	True H ₂ O (in.)	Actual Flow (Y) (cfm)	XY	X ²	Remark
18	19.40	13.40	60.88	1,181.07	376.36	
13	15.20	10.40	53.96	820.19	231.04	
10	11.80	7.50	46.90	553.42	139.24	
7	8.40	5.00	37.81	317.60	70.56	
5	4.20	3.00	29.58	124.24	17.64	
Sum	59.00	39.30	229.13	2,996.52	834.84	

Calibrated by : Suphanut I.

Approved by : Wuthayon K.

*** δ must be ≤ 0.01 for the test to be acceptable ***
 *** $|CP(A) - CP(B)|$ must also be < 0.01 if average of $CP(A)$ and $CP(B)$ is ot be used ***



SO2 Analyzer Performance Test

Date : 9 Jan 23

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

Analyzer Type :	SO2
Brand :	Thermo
Model :	43C
S/N :	60745-328/2

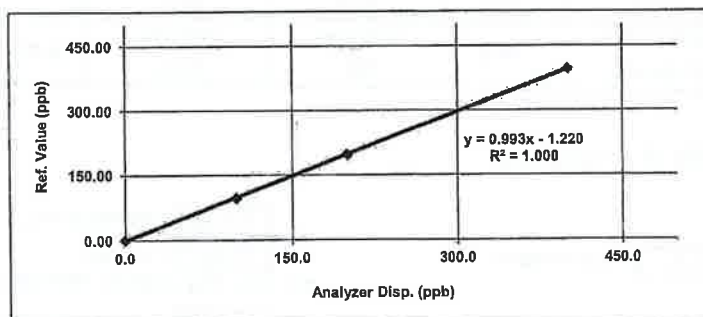
Dilutor :	Teledyne T 700 1367
Zero Air :	M701 S/N 1039
STD GAS :	EB0108319

Single Point Calibration

Supply Gas	Ref Value	Analyzer Disp.	Zero-Span Error %	Slope - Offset
Zero	0.00	0.40	-	-
Span	450.00	445.40	-	0.993

MultiPoint Calibration

Ref Value	Analyzer Disp.	Output Difference		
		Diff	Percent Diff	Percent Diff abs.
0.0	0.40	0.40	-	-
100.0	96.50	-3.50	-3.50	3.50
200.0	196.50	-3.50	-1.75	1.75
400.0	396.80	-3.20	-0.80	0.80
			Average Diff (%)	2.02



Calibrated by :

Approved by :



NOX-NO Analyzer Performance Test

Date : 9 Jan 23

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

Analyzer Type :	Nox
Brand :	API
Model :	200A
S/N :	2386

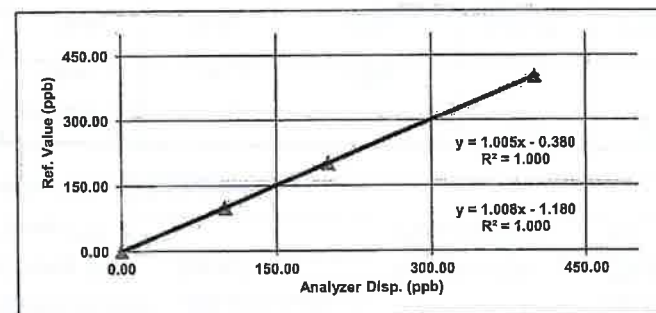
Dilutor :	Teledyne 700E 587
Zero Air :	M701 S/N 1044
STD GAS :	EB0108319

NOX-NO Single Point Calibration

Supply Gas	Ref Value	NOX Analyzer Disp.	NO Analyzer Disp.	Slope - Offset
Zero	0.0	-0.4	0.0	1.005
Span	450.0	447.6	447.10	1.008

NOX-NO MultiPoint Calibration

Ref Value	NOX Analyzer Disp.	NO Analyzer Disp.	Output Difference	
			NOx Percent Diff abs.	NO Percent Diff abs.
0.00	-0.40	0.00	-	-
100.00	98.60	99.10	1.4	0.9
200.00	200.40	201.30	0.2	0.7
400.00	402.30	401.40	0.6	0.3
		Average Diff (%)	0.7	0.6



Calibrated by :

Approved by :

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number: E04NI99E15AC084 Reference Number: 82-401409170-1
Cylinder Number: EB0102326 Cylinder Volume: 144.4 CF
Laboratory: 124 - Riverton (SAP) - NJ Cylinder Pressure: 2015 PSIG
PGVP Number: B52019 Valve Outlet: 660
Gas Code: CO,NO,NOX,SO2,BALN Certification Date: Feb 05, 2019

Expiration Date: Feb 05, 2027

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 800/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	50.00 PPM	51.01 PPM	G1	+/- 0.9% NIST Traceable	01/28/2019, 02/05/2019
NITRIC OXIDE	50.00 PPM	50.86 PPM	G1	+/- 0.9% NIST Traceable	01/28/2019, 02/05/2019
SULFUR DIOXIDE	50.00 PPM	50.87 PPM	G1	+/- 1.0% NIST Traceable	01/28/2019, 02/05/2019
CARBON MONOXIDE	0.5000 %	0.5050 %	G1	+/- 0.7% NIST Traceable	01/31/2019
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060206	CC401947	4950 PPM CARBON MONOXIDE/NITROGEN	+/- 0.4%	Feb 15, 2019
PRM	12367	APEX1099237	9.82 PPM NITROGEN DIOXIDE/AIR	+/- 2.0%	Jun 02, 2017
NTRM	12010724	KAL004497	50.03 PPM NITRIC OXIDE/NITROGEN	+/- 0.8%	Mar 12, 2024
GMIS	1114201601	CC506710	4.971 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Nov 14, 2019
NTRM	14010327	KAL004376	49.08 PPM SULFUR DIOXIDE/NITROGEN	+/- 1.0%	Apr 17, 2024

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Siemens Ultramat 6 J3-599 COHIGH	NDIR	Jan 18, 2019
Nicolet 6700 APW1100391 NO	FTIR	Jan 10, 2019
Nicolet 6700 APW1100391 NO2	FTIR	Jan 10, 2019
Nicolet 6700 APW1100391 SO2	FTIR	Jan 10, 2019

Triad Data Available Upon Request

PERMANENT NOTES: PRODUCED IN ACCORDANCE WITH ISO17025 REQUIREMENTS

NOTES:

Gross Weight: 27806.3 grams

Net Weight: 4733.2 grams

This calibration std. has been certified in accordance with the May 2012 EPA Traceability Protocol Document EPA-800/R-12/531. All testing processes and measurements conform to the requirements of ISO/IEC 17025 and to Airgas ISO 9001:2008 and relate only to items identified on this certificate. All items are certified to be NIST Traceable with total uncertainty as detailed under Analytical Uncertainty. This document shall not be reproduced in full without written approval of the issuer.



TESTING CERT No. 3082.05

[Signature]
Approved for Release

Page 1 of 82-401409170-1



SOUND LEVEL METER CALIBRATION

Calibration Location: SECOT

Calibration Date: Apr 17, 24

ACOUSTIC CALIBRATOR

Brand	Model	Serial No.	Frequency (Hz)	Ref. Calibrated (dB)	Eff. Calibrated (dB)
Cirrus	CR:515	97097	1000.00	94.0	93.7
No.	Brand	Model	Serial No.	Reading (dB)	dB Adjust
42	Cirrus	CR162B	G302738	92.9	0.8
48	Cirrus	CR162B	G302237	92.2	1.5

Calibrated by :

Approved by :

[Signature]



SOUND LEVEL METER CALIBRATION

Calibration Location: SECOT

Calibration Date: Feb 6, 24

ACOUSTIC CALIBRATOR

Brand	Model	Serial No.	Frequency (Hz)	Ref.Calibrated (dB)	Eff.Calibrated (dB)
Cirrus	CR:515	97097	1000.00	94.0	93.8

No.	Brand	Model	Serial No.	Reading (dB)	dB Adjust
4	SCARLET	ST-21D	820725	94.0	-0.2
5	SCARLET	ST-21D	820726	93.9	-0.1

Calibrated by :

Approved by :



SOUND LEVEL METER CALIBRATION

Calibration Location: SECOT

Calibration Date: May 8, 24

ACOUSTIC CALIBRATOR

Brand	Model	Serial No.	Frequency (Hz)	Ref.Calibrated (dB)	Eff.Calibrated (dB)
Cirrus	CR:515	97097	1000.00	94.0	93.8

No.	Brand	Model	Serial No.	Reading (dB)	dB Adjust
5	SCARLET	ST-21D	820726	93.8	0.0
8	SCARLET	ST-21D	820729	93.7	0.1

Calibrated by :

Approved by :



ELECTRICAL AND ELECTRONICS INSTITUTE
FOUNDATION FOR INDUSTRIAL DEVELOPMENT

975 Moo 4, Bangpoo Industrial Estate, Soi 8, Sukhumvit Road km 37,

Phraek Sa, Mueang Samut Prakan, Samut Prakan 10280

Tel: +66 2709 4860 Fax: +66 2324 0917



Certificate No.: CP20230345EA
Operation No.: CP2023080023

Certificate of Calibration

Equipment: Sound Calibrator
Manufacturer: Cirrus Research Plc
Model/Type: CR:515
Serial No.: 97097
ID No.:
Customer: SECOT Co.,Ltd.
Address: 239 Rimklongprapa Rd., Bangsue,
Bangkok 10800 Thailand
Received Date: 28 August 2023
Calibrated Date: 4 September 2023
Issued Date: 8 September 2023
Calibrated by: Ms. Juntaporn Kunhakom

Approved by:

(Mr. Sittichai Swaksuriyawong)
Group Manager

This report was prepared electronically using applicable electronic signature. Printing or copy of file are considered as a copy of the document.

The reported uncertainty of measurement was based on standard uncertainty multiplied by a coverage factor (k) providing a level of confidence of approximately 95%. This certificate may not be reproduced other than in full except with the prior written approval of the Electrical and Electronics Institute, Foundation for Industrial Development.



ELECTRICAL AND ELECTRONICS INSTITUTE
FOUNDATION FOR INDUSTRIAL DEVELOPMENT

Certificate No.: CP20230345EA

Calibration Report

Equipment: Sound Calibrator
Manufacturer: Cirrus Research Plc
Model/Type: CR:515
Serial No.: 97097
ID No.:
Ambient Temperature: (23 ± 2) °C
Relative Humidity: (50 ± 15) %
Pressure: (101.3 ± 1.5) kPa
Method of Calibration :-
IEC 60942:2017

Condition of this result of calibration

1. Reference standards instrument :-

Instrument	Model	Serial No.	Cert. No.	Due Date
1) Standard microphone	4180	2787490	AA-1024-22	6 November 2023
2) Waveform Generator	33511B	MY52302264	CK20230039EA	27 June 2024
3) Audio Analyzing DMM	2015-P	000136E	E1U225466	2 December 2023
4) Pressure humidity and Temperature Transmitter	PTU301	F0640002	CL1-P230024 CD20230196EA	20 March 2024 23 July 2024

2. This result of calibration was found accurate as shown on date and place of calibration only.

3. This certification is traceable to the international system of unit maintained at :-

Reference standards instrument for Acoustic function

- National Institute of Metrology (Thailand)

Reference standards instrument for Electrical function

- Electrical and Electronics Institute; NSC Accredited Calibration No.0119

Result of Calibration:-

1. Function : Sound pressure level

Normal	Specified Sound	Measured value	Deviated value ^[1]	Acceptance limit ^[3]
Frequency (Hz)	Pressure level (dB)	(dB)	(dB)	(dB)
1000	94	94.13	0.13	±0.25

2. Function : Frequency

Normal Sound	Specified Frequency	Measured value	Deviated value ^[2]	Acceptance limit ^[3]
Pressure level (dB)	(Hz)	(Hz)	(%)	(%)
94	1000	1000.3	0.0	±0.7



ELECTRICAL AND ELECTRONICS INSTITUTE
FOUNDATION FOR INDUSTRIAL DEVELOPMENT

Certificate No.: CP20230345EA

Calibration Report

3. Function : Total distortion + noise

Norminal Sound Pressure Level (dB)	Norminal Frequency (Hz)	Measured value ^[4] (%)	Acceptance limit ^[5] (%)
94	1000	1.0	2.5

Uncertainty of measurement

Function	Uncertainty	Maximum-permitted uncertainty of measurement
Sound pressure level	0.10 dB	0.15 dB
Frequency	0.10 %	0.20 %
Total distortion + noise	0.40 %	0.50 %

Note: [1] The deviated value is the absolute value of the difference between the measured value and the corresponding specified sound pressure level.
[2] The deviated value is the absolute value of the difference in percent between the measured value and the corresponding specified frequency.
[3] The acceptance limit is for the deviated value.
[4] The measured value is the total distortion + noise, measured over the frequency range from 20 Hz to 20 kHz.
[5] The acceptance limit is for the Measured value.

Remarks: 1. Acceptance limit was IEC 60942:2017 Class 1.
2. Maximum-permitted uncertainty of measurement was IEC 60942:2017 Class 1.
3. The coverage factor $k = 2.00$

-- End of Report --



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



Cert.No.: 23CH1640

Page.: 1 of 2

Certificate of Calibration

Equipment : pH Meter
Manufacturer : Hanna
Model : HI98190
Serial No. : 06470022101
ID No. : pH No.19
Condition As-Received: Used Item
Received Date : 26 December 2023
Calibration Date : 27 December 2023
Reference : 2312-0602DN-3
Submitted by : Secot Co.,Ltd.
239 Rimklongprapa Road,
Bangsue, Bangkok 10800
Ambient Temperature : (25 ± 2.5) °C
Relative Humidity : (50 ± 15) %
Calibration Procedure : In - house method :
- CP-CH5 by direct measurement with standard
voltage calibrator and direct measurement
with certified reference material (CRM)

Calibrated by : Walalak Sirlthean

Approved by :

(✓) Salthip Meangmai
() Warakom Lernagatrakul
() Ponpan Palpim

Issue Date : 29 December 2023

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.: 23CH1640

Page.: 2 of 2

Condition of this calibration result

1. Certified Reference Materials : The measurement results are traceable to SI through CPA chem Ltd., ANSI-ASQ National Accreditation Board, Accredited No. AR-1835

Buffer Solution	Manufacturer	Lot No.	Exp. date
pH 4.008	CPA chem	913598	14 July 2025
pH 6.986	CPA chem	931959	01 Oct 2024
pH 9.997	CPA chem	940106	02 Nov 2024

2. 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 (\pm)	Coverage factor k
pH Electrode S/N.: 0951058N	4.008	4.018	177.9	0.0044	2.00
	6.986	6.987	-2.5	0.0084	2.00
	9.997	10.001	-175.2	0.0070	2.00

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

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 %

-o-o-

Signature

a 1196119



ศูนย์บริการทดสอบมาตรฐานผลิตภัณฑ์อุตสาหกรรม
ศูนย์บริการห้องปฏิบัติการทดสอบอาหาร
Foundation for Industrial Development National Food Institute
Food Industrial Laboratory Service Center



Calibration Certificate

Certificate No.: 2304081-003-01
Client name: SECOT CO., LTD.
Address: 239 Rimklongprapa Road,
Bangsue, Bangsue, Bangkok 10800

Page 1 of 3

Equipment: CHAMBER (Hot Air Oven)
Manufacturer: BINDER
Model: ED 53
Serial No.: 01-27152
ID No.: N/A
Order No.: 2304081
Operation No.: 2304081-003
Date of Receipt: 27 July 2023
Date of Calibration: 27 July 2023

Calibrated by Mr.Worapob Sooktong
Scientist

Approved by *Signature*
(Mr.Pheraphat Tuanjit)
Manager, Division of Calibration Laboratory
Responsible for the Technical Management Team

Date of Issue: 7 August 2023

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 standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the National Food Institute.

F-CS-009 Revision: 01 Date: 20-04-65



Calibration Report

Certificate No.: 2304081-003-01
Equipment: CHAMBER (Hot Air Oven)
Model: ED 53 Serial No.: 01-27152
Resolution: 1 °C ID No.: N/A
Manufacturer: BINDER
Date of Calibration: 27 July 2023

Page 2 of 3

Location: Laboratory, SECOT CO., LTD.
Environment Condition: Ambient Temperature (32 ± 1) °C
Relative Humidity (52 ± 2) %
Line Voltage (228 ± 1) Volt

Condition of this results of Calibration:

- This instrument was calibrated by insert 9 standard thermometer into its chamber and calibration according to W-TE-014 Based on TLAS G-20-1/02-08 (E); Guidelines for Calibration and Checks of Temperature Controlled Enclosures.
- The temperature scale used was based on ITS - 90.
- All data show below were final values and the initial data may be obtained upon request.

2. Reference Standard Instrument :

Instrument	Model	Serial No./ID No.	Certificate No.	Due Date	Through
Digital Thermometer with sensor	34972A	MY49016894	TE 660380-01	22 April 2024	NATIONAL FOOD INSTITUTE
	RTD	CH#101-109/RTD#101-109			

- This certificate is traceable to International System of Units (SI Units).
- This certificate was certified only for the instrument we calibrated.
- This result of calibration was found accurate as shown on date and place of calibration only.
- Condition of Calibrated item : Good

UUC Description :

Time of Record 1 Hour 9 Minute At 104, 110 and 180 °C

Fresh air Damper
☐ Open Position
☒ Close
☐ Not Available

7. Result of Calibration : ☒ Without adjustment ☐ After adjustment



Calibration Report

Certificate No.: 2304081-003-01
Equipment: CHAMBER (Hot Air Oven)
Model: ED 53 Serial No.: 01-27152
Resolution: 1 °C ID No.: N/A
Manufacturer: BINDER
Date of Calibration: 27 July 2023

Page 3 of 3

Calibration point: 104, 110 and 180 °C

Calibration result:

Calibration Condition	Temperature (°C)	Relative Humidity (%)	Line Voltage (Volt)
MIN	31.7	50.3	227.1
MAX	32.7	53.5	228.5

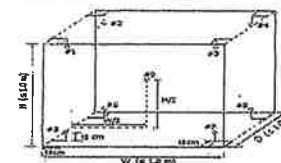


Table1 : Reporting of Temperature

Calibration point (°C)	Measured Temperature (°C) @ Sensor No. (Sensor No.9 is REF)									Uncertainty ± (°C)
	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	
104	104.79	105.05	104.60	104.30	104.35	103.88	104.29	103.87	103.82	0.78
110	111.06	111.10	110.65	110.38	110.01	109.70	109.80	109.76	109.80	0.80
180	181.06	181.08	180.58	180.53	180.43	180.25	179.97	180.71	180.08	0.90

Table 2 : Reporting of Characterization Result

UUC* Setting (°C)	UUC* reading (°C)			Stability ± (°C)	Uniformity (°C)	Overall Variation (°C)
	MIN	MAX	Average			
104	104	104	104	0.22	1.23	1.55
110	110	110	110	0.25	1.30	1.80
177	177	177	177	0.32	0.99	1.54

Note The quoted uncertainty include " Stability " and " Loading effect (20% of Temp Uniformity) "

UUC* = Unit Under Calibration

Stability = One-half of the greatest maximum difference of measured temperatures at any one sensors, for at least half an hour after reaching steady state.

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.

Overall Variation = The difference of the maximum and minimum measured temperatures throughout observation time.

The report uncertainty of measurement was based on standard uncertainty multiplied by coverage factor k= 2, providing a level of confidence of approximately 95 %.

----- End -----



Calibration Certificate

Certificate No.: 2303092-001-01
Client name: SECOT CO., LTD.
Address: 239 Rimklongprapa Road, Bangsue,
Bangsue, Bangkok 10800

Page 1 of 3

Equipment: CHAMBER (Hot Air Oven)
Manufacturer: MEMMERT
Model: UF 55
Serial No.: B213.0295
ID No.: N/A
Order No.: 2303092
Operation No.: 2303092-001
Date of Receipt: 26 May 2023
Date of Calibration: 26 May 2023

Calibrated by Mr.Jerawut Prapawuttipong
Scientist

Approved by

(Mr.Pheraphat Tuanjit)

Manager, Division of Calibration Laboratory

Date of Issue: 30 May 2023

Responsible for the Technical Management Team

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 standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the National Food Institute.

F-CS-009 Revision: 01 Date: 20-04-65



Calibration Report

Certificate No.: 2303092-001-01
Equipment: CHAMBER (Hot Air Oven)
Model: UF 55 **Serial No.:** B213.0295
Resolution: 0.1 °C **ID No.:** N/A
Manufacturer: MEMMERT

Date of Calibration: 26 May 2023

Page 2 of 3

Location: Walkway Laboratory, SECOT CO., LTD.
Environment Condition: Ambient Temperature (30.5 ± 1) °C
Relative Humidity (60 ± 5) %
Line Voltage (220 ± 5) Volt

Condition of this results of Calibration:

- This instrument was calibrated by Insert 9 standard thermometer into its chamber and calibration according to W-TE-014 Based on TLAS G-20-1/02-08 (E): Guidelines for Calibration and Checks of Temperature Controlled Enclosures.
- The temperature scale used was based on ITS - 90.
- All data show below were final values and the initial data may be obtained upon request.

2. Reference Standard Instrument :

Instrument	Model	Serial No./ID No.	Certificate No.	Due Date	Through
Digital Thermometer with sensor	34972A	MY49016851	TE 660495-01	7 May 2024	NATIONAL FOOD INSTITUTE
	RTD	CH#201-209/ RTD#201-209			

- This certificate is traceable to International System of Units (SI Units).
- This certificate was certified only for the instrument we calibrated.
- This result of calibration was found accurate as shown on date and place of calibration only.
- Condition of Calibrated Item : Good

UUC Description :

Time of Record 1 Hour 9 Minute At 80.0, 104.0 and 180.0 °C
Fresh air Damper ☒ Open Position ☒
☒ Close Fan ☒
☒ Not Available

- Result of Calibration : ☒ Without adjustment ☐ After adjustment

F-CS-012 Revision: 01 Date: 20-04-65



Calibration Report

Certificate No.: 2303092-001-01
Equipment: CHAMBER (Hot Air Oven)
Model: UF 55 **Serial No.:** B213.0295
Resolution: 0.1 °C **ID No.:** N/A
Manufacturer: MEMMERT

Date of Calibration: 26 May 2023

Page 3 of 3

Calibration point: 80.0, 104.0 and 180.0 °C

Calibration result:

Calibration Condition	Temperature (°C)	Relative Humidity (%)	Line Voltage (Volt)
MIN	30.0	55	215.0
MAX	31.0	65	225.0

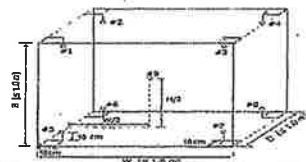


Table 1 : Reporting of Temperature

Calibration point (°C)	Measured Temperature (°C) @ Sensor No. (Sensor No.9 is REF)									Uncertainty ± (°C)
	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	
80.0	80.00	80.08	79.98	80.01	80.11	80.00	79.89	80.02	80.12	0.46
104.0	104.05	104.03	104.19	104.09	104.06	104.10	103.89	104.17	104.29	0.53
180.0	179.88	180.12	180.02	180.20	180.27	180.36	179.93	180.04	180.11	0.90

Table 2 : Reporting of Characterization Result

UUC* Setting (°C)	UUC* Reading (°C)			Stability ± (°C)	Uniformity (°C)	Overall Variation (°C)
	MIN	MAX	Average			
80.0	80.0	80.0	80.0	0.077	0.23	0.33
104.0	104.0	104.0	104.0	0.094	0.40	0.51
180.0	180.0	180.0	180.0	0.17	0.26	0.77

Note The quoted uncertainty include " Stability " and " Loading effect (20% of Temp Uniformity) "

UUC* = Unit Under Calibration

Stability = One-half of the greatest maximum difference of measured temperatures at any one sensors, for at least half an hour after reaching steady state.

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.

Overall Variation = The difference of the maximum and minimum measured temperatures throughout observation time.

The report uncertainty of measurement was based on standard uncertainty multiplied by coverage factor k= 2, providing a level of confidence of approximately 95 %.

----- End -----

Handwritten signature



Calibration Certificate

Certificate No.: 2303092-002-01
Client name: SECOT CO., LTD.
Address: 239 Rimklongprapa Road, Bangsue, Bangsue, Bangkok 10800

Page 1 of 3

Equipment: CHAMBER (Hot Air Oven)

Manufacturer: MEMMERT

Model: UM 400

Serial No.: B419.1400

ID No.: N/A

Order No.: 2303092

Operation No.: 2303092-002

Date of Receipt: 26 May 2023

Date of Calibration: 26 May 2023

Calibrated by Mr.Jerawut Prapawuttipong
Scientist

Approved by

(Mr.Pheraphat Tuanjit)

Manager, Division of Calibration Laboratory

Date of Issue: 30 May 2023

Responsible for the Technical Management Team

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 standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the National Food Institute.



Calibration Report

Certificate No.: 2303092-002-01
Equipment: CHAMBER (Hot Air Oven)
 Model: UM 400 Serial No.: B419.1400
 Resolution: 1 °C ID No.: N/A
 Manufacturer: MEMMERT
Date of Calibration: 26 May 2023

Page 2 of 3

Location: Walkway Laboratory, SECOT CO., LTD.
Environment Condition:
 Ambient Temperature (30.5 ± 1) °C
 Relative Humidity (60 ± 5) %
 Line Voltage (220 ± 5) Volt

Condition of this results of Calibration:

- This instrument was calibrated by Insert 9 standard thermometer into its chamber and calibration according to W-TE-014 Based on TLAS G-20-1/02-08 (E): Guidelines for Calibration and Checks of Temperature Controlled Enclosures.
 - The temperature scale used was based on ITS - 90.
 - All data show below were final values and the initial data may be obtained upon request.

2. Reference Standard Instrument :

Instrument	Model	Serial No./ID No.	Certificate No.	Due Date	Through
Digital Thermometer with sensor	34972A	MY49016851	TE 660495-01	7 May 2024	NATIONAL FOOD INSTITUTE
	RTD	CH#101-109/ RTD#101-109			

- This certificate is traceable to International System of Units (SI Units).
- This certificate was certified only for the Instrument we calibrated.
- This result of calibration was found accurate as shown on date and place of calibration only.
- Condition of Calibrated item : Good

UUC Description :

Time of Record 1 Hour 9 Minute At 150 °C

Fresh air Damper ☐ Open Position ☐
☒ Close Fan ☐
☐ Not Available

7. Result of Calibration : ☒ Without adjustment ☐ After adjustment



Calibration Report

Certificate No.: 2303092-002-01
Equipment: CHAMBER (Hot Air Oven)
 Model: UM 400 Serial No.: B419.1400
 Resolution: 1 °C ID No.: N/A
 Manufacturer: MEMMERT
Date of Calibration: 26 May 2023

Page 3 of 3

Calibration point: 150 °C

Calibration result:

Calibration Condition	Temperature (°C)	Relative Humidity (%)	Line Voltage (Volt)
MIN	30.0	55	215.0
MAX	31.0	65	225.0

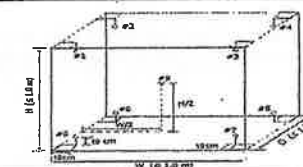


Table1 : Reporting of Temperature

Calibration point (°C)	Measured Temperature (°C) @ Sensor No. (Sensor No.9 is REF)									Uncertainty ± (°C)
	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	
150	150.84	151.35	150.78	151.22	149.63	151.51	150.53	151.02	150.13	0.89

Table 2 : Reporting of Characterization Result

UUC* Setting (°C)	UUC* Reading (°C)			Stability ± (°C)	Uniformity (°C)	Overall Variation (°C)
	MIN	MAX	Average			
As Mark 150	174	174	174	0.42	1.4	2.5

Note The quoted uncertainty include " Stability " and " Loading effect (20% of Temp Uniformity) "

UUC* = Unit Under Calibration

Stability = One-half of the greatest maximum difference of measured temperatures at any one sensors, for at least half an hour after reaching steady state.

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.

Overall Variation = The difference of the maximum and minimum measured temperatures throughout observation time.

The report uncertainty of measurement was based on standard uncertainty multiplied by coverage factor k= 2, providing a level of confidence of approximately 95 %.

----- End -----




Calibration Certificate

Certificate No.: 2304081-002-01
Client name: SECOT CO., LTD.
Address: 239 Rimklongprapa Road,
 Bangsue, Bangsue, Bangkok 10800

Page 1 of 3

Equipment: Water Bath
Manufacturer: MEMMERT
Model: WB 29
Serial No.: 1698.0051
ID No.: N/A
Order No.: 2304081
Operation No.: 2304081-002
Date of Receipt: 27 July 2023
Date of Calibration: 27 July 2023

Calibrated by Mr.Worapob Sooktong
 Scientist

Approved by 
 (Mr.Pheraphat Tuanjit)
 Manager, Division of Calibration Laboratory
 Responsible for the Technical Management Team

Date of Issue: 7 August 2023

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 standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the National Food Institute.

F-CS-009 Revision: 01 Date: 20-04-65



Calibration Report

Certificate No.: 2304081-002-01
Equipment: Water Bath
 Model: WB 29 Serial No.: 1698.0051
 Resolution: 0.1 °C ID No.: N/A
 Manufacturer: MEMMERT

Date of Calibration: 27 July 2023

Page 2 of 3

Location: Laboratory, SECOT CO., LTD.
Environment Condition: Ambient Temperature (24 ± 1) °C
 Relative Humidity (58 ± 2) %
 Line Voltage (229 ± 1) Volt

Condition of this results of Calibration:

- This instrument was calibrated by Insert 5 standard thermometer into its liquid bath and calibration according to W-TE-011 based on ASTM E715-80 (2016): Standard Specification for Gravity-Convection and Forced-Circulation Water Baths.
 - The temperature scale used is ITS - 90.
 - All data show below were final values and the initial data may be obtained upon request.

2. Reference Standard Instrument :

Instrument	Model	Serial No./ID No.	Certificate No.	Due Date	Through
Digital Thermometer with sensor	34972A	MY49016894	TE'660380-01	22 April 2024	NATIONAL FOOD INSTITUTE
	RTD	RTD#201-205 / CH#201-205			

- This certificate is traceable to International System of Units (SI Units).
- This certificate was certified only for the instrument we calibrated.
- This result of calibration was found accurate as shown on date and place of calibration only.
- Condition of Calibrated item : Good

UUC Description:

- Time of Record 1 Hour 9 Minute At 95.0 °C
7. Result of Calibration : ☒ Without adjustment
☐ After adjustment

F-CS-012 Revision: 01 Date: 20-04-65



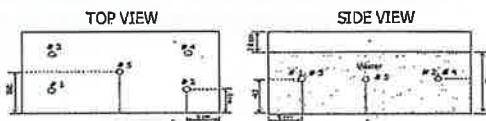
Calibration Report

Certificate No.: 2304081-002-01
Equipment: Water Bath
Model: WB 29 Serial No.: I698.0051
Resolution: 0.1 °C ID No.: N/A
Manufacturer: MEMMERT

Date of Calibration: 27 July 2023 Page 3 of 3

Calibration point: 95.0 °C
Calibration result:

Calibration Condition	Temperature (°C)	Relative Humidity (%)	Line Voltage (Volt)
Min	23.0	56.3	227.5
Max	25.0	60.2	229.6



Sensor Installation Location

Table 1 : Reporting of Temperature

Calibration Point (°C)	Measured Temperature (°C) @ Sensor No. (Sensor No.5 is REF)					Uncertainty ± (°C)
	# 1	# 2	# 3	# 4	# 5	
95.0	95.03	94.96	95.10	94.97	95.02	0.28

Table 2 : Reporting of Characterization Result

UUC* Setting (°C)	UUC* reading (°C)			Stability ± (°C)	Uniformity (°C)	Overall Variation (°C)
	MIN	MAX	Average			
95.0	94.9	95.1	95.0	0.18	0.080	0.47

Note The quoted uncertainty include " Stability " and " Loading effect (20% of Temp Uniformity) "
UUC* = Unit Under Calibration
Stability = One-half of the greatest maximum difference of measured temperatures at any one sensors, for at least half an hour after reaching steady state.
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.
Overall Variation = The difference of the maximum and minimum measured temperatures throughout observation time.
The report uncertainty of measurement was based on standard uncertainty multiplied by coverage factor k= 2, providing a level of confidence of approximately 95 %.

End



Calibration Certificate

Certificate No.: 2304081-001-01
Client name: SECOT CO., LTD.
Address: 239 Rjmklongprapa Road,
Bangsue, Bangsue, Bangkok 10800

Page 1 of 3

Equipment: CHAMBER (Incubator)

Manufacturer: MEMMERT

Model: ICP 400

Serial No.: K406.0004

ID No.: N/A

Order No.: 2304081

Operation No.: 2304081-001

Date of Receipt: 27 July 2023

Date of Calibration: 27 July 2023

Calibrated by Mr.Worapob Sooktong
Scientist

Approved by (Mr.Pheraphat Tuanjit)
Manager, Division of Calibration Laboratory
Responsible for the Technical Management Team

Date of Issue: 7 August 2023

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

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Calibration Report

Certificate No.: 2304081-001-01
Equipment: CHAMBER (Incubator)
 Model: ICP 400 Serial No.: K406.0004
 Resolution: 0.1 °C ID No.: N/A
 Manufacturer: MEMMERT

Date of Calibration: 27 July 2023

Page 2 of 3

Location: Laboratory, SECOT CO., LTD.
Environment Condition: Ambient Temperature (30 ± 1) °C
 Relative Humidity (54 ± 1) %
 Line Voltage (228 ± 0) Volt

Condition of this results of Calibration:

- This instrument was calibrated by insert 9 standard thermometer into its chamber and calibration according to W-TE-014 Based on TLAS G-20-1/02-08 (E): Guidelines for Calibration and Checks of Temperature Controlled Enclosures.
 - The temperature scale used was based on ITS - 90.
 - All data show below were final values and the Initial data may be obtained upon request.

2. Reference Standard Instrument :

Instrument	Model	Serial No./ID No.	Certificate No.	Due Date	Through
Digital Thermometer with sensor	34972A	MY49016894	TE 660380-01	22 April 2024	NATIONAL FOOD INSTITUTE
	RTD	CH#301-309/ RTD#301-309			

- This certificate is traceable to International System of Units (SI Units).
- This certificate was certified only for the Instrument we calibrated.
- This result of calibration was found accurate as shown on date and place of calibration only.
- Condition of Calibrated Item : Good

UUC Description :

Time of Record 1 Hour 9 Minute At 20.0 °C
 Fresh air Damper ☒ Open Position ☐ ☒ Close
☒ Not Available

7. Result of Calibration : ☒ Without adjustment ☐ After adjustment



Calibration Report

Certificate No.: 2304081-001-01
Equipment: CHAMBER (Incubator)
 Model: ICP 400 Serial No.: K406.0004
 Resolution: 0.1 °C ID No.: N/A
 Manufacturer: MEMMERT

Date of Calibration: 27 July 2023

Page 3 of 3

Calibration point: 20.0 °C

Calibration result:

Calibration Condition	Temperature (°C)	Relative Humidity (%)	Line Voltage (Volt)
MIN	28.6	53.0	227.3
MAX	31.4	54.1	228.1

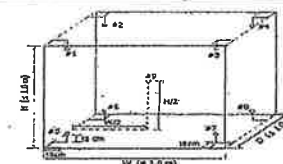


Table 1 : Reporting of Temperature

Calibration point (°C)	Measured Temperature (°C) @ Sensor No. (Sensor No.9 is REF)									Uncertainty ± (°C)
	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	
20.0	20.42	20.39	20.40	20.43	20.47	20.49	20.42	20.41	20.43	0.27

Table 2 : Reporting of Characterization Result

UUC* Setting (°C)	UUC* reading (°C)			Stability ± (°C)	Uniformity (°C)	Overall Variation (°C)
	MIN	MAX	Average			
20.0	20.0	20.1	20.0	0.065	0.053	0.220

Note The quoted uncertainty include " Stability " and " Loading effect (20% of Temp Uniformity) "

UUC* = Unit Under Calibration

Stability = One-half of the greatest maximum difference of measured temperatures at any one sensors, for at least half an hour after reaching steady state.

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.

Overall Variation = The difference of the maximum and minimum measured temperatures throughout observation time.

The report uncertainty of measurement was based on standard uncertainty multiplied by coverage factor k=2, providing a level of confidence of approximately 95 %.

----- End -----





Request Service No.100/66

Page 1 of 3

Calibration Certificate

Nomenclature : Brand : Sartorius Type : Top-Loading Electronic Balance

Model : BSA224S-CW Serial No. : 32191636

Submitted by : Laboratory of SECOT CO., LTD.

Location of Calibration : BAL Room , 6th Floor, Secot Co., Ltd.

Calibration range : 0 – 200 g Scale division : 0.0001 g (220 g)

Calibration date : May 23,2023

Reference Standard No. M220177, M2302167S, M2303005N

Traceable to : Metrological Center SCI ECO Services Co.,Ltd., Thai Calibration services Co.,Ltd

Ambient Condition : Temperature 24.60-24.80 °C

Humidity 50.6-51.4 % RH

Calibrated By : *Khemchuda Insorn*

(Miss Khemchuda Insorn)

Approved By : *Narisa Poowasanpetch*

(Miss Narisa Poowasanpetch)

Testing Officer

Chief of Technical Management

Date : 24/05/2023

Date : 24/05/2023

Issued Date : May 24,2023

Measurement Report

Request Service No.100/66

Page 2 of 3

Description : Brand : Sartorius

Type : Top-Loading Electronic Balance

Model : BSA224S-CW

Serial No. : 32191636

Calibration range : 0 – 200 g

Scale division : 0.0001 g (220 g)

Calibration date : May 23,2023

Ambient Condition : Temperature 24.60-24.80 °C Relative humidity 50.6-51.4 % RH

Measurement data :

1. Repeatability of Reading :

Load (g)	Standard Deviation of Reading (g)	Maximum Difference between Successive Reading (g)
50	0.00007	0.0002
100	0.00005	0.0001
150	0.00006	0.0002
200	0.00006	0.0002

2. Off-Center Loading :

A Mass of 50.0000 g was placed and moved to various position on the pan.

Unit : g

Center	Front	Left	Back	Right	Center	Maximum Difference
49.99976	49.99988	49.99984	49.99984	49.99990	49.99976	0.00012

Issued Date : May 24,2023

3. Departure from Nominal Value :

Reading (g)	Correction (g)	Uncertainty (+/- g)
0	0.00000	± 0.00008
1	+ 0.00004	± 0.00008
5	- 0.00005	± 0.00008
10	+ 0.00020	± 0.00008
20	+ 0.00027	± 0.00008
40	+ 0.00022	± 0.00010
60	+ 0.00018	± 0.00012
80	+ 0.00019	± 0.00014
100	+ 0.00028	± 0.00016
120	+ 0.00027	± 0.00018
140	+ 0.00036	± 0.00020
160	+ 0.00040	± 0.00022
180	+ 0.00058	± 0.00024
200	+ 0.00052	± 0.00027

Calibrated by :

Khemchuda Insorn

Approved By :

Narisa Poowasanpetch

(Miss Khemchuda Insorn)

(Miss Narisa Poowasanpetch)

Testing Officer

Chief of Technical Management

Date :

24/05/2023

Date :

24/05/2023

Issued Date : May 24, 2023



WO-02528406

PinAAcle 900 Series 900T, 900H, 900Z & 900F

Installation Checklist

Customer : SECOT Co., Ltd.

Date Tested: 27-28 Sep 2023

239 ถ.วิมลทองประชาป้า

Customer Name: คุณอารยา

แขวงบางซื่อ เขตบางซื่อ

Tel # : 086-590-9080

กรุงเทพฯ 10800

Work Order #: WO-02528406

CRM # 4854691

CSE: Chainarong Thanin

UPON SITE ARRIVAL:



Verify that the instrument was not damaged during shipment



Unpack the PC and all other accessories. Record the following:

PinAAcle Instrument Model:	PinAAcle900T	S/N	PTDS23051001
Auto Sample Model:	AS 900	S/N	AS9C23037501
Computer Model:	DELL OptiPlex	S/N	DTV9NY3
Cooling System Model:	PolyScience	S/N	2301-01301
Printer Model:	N/A	S/N	N/A
Misc.	FIAS 100	S/N	100S23071301



Record the software and firmware revision below:

Syngistix Software for AA Version: 5.1.0.2066

PinAAcle Spectrometer Firmware Version: 1.5.0.0126

PinAAcle Furnace Firmware Version: 2.20.040

Check the model specific Shipping Kit packed separately for completeness.
Verify the shipping Kit with each instrument order includes all items listed.



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PER-INSTALLATION CHECKS:

- ☒ Verify that proper ventilation is installed and an adequate exhaust rate is accordance to PYL.
- ☒ Verify that the gasses meet out PYL specifications.
- ☒ Verify that gas pressure regulators are installed with proper filters and pressure are set in accordance to PYL.
- ☒ Verify that the wiring in the lab meets our power and noise requirements specified in PYL.
- ☒ Verify that the lab environment conditions (room temperature, relative humidity) meet in our PYL specification.
- ☒ Maintenance accessibility is adequate.
- ☒ Measured Mains Input Voltage under load is adequate per our PYL specifications (≥ 208 VAC)

PHYSICAL INSTALLATION:

- ☒ The instrument, cooling system, computer and any accessories are unpacked and installed on suitable bench.
- ☒ Install all the electrical connections.
- ☒ Connect the gas hoses and tank regulators, set required pressures, and leak test as required.
- ☒ Install the burner system components. (PinAAcle Series 900T & 900F)
- ☒ Mount and connect the auto sample.
- ☒ Fill and connect the cooling system or connect external cooling according to specifications.
- ☒ Setup the computer and printer. Interconnect all cables between the computer, printer, and instrument.
- ☒ Setup and configure the computer to the instrument and install the software according to the installation chapter in the PinAAcle Service Manual.
- ☒ Record the furnace head voltage and manual temperature of 1200 Degrees Celsius.

INSTALLATION TESTING:

- ☒ Perform the following instrument performance tests according to the installation and test procedure. Complete the Instrument Performance Test Data Sheet below.
 - PinAAcle900T, 900H & 900F
 - Flame Copper Sensitivity and Precision
 - PinAAcle900T & 900Z
 - Furnace Copper Characteristic Mass and Zeeman Ratio
 - PinAAcle900H
 - Furnace Chromium Characteristic Mass and Precision
- ☒ Make and electronic copy of the Instrument parameters file per SDB 900PIN_021 procedure on the customer's computer.



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CUSTOMER ORIENTATION:

- ☒ Refer to the Customer Orientation Script for details
- ☒ Explain the warranty and customer replaceable parts policy
- ☒ Inform the customer of relevant PerkinElmer training courses, websites, and phone number



WO-02528406

PinAAcle 900 Series 900T, 900H, 900Z & 900F

Installation Performance Test Data Sheet

Flame Sensitivity and Precision

(PinAAcle Series 900T, 900H & 900F)

With Stainless Steel Nebulizer

Sensitivity	Mean Absorbance ≥ 0.250	<u>N/A</u>
Precision	%RSD ≤ 0.30 %	<u>N/A</u>

With High Sensitivity Nebulizer

Sensitivity	Mean Absorbance ≥ 0.250 Abs.	<u>0.3957</u>	Abs.
Precision	%RSD ≤ 0.40 %	<u>0.29</u>	%

THGA Furnace Copper Characteristic Mass and Zeeman Ratio

(PinAAcle 900T & 900Z)

Copper Characteristic Mass

Characteristic Mass	14 ± 2.5 pg	<u>11.3</u>	pg
Zeeman Ratio	0.52 ± 0.04	<u>0.55</u>	
Precision	%RSD ≤ 2.0 %	<u>0.07</u>	%

A.C Voltage measurement under load (Atomization)	≥ 208 VAC	<u>214.6</u>	VAC
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HGA Furnace Chromium Characteristic Mass and Precision

(PinAAcle 900H)

Chromium Characteristic Mass

Characteristic Mass	3 ± 0.8 pg	<u>N/A</u>
Precision	≤ 2.0 %	<u>N/A</u>

A.C Voltage measurement under load (Atomization)	≥ 207 VAC	<u>N/A</u>
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PinAAcle 900 Added Installation Test Checklist:

Model:	<u>PinAAcle900T</u>	Serial Number:	<u>PTDS23061001</u>
Software Version:	<u>5.1.0.2066</u>	Spectrometer FW Version:	<u>1.5.0.0126</u>
		Furnace FW Version:	<u>2.20.040</u>
		Instrument Control PCB revision:	<u>3</u>

NOTE: First 12 test checks are mandatory

1. 0.2, 0.7 & 2.0 Slits and 6 Lamp turret position calibration.

Check ☒

2. Cu energy & Capacitance:

Cu 324.75nm Line: Energy can vary by model and configuration, but Capacitance should be ≥ 7 pF.Capacitance = 7.0 pF

3. Wavelength Calibration Passed (As, Cu, Ba, K < 6 steps)

Yes

No ☒

4. Wavelength Accuracy Check

AS 193.70 nm +/- 0.12 nm	(193.56-193.82)	<u>193.700</u> nm
Cu 324.75 nm +/- 0.12 nm	(324.63-324.87)	<u>324.700</u> nm
Ba 553.55 nm +/- 0.12 nm	(553.43-553.67)	<u>553.550</u> nm
K 766.49 nm +/- 0.12 nm	(766.37-766.61)	<u>766.490</u> nm

5. HCL Sample to HCL Reference Ratio with Cu

30:70	<u>0.42</u>	HCL = 0.43, spec 0.18-0.58, target 0.34-0.52
30:70	<u>1.43</u>	D2 spec = 1.0-4.3
50:50	<u>N/A</u>	HCL = 1.0, spec 0.42-1.35, target 0.90-1.15
50:50	<u>N/A</u>	D2 spec = 0.43-1.84

6. Monochromator Bleed cover with Cu: Must be done with drak current checked (on)

Sample beam blocked value	<u>11</u>	spec <60 counts, ideally <20
Reference beam blocked value (900T/H)	<u>8</u>	spec <60 counts, ideally <20

7. Cu Flame Double-Beam Check

Mean_15 mA - Mean_10 mA ≤ 0.004 -0.0014

8. Low UV Energy & Capacitance check: check on on all

Cu 216.5 nm	<u>1.0</u>	≥ 1 pF Energy = <u>68</u>	below 50 may be a problem
*Pb 217.0 nm	<u>N/A</u>	≥ 1 pF Energy = <u>N/A</u>	below 50 may be a problem
*Zn 213.0 nm	<u>2.5</u>	≥ 1 pF Energy = <u>79</u>	below 50 may be a problem

* Option tests

N/A for PinAAcle 900Z. Flame double-beam mode test



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9. Mn Resolution Peak to Valley RatioHCL Sample Intensity (Valley) / HCL Sample Intensity (Peak) < 0.40 (40%) N/AHCL Reference Intensity (Valley) / HCL Reference Intensity (Peak) < 0.40 (40%) N/A**Furnace Mode (900Z)**HCL Sample Intensity (Valley) / HCL Sample Intensity (Peak) < 0.40 (40%) N/A**10. Furnace and Baffles Alignment Check w/ Cu (900T/Z/H)**Pk Area - AA < 0.005 A-s 0.0004Pk Area - BG < 0.005 A-s 0.0012**11. Furnace auto sample check valve test (900T/Z/H)**

Place sample probe onto rinse alignment and for 2 minutes and watch for backwards flow of rinse solution

Does rinse solution go backward? Y/N N**Optional Test Check****[Flame only Verification - 900T/H/F]****12. Gas box calibration check default flow settings**Fuel flow 20 20-22Oxidant flow 42 around 43Nebulizer Pressure 29 29-29.5**[Furnace only Verification] *Note test 13&14 should be done simultaneously****13. Voltage drop***2300C Atomization test 7.5 spec < 16 volts**14. Cr heating rate*** : By design the ASCOM PS will output the right DC voltage regardless of the incoming voltage, so that is not the purpose of this test. We are using this to check the conductivity of the furnace head and the function of the pyrometer.10ppb Cr standard @ 2300C Peak Height/Peak Area 1.578 > 1.3

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Comments:

PerkinElmer Service Engineer Signature: ชัยณรงค์ ธานี Date: 27-28 Sep 2023
Chainarong Thanin

ภาคผนวก จ

หนังสืออนุญาตขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
จากกรมโรงงานอุตสาหกรรม



ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐๑ ๖

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒ ๐ กรกฎาคม ๒๕๖๖

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท ชีคอต จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๗ เมษายน ๒๕๖๖

- สิ่งที่ส่งมาด้วย ๑. รายชื่อผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑ แผ่น
๒. รายชื่อเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๑ แผ่น
๓. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๙ แผ่น

ตามหนังสือที่อ้างถึง บริษัท ชีคอต จำกัด ขอต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ๖-๒๓๙ สถานที่ตั้งเลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท ชีคอต จำกัด ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

- ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑๐ ราย ตามสิ่งที่ส่งมาด้วย ๑
ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓๘ ราย ตามสิ่งที่ส่งมาด้วย ๒
ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย น้ำใต้ดิน อากาศเสีย สิ่งปฏิกูล หรือวัสดุที่ไม่ใช่แล้ว และดิน ตามสิ่งที่ส่งมาด้วย ๓

หนังสือฉบับนี้จะหมดอายุในวันที่ ๒ พฤษภาคม ๒๕๖๙ หากประสงค์จะต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อกรมโรงงานอุตสาหกรรมภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ซึ่งคำขอต่ออายุดังกล่าวขอรับได้ที่กรมโรงงานอุตสาหกรรม ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ ที่หน้าเว็บไซต์กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายประสม ดำรงพงษ์)

กองวิจัยและเตือนภัยมลพิษโรงงาน
ผู้อำนวยการวิจัยและเตือนภัยมลพิษโรงงาน
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม
กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕
โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๙๙
ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



“อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว”



ส่งที่ส่งมาด้วย ๑

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ชีคอต จำกัด

เลขทะเบียน ๖-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐๑ ๖

ลงวันที่ ๒ ๐ กรกฎาคม ๒๕๖๖

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑๐ ราย

๑) นายขรรชัย เกรียงไกรอุดม	ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๒
๒) นางสมฤดี เกรียงไกรอุดม	ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๓
๓) นางอารยา ทิพรัักษ์	ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๔
๔) นางสาวเชมชุตตา อินทร์ศรี	ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๕
๕) นางสาวปรีดา สมใจ	ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๖
๖) นางสาวอริญญา มาตา	ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๗
๗) นางสาวลดาวัลย์ วงศ์เจริญ	ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๘
๘) นางสาวณัฏฐพร เกตุะวันดี	ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๙
๙) นางสาวนริสา ภูวสรเพ็ชญ์	ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๑๐
๑๐) นางสาวศิริวรรณ นิมนสง่า	ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๑๑

วิมล

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ชีคอฟ จำกัด

เลขทะเบียน ว-๒๓๙

ที่ ออก ๐๓๓๐(๑)/ ๑๑ ๐ ๑ ๖

ลงวันที่ ๒๐ กรกฎาคม ๒๕๖๖

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓๘ ราย

- ๑) นางสาวสุดาพร สุนทร
- ๒) นางสาวสุรชาติพย์ เทียนเตี้ย
- ๓) นางสาวสุนันทา ศิริวัฒนานนท์
- ๔) นายบวร ดีชัยยะ
- ๕) นางสาวเกศรินทร์ วรเดชวิทยา
- ๖) นายอนันต์วัฒน์ พิมวันนา
- ๗) นายชิตพล สมประสงค์
- ๘) นางสาวศศิธร พรหมประเสริฐ
- ๙) นายศิวะนนท์ กลุณษ์
- ๑๐) นางสาวอลิษา คณิรารานนท์
- ๑๑) นางสาวสิริวรรณ แก้วชิงดวง
- ๑๒) นางสาวปัทมวรรณ สุวรรณวิโรจน์
- ๑๓) นางสาวกนิษฐา เจริญเชื้อ
- ๑๔) นายวัชรกานต์ ประมาคะเต
- ๑๕) นายชอง เสงฆ์วัลกุล
- ๑๖) นางสาวกฤษณา จันทุม
- ๑๗) นางสาวพรนภา บุตรธรรม
- ๑๘) นางสาวธาริณี อัจฉริยะ
- ๑๙) นายธนโชติ ช่างล้อ
- ๒๐) นางสาวพัชรา สมานฉันท์
- ๒๑) นางสาวจุฑารัตน์ แจ่มเรือน
- ๒๒) นางสาวจณิสตา กุ้ยอ่อน
- ๒๓) นายกิตติพงศ์ ณะกิจสุข
- ๒๔) นายจิรวัฒน์ โคตรคำหาญ
- ๒๕) นายชนะพล อัครผล
- ๒๖) นางสาวทิพย์สุดา วรรณการ
- ๒๗) นายสิทธิชัย สว่างวงศ์ไชย
- ๒๘) นายพิษณุ สีนามเพ็ง
- ๒๙) นายรัตนชัย ขอบทำกิจ
- ๓๐) นายธนาวุฒิ ด่วนแสง
- ๓๑) นายณัฐชัย ไชยโคตร
- ๓๒) นายณัฐดนัย กฤษณะโสม
- ๓๓) นายศุภชัย สุขใหม่
- ๓๔) นายรอมฎอน เหลี่ยมหมาด
- ๓๕) นางสาวสุภาวดี บัวแก้ว
- ๓๖) นางสาวมาริยาณี ฮาแว
- ๓๗) นางสาววิระยา ปัจฉิมบุรณ์
- ๓๘) นางสาวศลิษา อินทรีย์

- ทะเบียนเลขที่
- ว-๒๓๙-จ-๐๐๐๑
- ว-๒๓๙-จ-๐๐๐๓
- ว-๒๓๙-จ-๐๐๐๔
- ว-๒๓๙-จ-๐๐๐๕
- ว-๒๓๙-จ-๐๐๐๖
- ว-๒๓๙-จ-๐๐๐๗
- ว-๒๓๙-จ-๐๐๐๘
- ว-๒๓๙-จ-๐๐๐๙
- ว-๒๓๙-จ-๐๐๑๐
- ว-๒๓๙-จ-๐๐๑๑
- ว-๒๓๙-จ-๐๐๑๒
- ว-๒๓๙-จ-๐๐๑๓
- ว-๒๓๙-จ-๐๐๑๔
- ว-๒๓๙-จ-๐๐๑๕
- ว-๒๓๙-จ-๐๐๑๖
- ว-๒๓๙-จ-๐๐๑๗
- ว-๒๓๙-จ-๐๐๑๘
- ว-๒๓๙-จ-๐๐๑๙
- ว-๒๓๙-จ-๐๐๒๐
- ว-๒๓๙-จ-๐๐๒๑
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- ว-๒๓๙-จ-๐๐๓๖
- ว-๒๓๙-จ-๐๐๓๗
- ว-๒๓๙-จ-๐๐๓๘
- ว-๒๓๙-จ-๐๐๓๙

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สิ่งที่ส่งมาด้วย ๒

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ชีคอฟ จำกัด

เลขทะเบียน ว-๒๓๙

ที่ ออก ๐๓๓๐(๑)/ ๑๑ ๐ ๑ ๖

ลงวันที่ ๒๐ กรกฎาคม ๒๕๖๖

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๕๕ รายการ

น้ำเสีย จำนวน 45 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
2	Arsenic	2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
3	Barium	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4]
4	α-BHC	2) Digestion, Inductively Coupled Plasma Method ^[4]
5	β-BHC	1) Digestion, Direct Nitrous Oxide-Acetylene Flame Method ^[4]
6	δ-BHC	2) Digestion, Inductively Coupled Plasma Method ^[4]
7	γ-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
		2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]

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สิ่งที่ส่งมาด้วย ๓

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
8	Biochemical Oxygen Demand	1) 5-Day BOD Test, Azide Modification Method ^[4] 2) 5-Day BOD Test, Membrane Electrode Method ^[4]
9	Cadmium	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4]
10	Chemical Oxygen Demand	1) Open Reflux, Titrimetric method ^[4] 2) Closed Reflux, Colorimetric method ^[4] 3) Closed Reflux, Titrimetric Method ^[4]
11	Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
12	Chromium	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4]
13	Color	ADMI Weighted-Ordinate Spectrophotometric Method ^[4]
14	Copper	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4]
15	Cyanide	Distillation, Colorimetric method ^[4]
16	4,4'-DDD	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
17	4,4'-DDE	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
18	4,4'-DDT	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
19	Dieldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
20	Endosulfan I	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
21	Endosulfan II	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
22	Endosulfan Sulfate	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
23	Endrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
24	Endrin Aldehyde	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
25	Formaldehyde	Distillation, Colorimetric Method ^[3]
26	Free Chlorine	1) Iodometric Method ^[4] 2) DPD Colorimetric Method ^[4]
27	Heptachlor	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
28	Heptachlor epoxide	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
29	Hexavalent Chromium	1) Colorimetric Method ^[4] 2) Extraction, Air-Acetylene Flame Method ^[4]
30	Lead	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4]
31	Manganese	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4]
32	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[4]
33	Methoxychlor	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
34	Nickel	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] <i>สมพงษ์</i>

3) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
		3) Digestion, Inductively Coupled Plasma Method ^[4]
35	Oil & Grease	1) Liquid-Liquid, Partition-Gravimetric Method ^[4] 2) Soxhlet Extraction Method ^[4]
36	pH	Electrometric Method ^[4]
37	Phenols	1) Distillation, Chloroform Extraction Method ^[4] 2) Distillation, Direct Photometric Method ^[4]
38	Selenium	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
39	Sulfide	1) Iodometric method ^[4] 2) Methylene blue method ^[4]
40	Temperature	Laboratory and Field Methods ^[4]
41	Total Dissolved Solids	Dried at 180 °C ^[4]
42	Total Kjeldahl Nitrogen	1) Macro Kjeldahl Method ^[4] 2) Semi-Micro Kjeldahl Method ^[4]
43	Total Suspended Solids	Dried at 103-105 °C ^[4]
44	Trivalent Chromium	1) Digestion, Direct Air-Acetylene Flame Method; Colorimetric Method; Calculation ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method; Colorimetric Method; Calculation ^[4] 3) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation ^[4]
45	Zinc	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4] <i>สมพงษ์</i>

น้ำใต้ดิน จำนวน 125 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
2	Acetone	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
3	Aldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
5	Antimony	Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
6	Arsenic	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
7	Atrazine	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
8	Barium	1) Digestion, Direct Nitrous Oxide-Acetylene Flame Method ^[4] 2) Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
9	Benz(a)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
10	Benzene	Purge and Trap Gas Chromatographic/Mass spectrometric Method ^[4]
11	Benzo(b)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
12	Benzo(k)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4] 3mg/l

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

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
27	Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
28	p-Chloroaniline	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
29	Chlorobenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
30	Chlorodibromomethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
31	Chloroform	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
32	2-Chlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
33	Chromium	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
34	Chromium (III)	1) Digestion, Direct Air-Acetylene Flame Method; Colorimetric Method; Calculation ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method; Colorimetric Method; Calculation ^[4] 3) Digestion, Inductively Coupled Plasma Spectrometric Method; Colorimetric Method; Calculation ^[4]
35	Chromium (VI)	1) Colorimetric Method ^[4] 2) Extraction, Air-Acetylene Flame Method ^[4]
36	Chrysene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4] <i>ส่ง</i>

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
37	Cyanide	1) Distillation, Titrimetric Method ^[4] 2) Distillation, Colorimetric Method ^[4]
38	2,4-D	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
39	DDD	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
40	DDE	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
41	DDT	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
42	Dibenz(a,h)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
43	Di-n-butyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
44	1,2-Dichlorobenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
45	1,3-Dichlorobenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
46	1,4-Dichlorobenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
47	3,3'-Dichlorobenzidine	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
48	1,1-Dichloroethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
49	1,2-Dichloroethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4] <i>ส่ง</i>

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
50	1,1-Dichloroethylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
51	cis-1,2-Dichloroethylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
52	trans-1,2-Dichloroethylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
53	2,4-Dichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
54	1,2-Dichloropropane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
55	1,3-Dichloropropane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
56	1,3-Dichloropropene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
57	Dieldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
58	Diethyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
59	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
60	2,4-Dinitrophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
61	2,4-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
62	2,6-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
63	Di-n-Octyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
64	Endosulfan	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾ 2) Liquid-Liquid...

2) Liquid-Liquid...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
65	Endrin	2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾ 1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
66	Ethylbenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
67	Fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
68	Fluorene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
69	Heptachlor	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
70	Heptachlor epoxide	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
71	Hexachlorobenzene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
72	Hexachloro-1,3-butadiene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
73	n-Hexane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
74	α-HCH	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾ 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽⁴⁾
75	β-HCH	1) Liquid-Liquid Extraction, Gas Chromatographic Method ⁽⁴⁾ 2) Liquid-Liquid...

2) Liquid-Liquid...

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

87 Methylene chloride...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
87	Methylene chloride	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
88	2-Methylphenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
89	2-Methylnaphthalene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
90	Methyl tert-butyl ether	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
91	Naphthalene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
92	Nickel	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
93	Nitrobenzene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
94	N-Nitrosodiphenylamine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
95	N-Nitrosodi-n-propylamine	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
96	Polychlorinated Biphenyls - PCB-1016 - PCB-1221 - PCB-1232 - PCB-1242 - PCB-1248 - PCB-1254 - PCB-1260	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
97	Pentachlorophenol	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
98	pH	Electrometric method ^[4]

99 Phenanthrene...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
99	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
100	Phenol	1) Distillation, Chloroform Extraction Method ^[4] 2) Distillation, Direct Photometric Method ^[4] 3) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
101	Pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
102	Selenium	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
103	Silver	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
104	Styrene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
105	1,1,2,2-Tetrachloroethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
106	Tetrachloroethylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
107	Toluene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
108	TPH (C ₅ -C ₈)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[12,25]
109	TPH (C ₈ -C ₁₆)	1) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[9,21] 2) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass spectrometric Method ^[9,25]
110	TPH (C ₁₆ -C ₃₅)	1) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[9,21] <i>วิมล</i>

2) Separatory...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
		2) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass spectrometric Method ^[9,25]
111	1,2,4-Trichlorobenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
112	1,1,1-Trichloroethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
113	1,1,2-Trichloroethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
114	Trichloroethylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
115	2,4,5-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
116	2,4,6-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
117	1,3,5-Trimethylbenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
118	Vanadium	Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
119	Vinyl acetate	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
120	Vinyl chloride	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
121	m-Xylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
122	o-Xylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
123	p-Xylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
124	Xylene (Total)	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4] <i>วิมล</i>

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
125	Zinc	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]

อากาศเสีย (ปล่อยระบาย) จำนวน 27 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Antimony	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
2	Arsenic	1) Isokinetic Sampling, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
3	Beryllium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
4	Cadmium	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
5	Carbon monoxide	Instrumental Analyzer Method ^[5]
6	Chlorine	1) Absorption Sampling, Ion Chromatographic Method ^[5] 2) Isokinetic Sampling, Ion Chromatographic Method ^[5]
7	Chromium	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 3100

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
8	Cobalt	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
9	Copper	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
10	Cresol	Adsorption Sampling, Gas Chromatographic Method ^[5]
11	Dioxin/Furans	Isokinetic Sampling ^[5]
12	Hydrogen chloride	1) Absorption Sampling, Ion Chromatographic Method ^[5] 2) Isokinetic Sampling, Ion Chromatographic Method ^[5]
13	Hydrogen Fluoride	1) Absorption Sampling, Ion Chromatographic Method ^[5] 2) Isokinetic Sampling, Ion Chromatographic Method ^[5]
14	Hydrogen Sulfide	Absorption Sampling, Iodometric Method ^[5]
15	Lead	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
16	Manganese	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
17	Mercury	Isokinetic Sampling, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[5]
18	Nickel	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] 3100

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
19	Opacity	Ringelmann's Method ^[2]
20	Oxides of Nitrogen	1) Absorption Sampling, Phenoldisulfonic acid Method ^[5] 2) Absorption Sampling, Ion Chromatographic Method ^[5] 3) Instrumental Analyzer Method ^[5]
21	Selenium	1) Isokinetic Sampling, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
22	Sulfur dioxide	1) Isokinetic Sampling, Barium-Thorin Titrimetric Method ^[5] 2) Absorption Sampling, Barium-Thorin Titrimetric Method ^[5] 3) Instrumental Analyzer Method ^[5]
23	Sulfuric acid	Isokinetic Sampling, Barium-Thorin Titrimetric Method ^[5]
24	Tin	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
25	Total Suspended Particulate	1) Isokinetic Sampling, Gravimetric Method ^[5] 2) Paired Train, Isokinetic Sampling, Gravimetric Method ^[5]
26	Vanadium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
27	Xylene	1) Adsorption Sampling, Gas Chromatographic Method ^[5] 2) Adsorption Sampling, Gas Chromatographic/Mass Spectrometric Method ^[5]

สิ่งปฏิกูล...

สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน 34 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,6,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,6,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
2	Antimony	1) Waste Extraction, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[1,6,16] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[7,16] 4) Digestion, Inductively Coupled Plasma Method ^[7,14]
3	Arsenic	1) Waste Extraction, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[1,6,16] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[7,16] 4) Digestion, Inductively Coupled Plasma Method ^[7,14]
4	Barium	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method ^[1,6,15]

2) Waste Extraction...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
5	Beryllium	2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 4) Digestion, Inductively Coupled Plasma Method ^[7,14]
6	Cadmium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
7	Chlordane	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 4) Digestion, Inductively Coupled Plasma Method ^[7,14]
8	Chromium	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27] 1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] <i>เพิ่ม</i>

3) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
9	Chromium (III)	3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 4) Digestion, Inductively Coupled Plasma Method ^[7,14] 1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method; Waste Extraction, Colorimetric Method; Calculation ^[1,6,15,17] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method; Waste Extraction, Colorimetric Method; Calculation ^[1,6,14,17]
10	Chromium (VI)	3) Digestion, Flame Atomic Absorption Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation ^[7,8,15,17] 4) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation ^[7,8,14,17]
11	Cobalt	1) Waste Extraction, Colorimetric Method ^[1,17] 2) Alkaline Digestion, Colorimetric Method ^[8,17]
12	Copper	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Digestion, Inductively Coupled Plasma Method ^[7,14] 1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 4) Digestion, Inductively Coupled Plasma Method ^[7,14] <i>เพิ่ม</i>

13 2,4-D...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
13	2,4-D	1) Waste Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[25]
14	DDD	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
15	DDE	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
16	DDT	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27] <i>3mg</i>

17 Dieldrin...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
17	Dieldrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
18	Endrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
19	Heptachlor	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
20	Lead	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] <i>3mg</i>

3) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
21	Lindane	3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 4) Digestion, Inductively Coupled Plasma Method ^[7,14] 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
22	Mercury	1) Waste Extraction, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[1,16] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[19] 4) Digestion, Inductively Coupled Plasma Method ^[7,14]
23	Methoxychlor	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]


24 Molybdenum...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
24	Molybdenum	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
25	Nickel	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 4) Digestion, Inductively Coupled Plasma Method ^[7,14]
26	Polychlorinated Biphenyls - Aroclor 1016 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,23] 2) Soxhlet Extraction, Gas Chromatographic Method ^[10,23]
27	Pentachlorophenol	1) Waste Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[25]
28	pH	Electrometric Method ^[31,32]
29	Selenium	1) Waste Extraction, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[1,6,20] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[7,20]


4) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
30	Silver	4) Digestion, Inductively Coupled Plasma Method ^[7,14] 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
31	Thallium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
32	Trichloroethylene	1) Waste Extraction, Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[1,12,26] 2) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[12,26]
33	Vanadium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
34	Zinc	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 4) Digestion, Inductively Coupled Plasma Method ^[7,14]

ดิน จำนวน 124 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27] 

2 Acetone...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
3	Aldrin	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]
4	Anthracene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
5	Antimony	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[7,16] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
6	Arsenic	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[7,16] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
7	Atrazine	Ultrasonic Extraction, Gas Chromatographic Method ^[11,24]
8	Barium	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
9	Benz(a)anthracene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
10	Benzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
11	Benzo(b)fluoranthene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
12	Benzo(k)fluoranthene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
13	Benzoic acid	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27] 

14 Benzo(a)pyrene...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
14	Benzo(a)pyrene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
15	Benzo(g,h,i)perylene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
16	Beryllium	Digestion, Inductively Coupled Plasma Method ^[7,14]
17	Bis(2-chloroethyl)ether	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
18	Bis(2-ethylhexyl)phthalate	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
19	Bromodichloromethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,26]
20	Bromoform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,26]
21	Butanol	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,26]
22	Butyl benzyl phthalate	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
23	Cadmium	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
24	Carbazole	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
25	Carbon disulfide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,26]
26	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,26]
27	Chlordane	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,27]

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
28	p-Chloroaniline	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
29	Chlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,26]
30	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,26]
31	Chloroform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
32	2-Chlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]
33	Chromium	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
34	Chromium (III)	1) Digestion, Flame Atomic Absorption Spectrometric Method; Colorimetric Method; Calculation ^[7,8,15,17] 2) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation ^[7,8,14,17]
35	Chromium (VI)	Alkaline Digestion, Colorimetric Method ^[8,17]
36	Chrysene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
37	Cyanide	1) Extraction, Distillation, Titrimetric Method ^[28,29,30] 2) Extraction, Distillation, Colorimetric Method ^[28,29,30]
38	2,4-D	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[24]
39	DDD	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,27]

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
40	DDE	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]
41	DDT	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]
42	Dibenz(a,h)anthracene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
43	Di-n-butyl phthalate	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
44	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
45	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
46	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
47	3,3'-Dichlorobenzidine	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
48	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
49	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
50	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
51	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
52	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
53	2,4-Dichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]

54 1,2-Dichloropropane...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
54	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
55	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
56	1,3-Dichloropropene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
57	Dieldrin	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]
58	Diethyl phthalate	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
59	2,4-Dimethylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]
60	2,4-Dinitrophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]
61	2,4-Dinitrotoluene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
62	2,6-Dinitrotoluene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
63	Di-n-Octyl phthalate	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
64	Endosulfan	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]
65	Endrin	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]
66	Ethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]

67 Fluoranthene...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
67	Fluoranthene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
68	Fluorene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
69	Heptachlor	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,27]
70	Heptachlor epoxide	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,27]
71	Hexachlorobenzene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]
72	Hexachloro-1,3-butadiene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
73	n-Hexane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,26]
74	α-HCH	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,27]
75	β-HCH	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,27]
76	γ-HCH	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,27]
77	Hexachlorocyclopentadiene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]

78 Hexachloroethane...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
78	Hexachloroethane	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
79	Indeno(1,2,3-cd)pyrene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
80	Isophorone	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
81	Lead	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
82	Manganese	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
83	Mercury	1) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[19] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
84	Methanol	Ultrasonic Extraction, Direct Aqueous Injection, Gas Chromatographic Method ^[11,21]
85	Methoxychlor	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,27]
86	Methyl bromide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
87	Methylene chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
88	2-Methylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]
89	2-Methylnaphthalene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]

90 Methyl tert-butyl ether...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
90	Methyl tert-butyl ether	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
91	Naphthalene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
92	Nickel	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
93	Nitrobenzene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
94	N-Nitrosodiphenylamine	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
95	N-Nitrosodi-n-propylamine	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
96	Polychlorinated Biphenyls - Aroclor 1016 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260	Soxhlet Extraction, Gas Chromatographic Method ^[10,23]
97	Pentachlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[24]
98	Phenanthrene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
99	Phenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]
100	Pyrene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
101	Selenium	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[7,20]

2) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
102	Silver	2) Digestion, Inductively Coupled Plasma Method ^[7,14] 1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
103	Styrene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
104	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
105	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
106	Toluene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
107	TPH (C ₅ -C ₈)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
108	TPH (C ₈ -C ₁₆)	1) Soxhlet Extraction, Gas Chromatographic Method ^[10,21] 2) Soxhlet Extraction, Gas Chromatographic/Mass spectrometric Method ^[10,26]
109	TPH (C ₁₆ -C ₃₅)	1) Soxhlet Extraction, Gas Chromatographic Method ^[10,21] 2) Soxhlet Extraction, Gas Chromatographic/Mass spectrometric Method ^[10,26]
110	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
111	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
112	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
113	Trichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]

114 2,4,5-Trichlorophenol...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
114	2,4,5-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,27)
115	2,4,6-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,27)
116	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
117	Vanadium	Digestion, Inductively Coupled Plasma Method ^(7,14)
118	Vinyl acetate	Purge and Trap, Gas Chromatographic/Mass spectrometric Method ^(13,26)
119	Vinyl chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
120	m-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
121	o-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
122	p-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
123	Xylene (Total)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
124	Zinc	1) Digestion, Flame Atomic Absorption Spectrometric Method ^(7,15) 2) Digestion, Inductively Coupled Plasma Method ^(7,14) <i>พิมพ์</i>

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
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ที่ ออก ๐๓๑๐(๑)/ ๕๐ ๕๔



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒๗ พฤษภาคม ๒๕๖๗

เรื่อง เปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท ซีคอฟ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๒๑ พฤษภาคม ๒๕๖๗

ตามคำขอที่อ้างถึง บริษัท ซีคอฟ จำกัด ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๒๓๙
สถานที่ตั้งเลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร ขอเปลี่ยนแปลงบุคลากร
ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์
จำนวน ๒ ราย ได้แก่

๑) นายวัชรกานต์ ประมาคะเต

ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๑๕

๒) นายรัตนชัย ชอบทำกิจ

ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๓๐

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายพรยศ กลั่นกรอง)

รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๙๔

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



ภาคผนวก ข

ใบรับรองความสามารถห้องปฏิบัติการและขอขยายการรับรอง
ห้องปฏิบัติการทดสอบ ตามมาตรฐาน ISO/IEC 17025
จากสำนักงานมาตรฐานอุตสาหกรรม (สมอ.)



แบบ กษช./สมอ.๒
Form NSC/TISI 2

ใบรับรองเลขที่ 24-LB0026
(Certificate No.)

ใบรับรองระบบงาน (Certificate of Accreditation)

อาศัยอำนาจตามความในพระราชบัญญัติการมาตรฐานแห่งชาติ พ.ศ. ๒๕๕๑
(By Virtue of National Standardization Act B.E. 2551 (2008))

เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม
(Secretary-General, Thai Industrial Standards Institute)

ออกใบรับรองฉบับนี้ให้
(Issues this certificate to)

บริษัท ซีคอต จำกัด ฝ่ายห้องปฏิบัติการทดสอบด้านสิ่งแวดล้อม
(Secot Company Limited, Environmental Laboratory Division)

ตั้งอยู่เลขที่
(Address)

๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร
(239 Rimklongprapa Road, Bangsue, Bangsue, Bangkok)

ได้รับการรับรองความสามารถ
(Certificate of competence)

ตามมาตรฐานเลขที่ มอก. ๑๗๐๒๕ - ๒๕๖๑
(Standard No. TIS 17025-2561 (2018) (ISO/IEC 17025: 2017))

ข้อกำหนดทั่วไปว่าด้วยความสามารถของ ห้องปฏิบัติการทดสอบและห้องปฏิบัติการสอบเทียบ
(General requirements for the competence of testing and calibration laboratories)

หมายเลขการรับรองที่ ทดสอบ ๐๓๙๔
(Accreditation No. Testing 0394)

โดยมีรายละเอียดสาขาและขอบข่ายที่ได้ใบรับรอง แสดงไว้ใน QR CODE และ www.tisi.go.th
(Details of the scheme and scope of the certificate are shown in QR CODE and www.tisi.go.th)

ออกให้ ณ วันที่ ๖ ธันวาคม พ.ศ. ๒๕๖๖
(Issue date : 6 December B.E. 2566 (2023))


(นายวีระศักดิ์ เพ็งหล่ง)
(นายวีระศักดิ์ เพ็งหล่ง)

ผู้อำนวยการสำนักงานคณะกรรมการการมาตรฐานแห่งชาติ
ปฏิบัติราชการแทน
เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม



Signed by สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม (สมอ.)
Thai Industrial Standards Institute (TISI)
Date: 2023-12-06T08:49:04.476+07:00
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กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม
(Ministry of Industry Thailand, Thai Industrial Standards Institute)



รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ
(Scope of Accreditation for Testing)
ใบรับรองเลขที่ 24-LB0026
(Certification No. 24-LB0026)



ชื่อห้องปฏิบัติการ
(Laboratory Name)

หมายเลขการรับรองที่
(Accreditation No.)

ฉบับที่ 02
(Issue No.02)

สถานภาพห้องปฏิบัติการ
(Laboratory status)

บริษัท ซีคอต จำกัด ฝ่ายห้องปฏิบัติการทดสอบด้านสิ่งแวดล้อม
(Secot Company Limited, Environmental Laboratory Division)

ทดสอบ 0394
(Testing 0394)

ออกให้ตั้งแต่วันที่ 30 ตุลาคม พ.ศ. 2566
(Valid from) (30 October B.E.2566 (2023))

☒ถาวร
(Permanent)

☐นอกสถานที่
(Site)

☐ชั่วคราว
(Temporary)

ถึงวันที่ 8 กันยายน พ.ศ. 2571
(Until) (8 September B.E.2571 (2028))

☐เคลื่อนที่
(Mobile)

☐หลายสถานที่
(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
สาขาสังแวดล้อม (environmental field) 1. น้ำและน้ำเสีย (water and wastewater)	- โลหะหนัก (heavy metals) • สารหนู (Arsenic, As) 0.000 5 mg/L ถึง 0.090 0 mg/L • สารหนู (Arsenic, As) 0.05 mg/L ถึง 4.50 mg/L • แบเรียม (Barium, Ba) 0.02 mg/L ถึง 4.50 mg/L • แคดเมียม (Cadmium, Cd) 0.01 mg/L ถึง 4.50 mg/L • โครเมียม (Chromium, Cr) 0.01 mg/L ถึง 4.50 mg/L	- Standard Methods for the Examination of Water and Wastewater, APHA , AWWA, WEF, 23 rd edition , 2017, Part 3030 F and Part 3114 C - Standard Methods for the Examination of Water and Wastewater, APHA , AWWA, WEF, 23 rd edition , 2017, Part 3030 E and Part 3120 B

กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม
(Ministry of Industry, Thai Industrial Standards Institute)

หน้า 1/9

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

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สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสิ่งแวดล้อม (environmental field)</p> <p>1. น้ำและน้ำเสีย (ต่อ) (water and wastewater) (cont.)</p>	<p>- โลหะหนัก (heavy metals)</p> <ul style="list-style-type: none"> ทองแดง (Copper, Cu) 0.02 mg/L ถึง 4.50 mg/L เหล็ก (Iron, Fe) 0.05 mg/L ถึง 9.00 mg/L ตะกั่ว (Lead, Pb) 0.03 mg/L ถึง 4.50 mg/L แมงกานีส (Manganese, Mn) 0.01 mg/L ถึง 9.00 mg/L นิกเกิล (Nickel, Ni) 0.01 mg/L ถึง 4.50 mg/L สังกะสี (Zinc, Zn) 0.02 mg/L ถึง 9.00 mg/L 	<p>- Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 23rd edition, 2017, Part 3030 E and Part 3120 B</p>

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สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสิ่งแวดล้อม (environmental field)</p> <p>1. น้ำและน้ำเสีย (ต่อ) (water and wastewater) (cont.)</p> <p>2. บริเวณทำงาน (workplace)</p>	<p>- ซีโอดี (Chemical oxygen demand, COD) 100 mg/L ถึง 4 000 mg/L</p> <p>- ฝุ่นละอองรวม (Total dust) 0.10 mg/filter ถึง 2.00 mg/filter</p> <p>- ฝุ่นละอองขนาดเล็ก (Respirable dust) 0.10 mg/filter ถึง 2.00 mg/filter</p>	<p>- Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 23rd edition, 2017, Part 5220 D</p> <p>- NIOSH Manual of Analytical Methods (NMAM), method 0500, 4th edition, 15th August 1994 (Exclude Sampling)</p> <p>- NIOSH Manual of Analytical Methods (NMAM), method 0600, 4th edition, 15th January 1998 (Exclude Sampling)</p>

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สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาส่งแวดล้อม (environmental field)</p> <p>2. บริเวณทำงาน (ต่อ) (workplace) (cont.)</p>	<ul style="list-style-type: none"> เบนซีน (Benzene) 1.10 µg/tube ถึง 420 µg/tube โทลูอีน (Toluene) 1.10 µg/tube ถึง 420 µg/tube โทไทรไซลีน (Total xylenes) 2.20 µg/tube ถึง 840 µg/tube เมตา, พารา-ไซลีน (m, p- Xylene) 1.10 µg/tube ถึง 420 µg/tube ออร์โธ-ไซลีน (o- Xylene) 1.10 µg/tube ถึง 420 µg/tube 	<ul style="list-style-type: none"> - NIOSH Manual of Analytical Methods (NMAM), method 1501, 4th edition, 15th March 2003 (Exclude Sampling)
<p>3. ปล่องระบายอากาศ (stack)</p>	<ul style="list-style-type: none"> ซัลเฟอร์ไดออกไซด์ (Sulfur dioxide) 1.00 mg/L ถึง 16 000 mg/L (solution) 	<ul style="list-style-type: none"> - US.EPA, Code of Federal Regulations, 40 CFR 60 appendix A, method 6, July 2019 (Exclude Sampling)

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สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาส่งแวดล้อม (environmental field)</p> <p>3. ปล่องระบายอากาศ (ต่อ) (stack) (cont.)</p>	<ul style="list-style-type: none"> ไฮโดรเจนฟลูออไรด์ (Hydrogen fluoride) 5 µg/sample ถึง 400 µg/sample ไฮโดรเจนคลอไรด์ (Hydrogen chloride) 5 µg/sample ถึง 400 µg/sample 	<ul style="list-style-type: none"> - WI-7.2-1-22 based on US.EPA, Code of Federal Regulations, 40 CFR 60 appendix A, method 26, 2019 (Exclude Sampling)

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สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสีสิ่งแวดล้อม (environmental field)</p> <p>4. บรรยากาศทั่วไป (ambient air)</p>	<p>- สารอินทรีย์ระเหยง่าย (Volatile organic compounds, VOCs)</p> <ul style="list-style-type: none"> คลอโรเอทีน (Chloroethene) 0.05 $\mu\text{g}/\text{m}^3$ ถึง 51.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) 1,3-บิวทาไดเอน (1,3-butadiene) 0.04 $\mu\text{g}/\text{m}^3$ ถึง 44.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) โบรมอมีเทน (Bromomethane) 0.08 $\mu\text{g}/\text{m}^3$ ถึง 77.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) อะคลอลีน (Acrolein) 0.05 $\mu\text{g}/\text{m}^3$ ถึง 45.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) 	<p>- WI-7.2-1-24 based on US EPA , Compendium Method TO-15 , EPA/625/R-96/010b, Second edition, January 1999</p>

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สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสีสิ่งแวดล้อม (environmental field)</p> <p>4. บรรยากาศทั่วไป (ต่อ) (ambient air) (cont.)</p>	<p>- สารอินทรีย์ระเหยง่าย (Volatile organic compounds, VOCs)</p> <ul style="list-style-type: none"> อะคริโลไนไตรล์ (Acrylonitrile) 0.04 $\mu\text{g}/\text{m}^3$ ถึง 43.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) ไดคลอโรมีเทน (Dichloromethane) 0.14 $\mu\text{g}/\text{m}^3$ to 69.00 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) คาร์บอนไดซัลไฟด์ (Carbon disulfide) 0.06 $\mu\text{g}/\text{m}^3$ ถึง 62.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) ไตรคลอโรมีเทน (Trichloromethane) 0.20 $\mu\text{g}/\text{m}^3$ ถึง 97.00 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) 1,2-ไดคลอโรเอทีน (1,2-dichloroethane) 0.08 $\mu\text{g}/\text{m}^3$ ถึง 80.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) 	<p>- WI-7.2-1-24 based on US EPA , Compendium Method TO-15 , EPA/625/R-96/010b, Second edition, January 1999</p>

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สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาส่งแวดล้อม (environmental field)</p> <p>4. บรรยากาศทั่วไป (ต่อ) (ambient air) (cont.)</p>	<ul style="list-style-type: none"> สารอินทรีย์ระเหยง่าย (Volatile organic compounds, VOCs) เบนซีน (Benzene) 0.06 $\mu\text{g}/\text{m}^3$ ถึง 63.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) คาร์บอนเตตระคลอไรด์ (Carbon tetrachloride) 0.25 $\mu\text{g}/\text{m}^3$ ถึง 125 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) ไตรคลอโรเอทิลีน (Trichloroethylene) 0.21 $\mu\text{g}/\text{m}^3$ ถึง 107 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) 1,2-ไดคลอโรโพรเพน (1,2-dichloropropane) 0.18 $\mu\text{g}/\text{m}^3$ ถึง 92.00 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) เตตระคลอโรเอทิลีน (Tetrachloroethylene) 0.27 $\mu\text{g}/\text{m}^3$ ถึง 135 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) 	<p>WI-7.2-1-24 based on US EPA , Compendium Method TO-15 , EPA/625/R-96/010b, Second edition, January 1999</p>

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สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาส่งแวดล้อม (environmental field)</p> <p>4. บรรยากาศทั่วไป (ต่อ) (ambient air) (cont.)</p>	<ul style="list-style-type: none"> สารอินทรีย์ระเหยง่าย (Volatile organic compounds, VOCs) 1,2-ไดโบรมีเอเทน (1,2-dibromoethane) 0.31 $\mu\text{g}/\text{m}^3$ ถึง 153 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) 1,1,2,2-เตตระคลอโรอีเทน (1,1,2,2-tetrachloroethane) 0.69 $\mu\text{g}/\text{m}^3$ ถึง 137 $\mu\text{g}/\text{m}^3$ (0.10 ppbv ถึง 20.00 ppbv) เบนซิลคลอไรด์ (Benzyl chloride) 0.52 $\mu\text{g}/\text{m}^3$ ถึง 103 $\mu\text{g}/\text{m}^3$ (0.10 ppbv ถึง 20.00 ppbv) 1,4-ไดคลอโรเบนซีน (1,4-dichlorobenzene) 0.24 $\mu\text{g}/\text{m}^3$ ถึง 120 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) 	<p>WI-7.2-1-24 based on US EPA , Compendium Method TO-15 , EPA/625/R-96/010b, Second edition, January 1999</p>

ภาคผนวก ข

ใบอนุญาตเป็นนิติบุคคลผู้ให้บริการตรวจวัดและวิเคราะห์การทำงาน
จากกรมสวัสดิการและคุ้มครองแรงงาน



แบบ ก.บ.บญ
นิติบุคคล

กรมสวัสดิการและคุ้มครองแรงงาน
ใบอนุญาต
เป็นนิติบุคคลผู้ให้บริการตรวจวัดและวิเคราะห์สภาวะการทำงานเกี่ยวกับระดับเสียง

ใบอนุญาตเลขที่ ๑๕๐๓-๐๓-๒๕๖๕-๐๐๔๘

อนุญาตให้.....บริษัท ซีคอนท. จำกัด.....

เลขทะเบียนนิติบุคคล.....๐๑๐๕๕๓๖๐๐๐๙๗๖.....

ตั้งอยู่เลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร.....

เป็นนิติบุคคลผู้ให้บริการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน ตามกฎกระทรวงกำหนดมาตรฐานในการบริหาร จัดการ และดำเนินการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงานเกี่ยวกับความร้อน แสงสว่าง และเสียง พ.ศ. ๒๕๕๙ ในการตรวจวัดและวิเคราะห์สภาวะการทำงานเกี่ยวกับระดับเสียง ประกอบกับกฎกระทรวงการขึ้นทะเบียนและการอนุญาตให้บริการเพื่อส่งเสริม ความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน พ.ศ. ๒๕๖๔ แห่งพระราชบัญญัติความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน พ.ศ. ๒๕๕๔ โดยมีบุคลากร จำนวน ๕ ราย ดังรายชื่อแนบท้ายใบอนุญาตนี้

ทั้งนี้ ตั้งแต่วันที่ ๑๗ มิถุนายน พ.ศ. ๒๕๖๕ ถึงวันที่ ๑๖ มิถุนายน พ.ศ. ๒๕๖๘

ให้ไว้ ณ วันที่ ๑๗ มิถุนายน พ.ศ. ๒๕๖๕

(นายสมพจน์ กวางแก้ว)
รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน

เลขทะเบียนควบคุม

๗-๑๑-๐๔๐๓-๐๔๘-๐๑-๖๕

(ลงนาม)

(นายทะเบียน)

(นายศักดิ์ศิลป์ ตุลาธร)

ตำแหน่ง ผู้อำนวยการกองความปลอดภัยแรงงาน

รายชื่อบุคลากรแนบท้ายใบอนุญาต
เป็นนิติบุคคลผู้ให้บริการตรวจวัดและวิเคราะห์สภาวะการทำงานเกี่ยวกับระดับเสียง
ของบริษัท ซีคอท จำกัด
ใบอนุญาตเลขที่ ๐๔๐๓-๐๓-๒๕๖๕-๐๐๔๘

- | | |
|-------------------|---------------|
| ๑. นางสาวสุนันทา | ศิริวัฒนานนท์ |
| ๒. นางสาวกนิษฐา | เจริญเชื้อ |
| ๓. นางสาวปัทมวรรณ | สุวรรณวิโรจน์ |
| ๔. นางสาวอลิษา | คณิธรานนท์ |
| ๕. นางสาวชนิตา | หล้าสาย |

ทั้งนี้ ตั้งแต่วันที่ ๑๗ มิถุนายน พ.ศ. ๒๕๖๕ ถึงวันที่ ๑๖ มิถุนายน พ.ศ. ๒๕๖๘

ให้ไว้ ณ วันที่ ๑๗ มิถุนายน พ.ศ. ๒๕๖๕



(นายสมพจน์ กวางแก้ว)

รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน

รายชื่อบุคลากร (เพิ่มเติม)
แนบท้ายใบอนุญาตเป็นนิติบุคคลผู้ให้บริการตรวจวัดและวิเคราะห์สภาวะการทำงานเกี่ยวกับระดับเสียง
ของบริษัท ซีคอท จำกัด
ใบอนุญาตเลขที่ ๐๔๐๓-๐๓-๒๕๖๕-๐๐๔๘

- | | |
|-------------------|-------------|
| ๑. นางสาวศลิษา | อินริย์ |
| ๒. นางสาวกรรียาณี | ฮาแว |
| ๓. นางสาววิระยา | ปัจฉิมบุรณ์ |

ทั้งนี้ ตั้งแต่วันที่ ๑๙ มกราคม พ.ศ. ๒๕๖๖ ถึงวันที่ ๑๖ มิถุนายน พ.ศ. ๒๕๖๘

ให้ไว้ ณ วันที่ ๑๙ มกราคม พ.ศ. ๒๕๖๖



(นายสมพจน์ กวางแก้ว)

รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน