

ภาคผนวก ง

ใบรับรองผลการตรวจวัดและวิเคราะห์

ภาคผนวก ง.1

ใบรับรองผลการตรวจวัดคุณภาพอากาศในบรรยากาศ



Meteorological Monitoring Results : Wind Rose MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor period : 23-30 Jan 2023

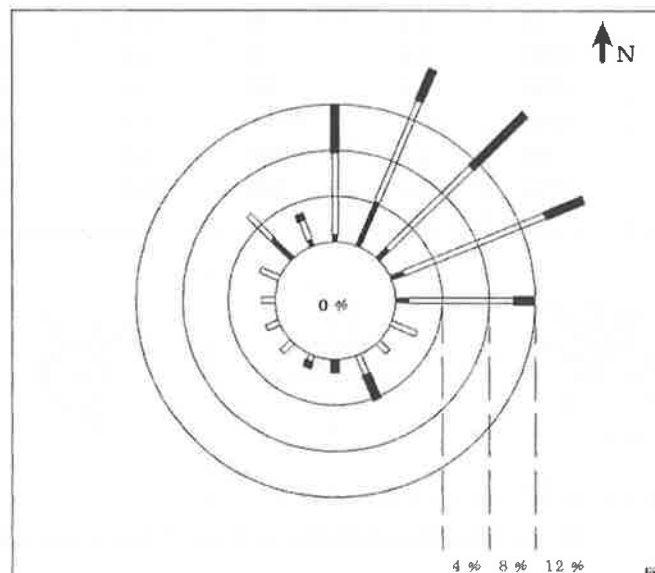
Wind Speed Model : NRG Symphonie

Serial No : 4904

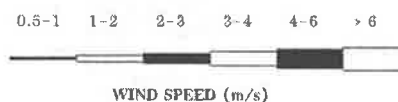
Wind Direction Model : NRG Symphonie

Serial No : 4904

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	0.0060	0.0714	0.0417	0.0000	0.0000	0.0000	0.1190
NNE	0.0417	0.0952	0.0298	0.0000	0.0000	0.0000	0.1667
NE	0.0119	0.1012	0.0655	0.0000	0.0000	0.0000	0.1786
ENE	0.0119	0.1310	0.0357	0.0000	0.0000	0.0000	0.1786
E	0.0119	0.0893	0.0179	0.0000	0.0000	0.0000	0.1190
ESE	0.0000	0.0238	0.0000	0.0000	0.0000	0.0000	0.0238
SE	0.0000	0.0119	0.0000	0.0000	0.0000	0.0000	0.0119
SSE	0.0000	0.0179	0.0238	0.0000	0.0000	0.0000	0.0417
S	0.0000	0.0000	0.0119	0.0000	0.0000	0.0000	0.0119
SSW	0.0000	0.0060	0.0060	0.0000	0.0000	0.0000	0.0119
SW	0.0000	0.0119	0.0000	0.0000	0.0000	0.0000	0.0119
WSW	0.0000	0.0119	0.0000	0.0000	0.0000	0.0000	0.0119
W	0.0000	0.0119	0.0000	0.0000	0.0000	0.0000	0.0119
WNW	0.0000	0.0179	0.0000	0.0000	0.0000	0.0000	0.0179
NW	0.0238	0.0298	0.0000	0.0000	0.0000	0.0000	0.0536
NNW	0.0060	0.0179	0.0060	0.0000	0.0000	0.0000	0.0298
CALM	0.0000						



Application : WindPro Ver.1.0

Control : 16 Direction Calculation With
Calm Wind < 0.5 m/sData Unit : Direction in Deg.
Wind Speed in m/sNOTE : Frequencies indicate direction from which
the wind is blowing

File Control : R:\Database\Windrose\FileControl\Win-222030-Mno4 of Ta-Phong Sub-District 23-30 Jan 2023

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor period : 23-30 Jan 2023

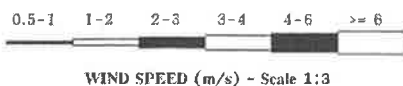
Wind Speed Model : NRG Symphonie

Serial No : 4904

Wind Direction Model : NRG Symphonie

Serial No : 4904

Time	23-24 Jan 2023		24-25 Jan 2023		25-26 Jan 2023		26-27 Jan 2023	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
15:00 - 16:00	2.0	S	2.4	NNE	1.8	SSE	1.9	SW
16:00 - 17:00	1.9	SW	1.2	ENE	1.8	E	1.8	SSW
17:00 - 18:00	1.8	WNW	1.0	E	1.9	SSE	1.8	NW
18:00 - 19:00	1.2	NNW	1.5	N	1.5	NNE	1.1	NNW
19:00 - 20:00	0.9	NW	0.7	NW	0.9	NNE	1.4	WNW
20:00 - 21:00	1.1	N	1.1	NE	0.8	E	1.1	NW
21:00 - 22:00	0.6	NE	0.8	NNE	1.0	ENE	0.8	NNE
22:00 - 23:00	1.1	WNW	1.1	ENE	1.0	E	0.6	NW
23:00 - 24:00	1.0	NW	1.4	NE	1.2	ENE	0.7	NW
00:00 - 01:00	0.8	N	2.0	NE	1.7	NE	1.0	NW
01:00 - 02:00	0.6	E	1.8	N	1.3	N	1.0	W
02:00 - 03:00	0.8	NNE	2.0	NE	2.0	N	0.7	NNW
03:00 - 04:00	0.9	NE	2.2	NNE	1.5	NE	1.1	E
04:00 - 05:00	1.0	NNE	2.3	ENE	2.1	NNW	0.6	ENE
05:00 - 06:00	1.4	NW	2.0	NE	1.7	N	1.1	NNE
06:00 - 07:00	1.9	E	1.8	NNE	1.6	W	1.6	NNW
07:00 - 08:00	1.6	NE	1.7	NE	1.4	E	1.3	NNE
08:00 - 09:00	1.2	ENE	2.0	N	1.5	NNE	1.6	ENE
09:00 - 10:00	0.9	NNE	2.1	E	1.4	N	1.7	N
10:00 - 11:00	1.5	N	1.8	ENE	1.4	E	1.9	NE
11:00 - 12:00	2.3	E	1.7	ENE	1.5	SE	1.8	NNE
12:00 - 13:00	2.1	S	1.7	ENE	1.0	WSW	1.7	ESE
13:00 - 14:00	1.9	ESE	2.0	NE	1.7	WSW	1.1	SSE
14:00 - 15:00	2.2	SSE	1.3	NNE	2.0	SSE	2.3	SSW
Wind Rose								



File Control :R:\Database\Win\rose\fileControl\Win-222030-Moo4 of Ta-Phong Sub-District 23-30 Jan 2023

Ladawan W.
(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

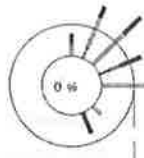
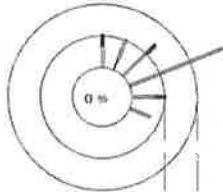
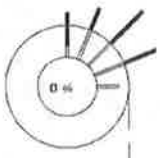
Monitor period : 23-30 Jan 2023

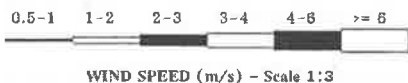
Wind Speed Model : NRG Symphonie

Serial No : 4904

Wind Direction Model : NRG Symphonie

Serial No : 4904

Time	27-28 Jan 2023		28-29 Jan 2023		29-30 Jan 2023		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
15:00 - 16:00	1.8	SE	1.5	ESE	1.8	E	
16:00 - 17:00	2.1	SSE	1.3	ESE	1.5	NNE	
17:00 - 18:00	1.3	E	1.3	NNE	1.6	NNE	
18:00 - 19:00	1.1	N	1.2	ENE	1.7	E	
19:00 - 20:00	0.6	NNE	0.9	NNE	1.3	N	
20:00 - 21:00	0.6	ENE	1.3	ENE	1.3	ENE	
21:00 - 22:00	1.2	NNE	1.1	ENE	1.7	NE	
22:00 - 23:00	1.4	NE	1.5	ENE	2.0	N	
23:00 - 24:00	1.5	E	1.3	NE	2.1	NNE	
00:00 - 01:00	1.6	NE	1.5	ENE	1.9	NE	
01:00 - 02:00	1.6	ENE	1.5	NNE	1.6	ENE	
02:00 - 03:00	1.8	NNE	1.7	NE	2.1	N	
03:00 - 04:00	1.3	NE	1.4	E	2.1	NE	
04:00 - 05:00	1.8	E	1.7	ENE	2.0	NNE	
05:00 - 06:00	1.5	NE	1.7	N	2.4	NE	
06:00 - 07:00	1.4	E	1.5	E	2.1	NE	
07:00 - 08:00	2.1	NE	1.6	ENE	2.7	NE	
08:00 - 09:00	2.0	NE	1.6	ENE	2.3	N	
09:00 - 10:00	2.7	ENE	1.9	N	2.7	ENE	
10:00 - 11:00	2.3	NNE	2.2	N	2.2	ENE	
11:00 - 12:00	2.4	N	1.9	NE	1.9	ENE	
12:00 - 13:00	2.2	ENE	2.0	NE	1.5	NNE	
13:00 - 14:00	1.8	NNE	1.9	ENE	2.0	ENE	
14:00 - 15:00	2.0	SSE	2.0	E	1.8	NE	
Wind Rose							



File Control : R:\Database\Windrose\FileControl\Win-222030-Moo4 of Ta-Phong Sub-District 23-30 Jan 2023

Ladawan W.
(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-CPL

Location : Technology IRPC School

Monitor period : 23-30 Jan 2023

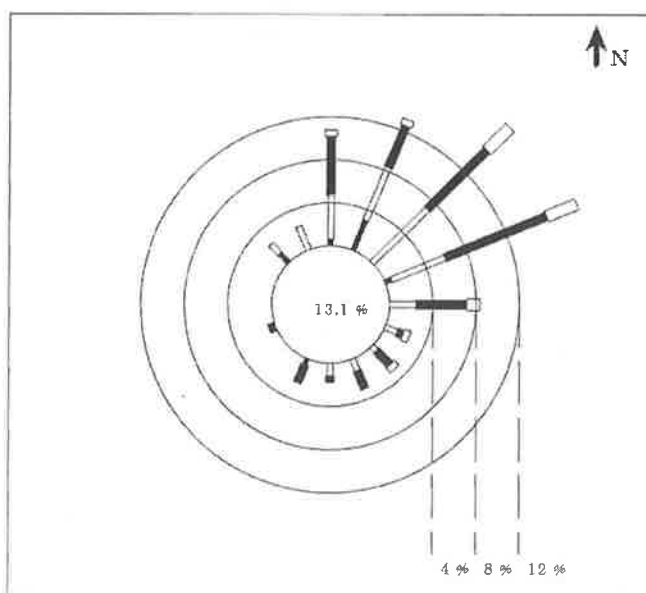
Wind Speed Model : NRG Symphonie

Serial No : 10695

Wind Direction Model : NRG Symphonie

Serial No : 10695

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	0.0060	0.0417	0.0536	0.0060	0.0000	0.0000	0.1071
NNE	0.0298	0.0536	0.0417	0.0060	0.0000	0.0000	0.1310
NE	0.0000	0.0714	0.0774	0.0298	0.0000	0.0000	0.1786
ENE	0.0060	0.0536	0.1012	0.0298	0.0000	0.0000	0.1905
E	0.0000	0.0238	0.0476	0.0119	0.0000	0.0000	0.0833
ESE	0.0000	0.0119	0.0060	0.0060	0.0000	0.0000	0.0238
SE	0.0000	0.0060	0.0179	0.0060	0.0000	0.0000	0.0298
SSE	0.0000	0.0119	0.0179	0.0000	0.0000	0.0000	0.0298
S	0.0000	0.0119	0.0060	0.0000	0.0000	0.0000	0.0179
SSW	0.0060	0.0000	0.0179	0.0000	0.0000	0.0000	0.0238
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0060	0.0000	0.0000	0.0000	0.0060
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0119	0.0119	0.0000	0.0000	0.0000	0.0000	0.0238
NNW	0.0000	0.0238	0.0000	0.0000	0.0000	0.0000	0.0238
CALM	0.1310						



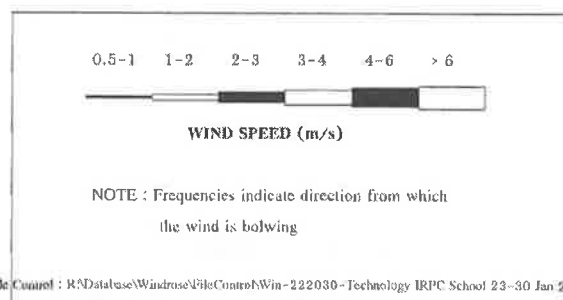
Application : WindPro Ver.1.0

Control : 16 Direction Calculation With

Calm Wind < 0.5 m/s

Data Unit : Direction in Deg.

Wind Speed in m/s



File Control : R:\Database\Windrose\FileControl\Win-222030-Technology IRPC School 23-30 Jan 2023

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-CPL

Location : Technology IRPC School

Monitor period : 23-30 Jan 2023

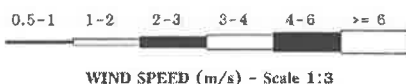
Wind Speed Model : NRG Symphonie

Serial No : 10695

Wind Direction Model : NRG Symphonie

Serial No : 10695

Time	23-24 Jan 2023		24-25 Jan 2023		25-26 Jan 2023		26-27 Jan 2023	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
13:00 - 14:00	2.9	SSW	3.0	ESE	2.2	NE	2.4	S
14:00 - 15:00	2.1	SSE	1.7	ESE	2.1	NE	2.4	SE
15:00 - 16:00	2.5	SE	1.1	NE	3.0	SE	2.2	SSW
16:00 - 17:00	0.8	SSW	1.2	NE	2.2	SE	1.4	S
17:00 - 18:00	1.1	NNW	0.5	NNE	1.0	SSE	1.3	NNW
18:00 - 19:00	0.5	NW	0.4	NNE	0.2	E	0.5	NW
19:00 - 20:00	0.1	NW	0.1	W	0.8	NNE	0.3	W
20:00 - 21:00	0.2	N	1.2	NE	0.7	N	0.3	W
21:00 - 22:00	0.2	N	1.7	NE	0.9	NNE	0.1	NNE
22:00 - 23:00	0.1	W	2.2	N	1.7	NNE	0.2	WNW
23:00 - 24:00	0.2	W	1.9	ENE	1.9	N	0.3	N
00:00 - 01:00	0.4	ENE	2.4	ENE	2.0	NNE	0.3	NNW
01:00 - 02:00	0.3	ENE	2.8	ENE	2.3	ENE	0.4	NW
02:00 - 03:00	0.7	NNE	2.8	NE	2.4	N	0.3	N
03:00 - 04:00	1.2	NE	2.8	ENE	1.9	NE	1.0	N
04:00 - 05:00	1.9	NNE	2.6	NE	1.9	N	1.5	NNE
05:00 - 06:00	1.5	NNW	2.1	ENE	1.6	NW	1.1	NNE
06:00 - 07:00	1.0	ENE	2.5	NE	1.3	NW	1.4	NNW
07:00 - 08:00	1.0	N	3.0	ENE	2.0	NE	1.7	NNE
08:00 - 09:00	2.1	N	2.1	NNE	1.9	E	2.0	ENE
09:00 - 10:00	2.6	NNE	2.2	ENE	1.2	ENE	1.9	NE
10:00 - 11:00	3.4	E	2.2	N	0.2	SE	1.4	N
11:00 - 12:00	2.2	E	2.3	ENE	2.5	SSE	0.8	ENE
12:00 - 13:00	3.4	E	1.6	ENE	2.6	SSW	2.9	SSE
Wind Rose								



File Control : R:\Database\Windrose\FileControl\Win-222030-Technology IRPC School 23-30 Jan 2023

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.

(Miss Preeda Sornjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-CPL

Location : Technology IRPC School

Monitor period : 23-30 Jan 2023

Wind Speed Model : NRG Symphonie

Serial No : 10695

Wind Direction Model : NRG Symphonie

Serial No : 10695

Time	27-28 Jan 2023		28-29 Jan 2023		29-30 Jan 2023		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
13:00 - 14:00	2.8	ESE	1.9	NE	2.4	E	
14:00 - 15:00	2.5	WSW	1.5	S	2.3	NNE	
15:00 - 16:00	1.8	SSE	1.8	SE	2.4	NE	
16:00 - 17:00	1.0	ESE	0.4	S	2.2	E	
17:00 - 18:00	0.1	NNE	1.0	N	1.7	NNE	
18:00 - 19:00	0.0	NE	1.1	NE	1.4	NE	
19:00 - 20:00	1.1	ENE	0.9	NNE	1.8	ENE	
20:00 - 21:00	1.7	E	1.2	N	2.3	E	
21:00 - 22:00	1.8	NNE	1.0	NE	2.3	N	
22:00 - 23:00	1.8	ENE	1.2	NNE	2.2	ENE	
23:00 - 24:00	1.8	ENE	1.8	ENE	2.3	ENE	
00:00 - 01:00	1.7	E	1.8	NNE	2.4	NE	
01:00 - 02:00	1.8	E	1.8	NE	2.9	E	
02:00 - 03:00	2.1	N	2.1	E	3.0	N	
03:00 - 04:00	2.2	ENE	2.1	N	3.0	NE	
04:00 - 05:00	2.0	ENE	2.2	NNE	2.6	NNE	
05:00 - 06:00	2.3	ENE	2.1	ENE	3.4	NNE	
06:00 - 07:00	3.0	NE	2.4	E	3.4	NE	
07:00 - 08:00	3.5	ENE	2.7	NE	3.7	ENE	
08:00 - 09:00	3.1	ENE	2.6	NE	3.1	NE	
09:00 - 10:00	3.5	NE	2.4	N	2.2	ENE	
10:00 - 11:00	3.1	ENE	2.6	E	2.3	ENE	
11:00 - 12:00	2.7	NNE	2.6	ENE	2.3	NE	
12:00 - 13:00	2.1	NE	2.3	N	2.4	NE	
Wind Rose							



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

File Control :R:\Database\Windrose\FileControl\Win-222030-Technology IRPC School 23-30 Jan 2023

Ladawan W.
(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.
(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 : UBE Chemicals (Asia) Public Co., Ltd. REFERENCE NO. : 222030 Amb (Cert.)/Jan/PM-10
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 23-30/01/2023
RECEIVED DATE : 01/02/2023 ANALYTICAL DATE : 01-03/02/2023
REPORT DATE : 06/02/2023 SAMPLE CONDITION : Normal
SITE OPERATOR : Mr.Siwanon Kulawong
STATION DESCRIPTION : 1. Technology IRPC School
2. Moo 4 of Ta-Phong Sub-District

PARAMETER	SAMPLING DATE	UNITS	RESULTS		STANDARD*	REFERENCE METHODS
			1	2		
PM-10 (24-hr)	23-24/01/2023	mg/m ³	0.057	0.054	0.120	40 CFR 50 App. J
	24-25/01/2023	mg/m ³	0.036	0.034		
	25-16/01/2023	mg/m ³	0.028	0.044		
	26-27/01/2023	mg/m ³	0.060	0.073		
	27-28/01/2023	mg/m ³	0.035	0.045		
	28-29/01/2023	mg/m ³	0.024	0.017		
	29-30/01/2023	mg/m ³	0.034	0.029		

Phatchara Samanchan
(Miss Phatchara Samanchan)

Analyst

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)

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).



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 : UBE Chemicals (Asia) Public Co., Ltd. REFERENCE NO. : 222030 Amb (Cert.)/Jan/TSP
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 23-30/01/2023
RECEIVED DATE : 01/02/2023 ANALYTICAL DATE : 01-03/02/2023
REPORT DATE : 06/02/2023 SAMPLE CONDITION : Normal
SITE OPERATOR : Mr.Siwanon Kulawong
LOCATION DESCRIPTION : 1. Technology IRPC School
2. Moo 4 of Ta-Phong Sub-District

PARAMETER	SAMPLING DATE	UNITS	RESULTS		STANDARD*	REFERENCE METHODS
			1	2		
TSP (24-hr)	23-24/01/2023	mg/m ³	0.090	0.106	0.330	40 CFR 50 App. B
	24-25/01/2023	mg/m ³	0.064	0.071		
	25-16/01/2023	mg/m ³	0.052	0.075		
	26-27/01/2023	mg/m ³	0.094	0.107		
	27-28/01/2023	mg/m ³	0.062	0.075		
	28-29/01/2023	mg/m ³	0.066	0.065		
	29-30/01/2023	mg/m ³	0.077	0.098		

Phatchara Samanchan
(Miss Phatchara Samanchan)

Analyst

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)

Technical Management Team

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

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



Ambient Air Monitoring Results : Sulfur dioxide MTR-CPL

Location : Technology IRPC School

Monitor Period : 23-30 Jan 2023

Analyzer Model : API 100A

Station No : Mobile 10

Serial No : 347

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 13 Jan 2022

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 12 Jan 2023

Time	SO2 Concentration (ppm)						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
13:00 - 14:00	0.0039	0.0029	0.0038	0.0038	0.0039	0.0033	0.0037
14:00 - 15:00	0.0056	0.0028	0.0044	0.0038	0.0043	0.0030	0.0034
15:00 - 16:00	0.0061	0.0025	0.0045	0.0043	0.0043	0.0035	0.0031
16:00 - 17:00	0.0051	0.0033	0.0036	0.0044	0.0040	0.0029	0.0034
17:00 - 18:00	0.0040	0.0030	0.0038	0.0032	0.0041	0.0042	0.0028
18:00 - 19:00	0.0048	0.0032	0.0042	0.0044	0.0035	0.0034	0.0037
19:00 - 20:00	0.0041	0.0024	0.0034	0.0034	0.0033	0.0031	0.0033
20:00 - 21:00	0.0044	0.0023	0.0035	0.0038	0.0037	0.0042	0.0029
21:00 - 22:00	0.0036	0.0038	0.0040	0.0040	0.0037	0.0039	0.0032
22:00 - 23:00	0.0035	0.0030	0.0026	0.0043	0.0035	0.0035	0.0028
23:00 - 00:00	0.0039	0.0023	0.0041	0.0049	0.0032	0.0037	0.0045
00:00 - 01:00	0.0029	0.0033	0.0038	0.0055	0.0027	0.0027	0.0036
01:00 - 02:00	0.0037	0.0031	0.0035	0.0054	0.0037	0.0043	0.0033
02:00 - 03:00	0.0024	0.0033	0.0042	0.0047	0.0038	0.0032	0.0036
03:00 - 04:00	0.0030	0.0029	0.0041	0.0045	0.0027	0.0036	0.0044
04:00 - 05:00	0.0036	0.0030	0.0040	0.0048	0.0031	0.0044	0.0034
05:00 - 06:00	0.0037	0.0030	0.0041	0.0048	0.0040	0.0044	0.0035
06:00 - 07:00	0.0040	0.0036	0.0037	0.0047	0.0040	0.0035	0.0042
07:00 - 08:00	0.0023	0.0038	0.0044	0.0049	0.0036	0.0046	0.0042
08:00 - 09:00	0.0033	0.0028	0.0037	0.0049	0.0031	0.0032	0.0047
09:00 - 10:00	0.0033	0.0033	0.0029	0.0037	0.0028	0.0033	0.0041
10:00 - 11:00	0.0028	0.0027	0.0034	0.0043	0.0029	0.0044	0.0036
11:00 - 12:00	0.0031	0.0032	0.0039	0.0039	0.0040	0.0042	0.0036
12:00 - 13:00	0.0024	0.0034	0.0039	0.0029	0.0029	0.0039	0.0023
Average-24Hr*	0.0037	0.0030	0.0038	0.0043	0.0035	0.0037	0.0036
Max-1Hr	0.0061	0.0038	0.0045	0.0055	0.0043	0.0046	0.0047
Min-1Hr	0.0023	0.0023	0.0026	0.0029	0.0027	0.0027	0.0023
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

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Sulfur dioxide MTR-CPL

Location : Technology IRPC School

Monitor Period : 23-30 Jan 2023

Analyzer Model : API 100A

Station No : Mobile 10

Serial No : 347

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 13 Jan 2022

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 12 Jan 2023

Time	SO2 Concentration (ppb)						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
13:00 - 14:00	3.9	2.9	3.8	3.8	3.9	3.3	3.7
14:00 - 15:00	5.6	2.8	4.4	3.8	4.3	3.0	3.4
15:00 - 16:00	6.1	2.5	4.5	4.3	4.3	3.5	3.1
16:00 - 17:00	5.1	3.3	3.6	4.4	4.0	2.9	3.4
17:00 - 18:00	4.0	3.0	3.8	3.2	4.1	4.2	2.8
18:00 - 19:00	4.8	3.2	4.2	4.4	3.5	3.4	3.7
19:00 - 20:00	4.1	2.4	3.4	3.4	3.3	3.1	3.3
20:00 - 21:00	4.4	2.3	3.5	3.8	3.7	4.2	2.9
21:00 - 22:00	3.6	3.8	4.0	4.0	3.7	3.9	3.2
22:00 - 23:00	3.5	3.0	2.6	4.3	3.5	3.5	2.8
23:00 - 00:00	3.9	2.3	4.1	4.9	3.2	3.7	4.5
00:00 - 01:00	2.9	3.3	3.8	5.5	2.7	2.7	3.6
01:00 - 02:00	3.7	3.1	3.5	5.4	3.7	4.3	3.3
02:00 - 03:00	2.4	3.3	4.2	4.7	3.8	3.2	3.6
03:00 - 04:00	3.0	2.9	4.1	4.5	2.7	3.8	4.4
04:00 - 05:00	3.6	3.0	4.0	4.8	3.1	4.4	3.4
05:00 - 06:00	3.7	3.0	4.1	4.8	4.0	4.4	3.5
06:00 - 07:00	4.0	3.6	3.7	4.7	4.0	3.5	4.2
07:00 - 08:00	2.3	3.8	4.4	4.9	3.6	4.6	4.2
08:00 - 09:00	3.3	2.8	3.7	4.9	3.1	3.2	4.7
09:00 - 10:00	3.3	3.3	2.9	3.7	2.8	3.3	4.1
10:00 - 11:00	2.8	2.7	3.4	4.3	2.9	4.4	3.6
11:00 - 12:00	3.1	3.2	3.9	3.9	4.0	4.2	3.6
12:00 - 13:00	2.4	3.4	3.9	2.9	2.9	3.9	2.3
Average-24Hr*	3.7	3.0	3.8	4.3	3.5	3.7	3.6
Max-1Hr	6.1	3.8	4.5	5.5	4.3	4.6	4.7
Min-1Hr	2.3	2.3	2.6	2.9	2.7	2.7	2.3
Standard-1Hr	300 ppb(780 ug/cu.m)						
Standard-24Hr	120 ppb(300 ug/cu.m)						

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

Ladawan W.
(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Sulfur dioxide MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor Period : 23-30 Jan 2023

Analyzer Model : API 100A

Station No : SS2-08

Serial No : 1715

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 13 Jan 2022

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 12 Jan 2023

Time	SO2 Concentration (ppm)						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
15:00 - 16:00	0.0050	0.0028	0.0038	0.0037	0.0033	0.0028	0.0029
16:00 - 17:00	0.0057	0.0028	0.0042	0.0041	0.0035	0.0028	0.0029
17:00 - 18:00	0.0049	0.0031	0.0042	0.0035	0.0032	0.0030	0.0028
18:00 - 19:00	0.0044	0.0029	0.0041	0.0034	0.0032	0.0034	0.0028
19:00 - 20:00	0.0045	0.0030	0.0046	0.0034	0.0033	0.0036	0.0031
20:00 - 21:00	0.0041	0.0028	0.0040	0.0034	0.0035	0.0030	0.0030
21:00 - 22:00	0.0039	0.0032	0.0040	0.0032	0.0027	0.0035	0.0032
22:00 - 23:00	0.0042	0.0031	0.0039	0.0029	0.0037	0.0036	0.0030
23:00 - 00:00	0.0039	0.0021	0.0032	0.0045	0.0035	0.0037	0.0031
00:00 - 01:00	0.0035	0.0030	0.0041	0.0040	0.0033	0.0032	0.0033
01:00 - 02:00	0.0030	0.0032	0.0033	0.0047	0.0032	0.0029	0.0033
02:00 - 03:00	0.0027	0.0028	0.0033	0.0044	0.0030	0.0037	0.0035
03:00 - 04:00	0.0030	0.0029	0.0033	0.0045	0.0028	0.0035	0.0033
04:00 - 05:00	0.0037	0.0030	0.0036	0.0047	0.0031	0.0037	0.0040
05:00 - 06:00	0.0038	0.0031	0.0039	0.0039	0.0028	0.0034	0.0034
06:00 - 07:00	0.0039	0.0037	0.0037	0.0047	0.0031	0.0033	0.0032
07:00 - 08:00	0.0034	0.0031	0.0037	0.0047	0.0027	0.0033	0.0034
08:00 - 09:00	0.0030	0.0028	0.0039	0.0038	0.0028	0.0035	0.0035
09:00 - 10:00	0.0032	0.0027	0.0032	0.0040	0.0030	0.0033	0.0036
10:00 - 11:00	0.0030	0.0028	0.0034	0.0032	0.0030	0.0033	0.0036
11:00 - 12:00	0.0027	0.0028	0.0032	0.0037	0.0027	0.0037	0.0034
12:00 - 13:00	0.0028	0.0032	0.0028	0.0035	0.0032	0.0035	0.0027
13:00 - 14:00	0.0029	0.0034	0.0029	0.0030	0.0029	0.0028	0.0027
14:00 - 15:00	0.0029	0.0037	0.0028	0.0037	0.0031	0.0032	0.0022
Average-24Hr*	0.0037	0.0030	0.0036	0.0039	0.0031	0.0033	0.0032
Max-1Hr	0.0057	0.0037	0.0046	0.0047	0.0037	0.0037	0.0040
Min-1Hr	0.0027	0.0027	0.0028	0.0029	0.0027	0.0028	0.0022
Standard-1Hr	0.30 ppm(760 ug/cu.m)						
Standard-24Hr	0.12 ppm(300 ug/cu.m)						

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

Ladawan W.
(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Sulfur dioxide MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor Period : 23-30 Jan 2023

Analyzer Model : API 100A

Station No : SS2-08

Serial No : 1715

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 13 Jan 2022

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 12 Jan 2023

Time	SO2 Concentration (ppb)						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
15:00 - 16:00	5.0	2.8	3.8	3.7	3.3	2.8	2.9
16:00 - 17:00	5.7	2.8	4.2	4.1	3.5	2.8	2.9
17:00 - 18:00	4.9	3.1	4.2	3.5	3.2	3.0	2.8
18:00 - 19:00	4.4	2.9	4.1	3.4	3.2	3.4	2.8
19:00 - 20:00	4.5	3.0	4.6	3.4	3.3	3.6	3.1
20:00 - 21:00	4.1	2.8	4.0	3.4	3.5	3.0	3.0
21:00 - 22:00	3.9	3.2	4.0	3.2	2.7	3.5	3.2
22:00 - 23:00	4.2	3.1	3.9	2.9	3.7	3.6	3.0
23:00 - 00:00	3.9	3.1	3.2	4.5	3.5	3.7	3.1
00:00 - 01:00	3.5	3.0	4.1	4.0	3.3	3.2	3.3
01:00 - 02:00	3.0	3.2	3.3	4.7	3.2	2.9	3.3
02:00 - 03:00	2.7	2.8	3.3	4.4	3.0	3.7	3.5
03:00 - 04:00	3.0	2.9	3.3	4.5	2.8	3.5	3.3
04:00 - 05:00	3.7	3.0	3.6	4.7	3.1	3.7	4.0
05:00 - 06:00	3.8	3.1	3.9	3.9	2.8	3.4	3.4
06:00 - 07:00	3.9	3.7	3.7	4.7	3.1	3.3	3.2
07:00 - 08:00	3.4	3.1	3.7	4.7	2.7	3.3	3.4
08:00 - 09:00	3.0	2.8	3.9	3.8	2.8	3.5	3.5
09:00 - 10:00	3.2	2.7	3.2	4.0	3.0	3.3	3.6
10:00 - 11:00	3.0	2.8	3.4	3.2	3.0	3.3	3.6
11:00 - 12:00	2.7	2.8	3.2	3.7	2.7	3.7	3.4
12:00 - 13:00	2.8	3.2	2.8	3.5	3.2	3.5	2.7
13:00 - 14:00	2.9	3.4	2.9	3.0	2.9	2.8	2.7
14:00 - 15:00	2.9	3.7	2.8	3.7	3.1	3.2	2.2
Average-24Hr*	3.7	3.0	3.6	3.9	3.1	3.3	3.2
Max-1Hr	5.7	3.7	4.6	4.7	3.7	3.7	4.0
Min-1Hr	2.7	2.7	2.8	2.9	2.7	2.8	2.2
Standard-1Hr	300 ppb(780 ug/cu.m)						
Standard-24Hr	120 ppb(300 ug/cu.m)						

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

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide MTR-CPL

Location : Technology IRPC School	Monitor Period : 23-30 Jan 2023
Analyzer Model : API 200A	Station No : Mobile 10
Serial No : 096	Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E	Serial No : 587
Calibration Gas Cylinder I.D.: EBO108319	
Certified Date : 13 Jan 2022	Cal Concentration (ppb) : 0,100,200,400
Expire Date : 12 Jan 2023	

Time	NO2 Concentration (ppm)						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
13:00 - 14:00	0.0106	0.0086	0.0041	0.0124	0.0162	0.0056	0.0058
14:00 - 15:00	0.0135	0.0068	0.0031	0.0149	0.0184	0.0085	0.0060
15:00 - 16:00	0.0158	0.0061	0.0075	0.0155	0.0192	0.0105	0.0061
16:00 - 17:00	0.0181	0.0045	0.0136	0.0195	0.0247	0.0119	0.0076
17:00 - 18:00	0.0209	0.0047	0.0171	0.0255	0.0181	0.0076	0.0086
18:00 - 19:00	0.0180	0.0066	0.0135	0.0220	0.0113	0.0074	0.0120
19:00 - 20:00	0.0126	0.0101	0.0120	0.0178	0.0164	0.0100	0.0120
20:00 - 21:00	0.0105	0.0108	0.0131	0.0194	0.0185	0.0118	0.0122
21:00 - 22:00	0.0093	0.0074	0.0096	0.0186	0.0145	0.0106	0.0123
22:00 - 23:00	0.0107	0.0055	0.0101	0.0182	0.0170	0.0095	0.0109
23:00 - 00:00	0.0109	0.0051	0.0101	0.0154	0.0180	0.0102	0.0109
00:00 - 01:00	0.0096	0.0042	0.0095	0.0131	0.0132	0.0101	0.0119
01:00 - 02:00	0.0081	0.0045	0.0082	0.0113	0.0129	0.0085	0.0095
02:00 - 03:00	0.0081	0.0042	0.0078	0.0122	0.0102	0.0083	0.0088
03:00 - 04:00	0.0104	0.0032	0.0061	0.0115	0.0090	0.0096	0.0090
04:00 - 05:00	0.0110	0.0026	0.0061	0.0141	0.0080	0.0102	0.0064
05:00 - 06:00	0.0114	0.0041	0.0068	0.0155	0.0073	0.0106	0.0092
06:00 - 07:00	0.0116	0.0056	0.0092	0.0142	0.0077	0.0088	0.0083
07:00 - 08:00	0.0115	0.0061	0.0091	0.0132	0.0071	0.0084	0.0077
08:00 - 09:00	0.0099	0.0065	0.0091	0.0121	0.0059	0.0100	0.0077
09:00 - 10:00	0.0075	0.0064	0.0094	0.0098	0.0071	0.0105	0.0088
10:00 - 11:00	0.0057	0.0060	0.0077	0.0081	0.0063	0.0111	0.0095
11:00 - 12:00	0.0050	0.0050	0.0089	0.0087	0.0054	0.0076	0.0073
12:00 - 13:00	0.0068	0.0040	0.0111	0.0114	0.0058	0.0068	0.0066
Average-24Hr*	0.0111	0.0058	0.0093	0.0148	0.0124	0.0093	0.0090
Max-1Hr	0.0209	0.0108	0.0171	0.0255	0.0247	0.0119	0.0123
Min-1Hr	0.0050	0.0026	0.0031	0.0081	0.0054	0.0058	0.0058
Standard-1Hr	0.17 ppm(320 ug/cu.m)						
Standard-24Hr	-						

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

Ladawan W.
(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor Period : 23-30 Jan 2023

Analyzer Model : API 200A

Station No : SS2-08

Serial No : 2387

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 13 Jan 2022

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 12 Jan 2023

Time	NO2 Concentration (ppm)						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
15:00 - 16:00	0.0138	0.0039	0.0054	0.0134	0.0168	0.0082	0.0042
16:00 - 17:00	0.0156	0.0028	0.0111	0.0166	0.0208	0.0103	0.0048
17:00 - 18:00	0.0191	0.0033	0.0129	0.0219	0.0145	0.0063	0.0051
18:00 - 19:00	0.0172	0.0040	0.0101	0.0181	0.0083	0.0057	0.0061
19:00 - 20:00	0.0112	0.0079	0.0101	0.0128	0.0107	0.0057	0.0066
20:00 - 21:00	0.0076	0.0087	0.0084	0.0126	0.0119	0.0065	0.0096
21:00 - 22:00	0.0071	0.0050	0.0064	0.0138	0.0124	0.0071	0.0088
22:00 - 23:00	0.0082	0.0040	0.0090	0.0171	0.0139	0.0081	0.0094
23:00 - 00:00	0.0086	0.0036	0.0080	0.0163	0.0122	0.0080	0.0116
00:00 - 01:00	0.0092	0.0037	0.0084	0.0138	0.0138	0.0079	0.0101
01:00 - 02:00	0.0081	0.0043	0.0087	0.0118	0.0138	0.0090	0.0081
02:00 - 03:00	0.0073	0.0033	0.0081	0.0114	0.0091	0.0093	0.0091
03:00 - 04:00	0.0092	0.0025	0.0060	0.0107	0.0091	0.0085	0.0079
04:00 - 05:00	0.0103	0.0017	0.0059	0.0135	0.0083	0.0083	0.0072
05:00 - 06:00	0.0101	0.0022	0.0058	0.0135	0.0085	0.0086	0.0079
06:00 - 07:00	0.0103	0.0026	0.0069	0.0121	0.0085	0.0077	0.0057
07:00 - 08:00	0.0101	0.0037	0.0073	0.0113	0.0062	0.0076	0.0083
08:00 - 09:00	0.0083	0.0045	0.0077	0.0100	0.0040	0.0062	0.0065
09:00 - 10:00	0.0046	0.0034	0.0066	0.0080	0.0040	0.0063	0.0090
10:00 - 11:00	0.0025	0.0039	0.0071	0.0075	0.0043	0.0084	0.0083
11:00 - 12:00	0.0041	0.0049	0.0099	0.0073	0.0054	0.0084	0.0077
12:00 - 13:00	0.0063	0.0042	0.0107	0.0092	0.0045	0.0089	0.0075
13:00 - 14:00	0.0072	0.0035	0.0112	0.0137	0.0037	0.0058	0.0053
14:00 - 15:00	0.0048	0.0021	0.0131	0.0152	0.0052	0.0049	0.0042
Average-24Hr*	0.0092	0.0039	0.0085	0.0130	0.0096	0.0076	0.0075
Max-1Hr	0.0191	0.0087	0.0131	0.0219	0.0208	0.0103	0.0116
Min-1Hr	0.0025	0.0017	0.0054	0.0073	0.0037	0.0049	0.0042
Standard-1Hr	0.17 ppm(320 ug/cu.m)						
Standard-24Hr	-						

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

Ladawan W.
(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide MTR-CPL

Location : Technology IRPC School

Monitor Period : 23-30 Jan 2023

Analyzer Model : API 200A

Station No : Mobile 10

Serial No : 096

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EBO108319

Certified Date : 13 Jan 2022

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 12 Jan 2023

Time	NO2 Concentration (ppb)						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
13:00 - 14:00	10.6	8.6	4.1	12.4	16.2	5.8	5.8
14:00 - 15:00	13.5	6.8	3.1	14.9	18.4	8.5	6.0
15:00 - 16:00	15.8	6.1	7.5	15.5	19.2	10.5	6.1
16:00 - 17:00	18.1	4.5	13.6	19.5	24.7	11.9	7.6
17:00 - 18:00	20.9	4.7	17.1	25.5	18.1	7.6	8.6
18:00 - 19:00	18.0	6.6	13.5	22.0	11.3	7.4	12.0
19:00 - 20:00	12.6	10.1	12.0	17.8	16.4	10.0	12.0
20:00 - 21:00	10.5	10.8	13.1	19.4	18.5	11.8	12.2
21:00 - 22:00	9.3	7.4	9.6	18.6	14.5	10.6	12.3
22:00 - 23:00	10.7	5.5	10.1	18.2	17.0	9.5	10.9
23:00 - 00:00	10.9	5.1	10.1	15.4	18.0	10.2	10.9
00:00 - 01:00	9.6	4.2	9.5	13.1	13.2	10.1	11.9
01:00 - 02:00	8.1	4.5	8.2	11.3	12.9	8.5	9.5
02:00 - 03:00	8.1	4.2	7.8	12.2	10.2	8.3	8.8
03:00 - 04:00	10.4	3.2	6.1	11.5	9.0	9.6	9.0
04:00 - 05:00	11.0	2.6	6.1	14.1	8.0	10.2	6.4
05:00 - 06:00	11.4	4.1	6.8	15.5	7.3	10.6	9.2
06:00 - 07:00	11.6	5.6	9.2	14.2	7.7	8.8	8.3
07:00 - 08:00	11.5	6.1	9.1	13.2	7.1	8.4	7.7
08:00 - 09:00	9.9	6.5	9.1	12.1	5.9	10.0	7.7
09:00 - 10:00	7.5	6.4	9.4	9.8	7.1	10.5	8.8
10:00 - 11:00	5.7	6.0	7.7	8.1	6.3	11.1	9.5
11:00 - 12:00	5.0	5.0	8.9	8.7	5.4	7.6	7.3
12:00 - 13:00	6.8	4.0	11.1	11.4	5.8	6.8	6.6
Average-24Hr*	11.1	5.8	9.3	14.8	12.4	9.3	9.0
Max-1Hr	20.9	10.8	17.1	25.5	24.7	11.9	12.3
Min-1Hr	5.0	2.6	3.1	8.1	5.4	5.8	5.8
Standard-1Hr	170 ppb(320 ug/cu.m)						
Standard-24Hr							

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

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor Period : 23-30 Jan 2023

Analyzer Model : API 200A

Station No : SS2-08

Serial No : 2387

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 13 Jan 2022

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 12 Jan 2023

Time	NO2 Concentration (ppb)						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
15:00 - 16:00	13.8	3.9	5.4	13.4	16.8	8.2	4.2
16:00 - 17:00	15.6	2.8	11.1	16.6	20.8	10.3	4.8
17:00 - 18:00	19.1	3.3	12.9	21.9	14.5	6.3	5.1
18:00 - 19:00	17.2	4.0	10.1	18.1	8.3	5.7	6.1
19:00 - 20:00	11.2	7.9	10.1	12.8	10.7	5.7	6.6
20:00 - 21:00	7.6	8.7	8.4	12.6	11.9	6.5	9.6
21:00 - 22:00	7.1	5.0	6.4	13.8	12.4	7.1	8.8
22:00 - 23:00	6.2	4.0	9.0	17.1	13.9	8.1	9.4
23:00 - 00:00	8.6	3.6	8.0	16.3	12.2	8.0	11.6
00:00 - 01:00	9.2	3.7	8.4	13.8	13.8	7.9	10.1
01:00 - 02:00	8.1	4.3	8.7	11.8	13.8	9.0	8.1
02:00 - 03:00	7.3	3.3	8.1	11.4	9.1	9.3	9.1
03:00 - 04:00	9.2	2.5	8.0	10.7	9.1	8.5	7.9
04:00 - 05:00	10.3	1.7	5.9	13.5	8.3	8.3	7.2
05:00 - 06:00	10.1	2.2	5.8	13.5	8.5	8.6	7.9
06:00 - 07:00	10.3	2.6	6.9	12.1	8.5	7.7	5.7
07:00 - 08:00	10.1	3.7	7.3	11.3	6.2	7.6	8.3
08:00 - 09:00	8.3	4.5	7.7	10.0	4.0	6.2	8.5
09:00 - 10:00	4.6	3.4	6.6	8.0	4.0	6.3	9.0
10:00 - 11:00	2.5	3.9	7.1	7.5	4.3	8.4	8.3
11:00 - 12:00	4.1	4.9	9.9	7.3	5.4	8.4	7.7
12:00 - 13:00	6.3	4.2	10.7	9.2	4.5	8.9	7.5
13:00 - 14:00	7.2	3.5	11.2	13.7	3.7	5.8	5.3
14:00 - 15:00	4.8	2.1	13.1	15.2	5.2	4.9	4.2
Average-24Hr*	9.2	3.9	8.5	13.0	9.6	7.6	7.5
Max-1Hr	19.1	8.7	13.1	21.9	20.8	10.3	11.6
Min-1Hr	2.5	1.7	5.4	7.3	3.7	4.9	4.2
Standard-1Hr	170 ppb(320 ug/cu.m)						
Standard-24Hr	-						

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

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Carbon monoxide MTR-CPL

Location : Technology IRPC School

Monitor Period : 23-30 Jan 2023

Analyzer Model : Thermo 48C

Station No : Mobile 10

Serial No : 365

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 13 Jan 2022

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 12 Jan 2023

Time	CO Concentration (ppm)						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
13:00 - 14:00	1.1	0.5	0.8	1.1	0.6	0.8	1.0
14:00 - 15:00	0.8	1.0	0.8	0.8	1.1	0.7	0.9
15:00 - 16:00	0.9	1.0	0.7	0.8	1.1	1.0	1.0
16:00 - 17:00	0.7	1.0	0.8	0.9	1.0	1.1	1.0
17:00 - 18:00	1.0	0.9	0.9	0.8	1.0	1.1	1.1
18:00 - 19:00	0.9	0.8	0.7	0.8	1.2	1.1	1.0
19:00 - 20:00	1.2	1.0	0.9	0.8	0.7	0.8	0.8
20:00 - 21:00	1.0	1.0	0.8	1.4	0.9	1.1	1.0
21:00 - 22:00	1.2	1.0	0.8	1.1	0.9	0.6	1.0
22:00 - 23:00	1.2	0.8	1.0	0.8	0.7	0.9	0.7
23:00 - 00:00	1.1	0.5	0.9	1.1	0.9	1.0	0.8
00:00 - 01:00	0.9	0.6	0.8	0.8	0.8	0.7	0.9
01:00 - 02:00	0.9	0.9	0.7	0.9	0.7	0.7	0.7
02:00 - 03:00	0.7	0.9	0.9	1.0	0.7	1.1	1.1
03:00 - 04:00	1.2	0.8	0.6	1.3	0.7	1.0	1.1
04:00 - 05:00	1.0	1.1	1.0	1.0	1.1	0.7	1.0
05:00 - 06:00	1.1	0.6	1.2	1.4	0.8	0.8	0.7
06:00 - 07:00	1.2	1.0	1.1	1.3	0.9	1.0	0.9
07:00 - 08:00	0.9	1.0	0.7	1.0	1.1	0.8	0.8
08:00 - 09:00	0.9	0.8	0.7	0.8	1.0	0.6	0.8
09:00 - 10:00	0.5	1.0	1.0	0.8	0.8	0.9	0.6
10:00 - 11:00	0.6	0.6	0.7	0.7	0.9	0.7	1.0
11:00 - 12:00	0.6	0.6	1.0	0.8	0.9	1.0	0.6
12:00 - 13:00	0.8	0.7	0.6	0.6	0.7	0.9	0.2
Average-24Hr*	0.9	0.8	0.8	1.0	0.9	0.9	0.9
Max-1Hr	1.2	1.1	1.2	1.4	1.2	1.1	1.1
Min-1Hr	0.5	0.5	0.6	0.6	0.6	0.6	0.2
Standard-1Hr	30 ppm(34.2 mg/cu.m)						
Standard-24Hr							

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

Ladawan W.
(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeeda S.
(Miss Preeeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Carbon monoxide MTR-CPL

Location : Technology IRPC School

Monitor Period : 23-30 Jan 2023

Analyzer Model : Thermo 48C

Station No : Mobile 10

Serial No : 365

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 13 Jan 2022

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 12 Jan 2023

Time	CO Concentration (ppb)						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
13:00 - 14:00	1100.0	500.0	800.0	1100.0	600.0	800.0	1000.0
14:00 - 15:00	800.0	1000.0	800.0	800.0	1100.0	700.0	900.0
15:00 - 16:00	900.0	1000.0	700.0	800.0	1100.0	1000.0	1000.0
16:00 - 17:00	700.0	1000.0	800.0	900.0	1000.0	1100.0	1000.0
17:00 - 18:00	1000.0	900.0	900.0	800.0	1000.0	1100.0	1100.0
18:00 - 19:00	900.0	800.0	700.0	800.0	1200.0	1100.0	1000.0
19:00 - 20:00	1200.0	1000.0	900.0	800.0	700.0	800.0	800.0
20:00 - 21:00	1000.0	1000.0	800.0	1400.0	900.0	1100.0	1000.0
21:00 - 22:00	1200.0	1000.0	800.0	1100.0	900.0	600.0	1000.0
22:00 - 23:00	1200.0	800.0	1000.0	800.0	700.0	900.0	700.0
23:00 - 00:00	1100.0	500.0	900.0	1100.0	900.0	1000.0	800.0
00:00 - 01:00	900.0	600.0	800.0	800.0	800.0	700.0	900.0
01:00 - 02:00	900.0	900.0	700.0	900.0	700.0	700.0	700.0
02:00 - 03:00	700.0	900.0	900.0	1000.0	700.0	1100.0	1100.0
03:00 - 04:00	1200.0	800.0	600.0	1300.0	700.0	1000.0	1100.0
04:00 - 05:00	1000.0	1100.0	1000.0	1000.0	1100.0	700.0	1000.0
05:00 - 06:00	1100.0	600.0	1200.0	1400.0	800.0	800.0	700.0
06:00 - 07:00	1200.0	1000.0	1100.0	1300.0	900.0	1000.0	900.0
07:00 - 08:00	900.0	1000.0	700.0	1000.0	1100.0	800.0	800.0
08:00 - 09:00	900.0	800.0	700.0	800.0	1000.0	600.0	800.0
09:00 - 10:00	500.0	1000.0	1000.0	800.0	800.0	900.0	600.0
10:00 - 11:00	600.0	600.0	700.0	700.0	900.0	700.0	1000.0
11:00 - 12:00	600.0	600.0	1000.0	800.0	900.0	1000.0	600.0
12:00 - 13:00	800.0	700.0	600.0	600.0	700.0	900.0	200.0
Average-24Hr*	900.0	800.0	800.0	1000.0	900.0	900.0	900.0
Max-1Hr	1200.0	1100.0	1200.0	1400.0	1200.0	1100.0	1100.0
Min-1Hr	500.0	500.0	600.0	600.0	600.0	600.0	200.0
Standard-1Hr	30000 ppb(34.2 mg/cu.m)						
Standard-24Hr							

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

Ladawan W.
(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Carbon monoxide MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor Period : 23-30 Jan 2023

Analyzer Model : API 300A

Station No : SS2-08

Serial No : 1077

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 13 Jan 2022

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 12 Jan 2023

Time	CO Concentration (ppm)						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
15:00 - 16:00	0.6	1.3	1.8	1.1	2.0	1.6	1.7
16:00 - 17:00	1.6	1.3	1.3	0.5	1.4	1.5	1.7
17:00 - 18:00	1.9	2.0	0.5	1.8	2.0	1.3	1.5
18:00 - 19:00	1.3	1.3	0.9	1.2	0.5	2.0	0.5
19:00 - 20:00	1.1	1.0	1.0	1.8	0.7	2.0	1.6
20:00 - 21:00	2.0	0.8	1.9	0.8	1.7	0.6	1.2
21:00 - 22:00	0.7	0.8	0.7	1.2	1.6	0.9	1.1
22:00 - 23:00	0.8	1.2	1.6	0.7	1.5	1.2	1.3
23:00 - 00:00	1.4	1.1	0.8	0.6	1.1	0.7	0.7
00:00 - 01:00	1.2	1.4	2.0	1.6	1.4	1.5	0.7
01:00 - 02:00	1.9	1.0	1.8	0.6	0.7	1.9	1.3
02:00 - 03:00	1.7	1.1	1.0	1.3	0.7	1.2	1.8
03:00 - 04:00	0.5	1.7	0.8	0.7	0.6	0.9	0.5
04:00 - 05:00	1.4	0.9	0.6	2.0	1.6	0.5	1.4
05:00 - 06:00	0.5	1.5	1.0	1.8	1.8	1.3	1.8
06:00 - 07:00	0.6	1.7	1.9	1.0	0.6	1.1	1.5
07:00 - 08:00	0.7	0.8	1.4	1.1	1.0	0.7	1.7
08:00 - 09:00	0.8	1.3	1.8	1.1	1.1	2.0	0.8
09:00 - 10:00	1.3	1.4	1.3	0.8	1.8	0.9	0.8
10:00 - 11:00	0.8	0.7	0.6	1.3	1.4	1.0	1.7
11:00 - 12:00	1.9	1.0	0.8	1.4	0.8	1.2	1.3
12:00 - 13:00	1.0	1.1	0.5	1.6	0.9	1.3	1.7
13:00 - 14:00	1.4	1.6	0.7	1.9	0.7	1.1	1.6
14:00 - 15:00	0.8	1.0	1.5	1.8	0.9	1.0	0.7
Average-24Hr*	1.2	1.2	1.2	1.2	1.2	1.2	1.3
Max-1Hr	2.0	2.0	2.0	2.0	2.0	2.0	1.8
Min-1Hr	0.5	0.7	0.5	0.5	0.5	0.5	0.5
Standard-1Hr	30 ppm(34.2 mg/cu.m)						
Standard-24Hr	-						

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

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Carbon monoxide MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor Period : 23-30 Jan 2023

Analyzer Model : API 300A

Station No : SS2-08

Serial No : 1077

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 13 Jan 2022

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 12 Jan 2023

Time	CO Concentration (ppb)						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
15:00 - 16:00	600.0	1300.0	1800.0	1100.0	2000.0	1600.0	1700.0
16:00 - 17:00	1600.0	1300.0	1300.0	500.0	1400.0	1500.0	1700.0
17:00 - 18:00	1900.0	2000.0	500.0	1800.0	2000.0	1300.0	1500.0
18:00 - 19:00	1300.0	1300.0	900.0	1200.0	500.0	2000.0	500.0
19:00 - 20:00	1100.0	1000.0	1000.0	1800.0	700.0	2000.0	1600.0
20:00 - 21:00	2000.0	800.0	1900.0	800.0	1700.0	600.0	1200.0
21:00 - 22:00	700.0	800.0	700.0	1200.0	1600.0	900.0	1100.0
22:00 - 23:00	800.0	1200.0	1600.0	700.0	1500.0	1200.0	1300.0
23:00 - 00:00	1400.0	1100.0	800.0	600.0	1100.0	700.0	700.0
00:00 - 01:00	1200.0	1400.0	2000.0	1600.0	1400.0	1500.0	700.0
01:00 - 02:00	1900.0	1000.0	1800.0	600.0	700.0	1900.0	1300.0
02:00 - 03:00	1700.0	1100.0	1000.0	1300.0	700.0	1200.0	1600.0
03:00 - 04:00	500.0	1700.0	800.0	700.0	600.0	900.0	500.0
04:00 - 05:00	1400.0	900.0	600.0	2000.0	1600.0	500.0	1400.0
05:00 - 06:00	500.0	1500.0	1000.0	1800.0	1800.0	1300.0	1600.0
06:00 - 07:00	600.0	1700.0	1900.0	1000.0	600.0	1100.0	1500.0
07:00 - 08:00	700.0	800.0	1400.0	1100.0	1000.0	700.0	1700.0
08:00 - 09:00	800.0	1300.0	1800.0	1100.0	1100.0	2000.0	600.0
09:00 - 10:00	1300.0	1400.0	1300.0	800.0	1800.0	900.0	600.0
10:00 - 11:00	800.0	700.0	600.0	1300.0	1400.0	1000.0	1700.0
11:00 - 12:00	1900.0	1000.0	800.0	1400.0	800.0	1200.0	1300.0
12:00 - 13:00	1000.0	1100.0	500.0	1600.0	900.0	1300.0	1700.0
13:00 - 14:00	1400.0	1600.0	700.0	1900.0	700.0	1100.0	1600.0
14:00 - 15:00	800.0	1000.0	1500.0	1800.0	900.0	1000.0	700.0
Average-24Hr*	1200.0	1200.0	1200.0	1200.0	1200.0	1200.0	1300.0
Max-1Hr	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0	1800.0
Min-1Hr	500.0	700.0	500.0	500.0	500.0	500.0	500.0
Standard-1Hr	30000 ppb(34.2 mg/cu.m)						
Standard-24Hr	-						

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

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team

ภาคผนวก ง.2

ใบรับรองผลการตรวจวัดคุณภาพอากาศจากปล่องระบายอากาศ



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

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemical (Asia) Public Co., Ltd.	REFERENCE NO.	: 222030/Stk(Cert.)/Jan/RTO
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 25/01/2023
RECEIVED DATE	: 26/01/2023	ANALYTICAL DATE	: 27/01/2023
REPORT DATE	: 04/02/2023	SAMPLE CONDITION	: Normal
STACK LOCATION	: Outlet of RTO Stack	SITE OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: LPG
STACK DESCRIPTION			

Height	: 35.0	m	Gas Velocity	: 10.6	m/s
Diameter	: 1.95	m	Flow Rate*	: 1,149	Ncu.m/min
Temperature	: 149.0	°C	Excess Oxygen	: 14.2	%

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE METHOD
		14.2%O ₂	7%O ₂		
Oxide of Nitrogen (NO _x)	ppm	6.0	12.4	200	U.S. EPA Method 7

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-ก-8183

Naris Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ก-6419

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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 @ 7% O₂.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 222030/Stk(Cert.)/Jan/RTO
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 25/01/2023
RECEIVED DATE : 26/01/2023 ANALYTICAL DATE : 26/01/2023
REPORT DATE : 04/02/2023 SAMPLE CONDITION : Normal
STACK LOCATION : Outlet of RTO Stack SITE OPERATOR : Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION : Combustion FUEL TYPE : LPG
STACK DESCRIPTION

Height	: 35.0	m	Gas Velocity	: 10.6	m/s
Diameter	: 1.95	m	Flow Rate*	: 1,149	Ncu.m/min
Temperature	: 149.0	°C	Excess Oxygen	: 14.2	%

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE METHOD
		14.2%O ₂	7%O ₂		
Carbon Monoxide (CO)	ppm	61.4	127.3	690	U.S. EPA Method 10

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG.NO.จ-239-จ-0001

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-6419

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B.E.2549 @ 7% O₂.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemical (Asia) Public Co., Ltd.	REFERENCE NO.	: 222030/Stk(Cert.)/Jan/HTS Furnace
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 26/01/2023
RECEIVED DATE	: 30/01/2023	ANALYTICAL DATE	: 01/02/2023
REPORT DATE	: 04/02/2023	SAMPLE CONDITION	: Normal
STACK LOCATION	: HTS Furnace Off Gas	SITE OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: LPG+H ₂
STACK DESCRIPTION			

Height	: 30.0	m	Gas Velocity	: 3.6	m/s
Diameter	: 1.24	m	Flow Rate*	: 105	Ncu.m/min
Temperature	: 370.3	°C	Excess Oxygen	: 3.1	%

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE METHOD
		3.1% O ₂	7% O ₂		
Oxides of Nitrogen (NO _x)	ppm	19.6	15.3	200	U.S. EPA Method 7

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO. 7-239-ก-8183

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 7-239-ก-6419

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 4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment, B.E.2549 @ 7% O₂.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemical (Asia) Public Co., Ltd.	REFERENCE NO.	: 222030/Stk(Cert.)/Jan/WGT
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 24/01/2023
RECEIVED DATE	: 26/01/2023	ANALYTICAL DATE	: 27/01/2023
REPORT DATE	: 04/02/2023	SAMPLE CONDITION	: Normal
STACK LOCATION	: Waste Gas Treatment Off Gas	SITE OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: LPG+H ₂

STACK DESCRIPTION

Height	: 37.0	m	Gas Velocity	: 18.2	m/s
Diameter	: 0.9	m	Flow Rate*	: 399	Ncu.m/min
Temperature	: 186.6	°C	Excess Oxygen	: 5.5	%

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE METHOD
		5.5% O ₂	7% O ₂		
Oxides of Nitrogen (NO _x)	ppm	50.8	45.9	200	U.S. EPA Method 7

Phatchara Samanchan
(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-8183

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-จ-6419

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4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,
B.E.2549 @ 7% O₂.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemical (Asia) Public Co., Ltd.	REFERENCE NO.	: 222030/Stk(Cert.)/Jan/WGT
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 24/01/2023
RECEIVED DATE	: 26/01/2023	ANALYTICAL DATE	: 30/01/2023
REPORT DATE	: 04/02/2023	SAMPLE CONDITION	: Normal
STACK LOCATION	: Waste Gas Treatment Off Gas	SITE OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: LPG+H ₂

STACK DESCRIPTION

Height	: 37.0	m	Gas Velocity	: 18.2	m/s
Diameter	: 0.9	m	Flow Rate*	: 399	Ncu.m/min
Temperature	: 186.6	°C	Excess Oxygen	: 5.5	%

PARAMETER	UNIT	RESULT*		STANDARD	REFERENCE METHOD
		5.5% O ₂	7% O ₂		
Ammonia (NH ₃)	ppm	9.4	8.5	-	U.S. EPA Method CTM-027

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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 4. - means standard is not specified yet.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemical (Asia) Public Co., Ltd.	REFERENCE NO.	: 222030/Stk(Cert.)/Jan/Column Ds
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 24/01/2023
RECEIVED DATE	: 26/01/2023	ANALYTICAL DATE	: 31/01/2023
REPORT DATE	: 04/02/2023	SAMPLE CONDITION	: Normal
STACK LOCATION	: Column Ds Off Gas	SITE OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Process		

STACK DESCRIPTION

Height	: 25.0	m	Gas Velocity	: 16.3	m/s
Diameter	: 0.5	m	Flow Rate*	: 110	Ncu.m/min
Temperature	: 194.0	°C	Excess Oxygen	: 8.3	%

PARAMETER	UNIT	RESULT*	STANDARD ^{1/}	REFERENCE METHOD
Sulfur Dioxide (SO ₂)	ppm	ND	500	U.S. EPA Method 6

Phatchara Samanchan
(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-ก-8183

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ก-6419

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4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,
B.E.2549 @ Actual O₂.

5. ND (Non-detectable) means the concentration is less than 1.9 ppm @ Actual O₂.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemical (Asia) Public Co., Ltd.	REFERENCE NO.	: 222030/Stk(Cert.)/Jan/Column Si
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 24/01/2023
RECEIVED DATE	: 26/01/2023	ANALYTICAL DATE	: 30-31/01/2023
REPORT DATE	: 04/02/2023	SAMPLE CONDITION	: Normal
STACK LOCATION	: Column Si Off Gas	SITE OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Process		
STACK DESCRIPTION			

Height	: 23.0	m	Gas Velocity	: 44.5	m/s
Diameter	: 0.5	m	Flow Rate*	: 438	Ncu.m/min
Temperature	: 48.0	°C	Excess Oxygen	: 8.8	%

PARAMETER	UNIT	RESULT*	STANDARD ^{1/}	REFERENCE METHOD
Particulate Matter (PM)	mg/Ncu.m.	4.3	400	U.S. EPA Method 5
Sulfur Dioxide (SO ₂)	ppm	ND	500	U.S. EPA Method 6

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-8183

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ค-6419

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B.E.2549 @ Actual O₂.

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 222030/Stk(Cert.)/Jan/Outlet of 2nd Absorption
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 28/01/2023
RECEIVED DATE : 30/01/2023 ANALYTICAL DATE : 31/01/2023
REPORT DATE : 04/02/2023 SAMPLE CONDITION : Normal
STACK LOCATION : Outlet of 2nd Absorption Tower Off Gas SITE OPERATOR : Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION : Process
STACK DESCRIPTION :

Height	: 35.0	m	Gas Velocity	: 9.0	m/s
Diameter	: 0.9	m	Flow Rate*	: 317	Ncu.m/min
Temperature	: 35.0	°C	Excess Oxygen	: 5.6	%

PARAMETER	UNIT	RESULT*	STANDARD ^{1/}	REFERENCE METHOD
Sulfur Dioxide (SO ₂)	ppm	ND	60	U.S. EPA Method 6

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO. 2-239-ก-8183

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 2-239-ก-6419

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4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,
B.E.2549 @ Actual O₂.

5. ND (Non-detectable) means the concentration is less than 1.9 ppm @ Actual O₂.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemical (Asia) Public Co., Ltd.	REFERENCE NO.	: 222030/Stk(Cert.)/Jan/Combined
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 27/01/2023
RECEIVED DATE	: 30/01/2023	ANALYTICAL DATE	: 30-31/01/2023, 01/02/2023
REPORT DATE	: 04/02/2023	SAMPLE CONDITION	: Normal
STACK LOCATION	: Combined Stack (Incinerator Unit 4400)	SITE OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Mixed Anone
STACK DESCRIPTION			

Height	: 90.0	m	Gas Velocity	: 8.5	m/s
Diameter	: 0.37	m	Flow Rate*	: 42.3	Ncu.m/min
Temperature	: 68.5	°C	Excess Oxygen	: 11.1	%

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE METHOD
		11.1% O ₂	7% O ₂		
Particulate Matter (PM)	mg/Ncu.m.	5.5	7.9	320	U.S. EPA Method 5
Sulfur Dioxide (SO ₂)	ppm	ND	ND	60	U.S. EPA Method 6
Oxides of Nitrogen (NO _x)	ppm	40.4	57.2	200	U.S. EPA Method 7

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-8183

Narisa Poowasanpeith

(Miss Narisa Poowasanpeith)

Technical Management Team

REG.NO.จ-239-ท-6419

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 222030/Stk(Cert.)/Jan/Combined
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 27/01/2023
RECEIVED DATE : 30/01/2023 ANALYTICAL DATE : 30/01/2023
REPORT DATE : 04/02/2023 SAMPLE CONDITION : Normal
STACK LOCATION : Combined Stack (Incinerator Unit 4400) SITE OPERATOR : Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION : Combustion FUEL TYPE : Mixed Anone

STACK DESCRIPTION

Height : 90.0 m Gas Velocity : 8.5 m/s
Diameter : 0.37 m Flow Rate* : 42.3 Ncu.m/min
Temperature : 68.5 °C Excess Oxygen : 11.1 %

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE METHOD
		11.1% O ₂	7% O ₂		
Carbon Monoxide (CO)	ppm	0.6	0.9	690	U.S. EPA Method 10

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG.NO.จ-239-จ-0001

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-6419

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B.E.2549 @ 7% O₂.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 222030/Stk(Cert.)/Jan/Dryer (1410-V17)
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 25/01/2023
RECEIVED DATE : 26/01/2023 ANALYTICAL DATE : 30-31/01/2023
REPORT DATE : 01/02/2023 SAMPLE CONDITION : Normal
STACK LOCATION : Dryer Off Gas (1410-V17) SITE OPERATOR : Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION : Process

STACK DESCRIPTION

Height	: 23.0	m	Gas Velocity	: 16.3	m/s
Diameter	: 0.9	m	Flow Rate*	: 531	Ncu.m/min
Temperature	: 52.1	°C	Excess Oxygen	: 20.7	%

PARAMETER	UNIT	RESULT*	STANDARD ^{1/}	REFERENCE METHOD
Particulate Matter (PM)	mg/Ncu.m.	5.3	400	U.S. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO. 2-239-ก-8183

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 2-239-ก-6419

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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 @ Actual O₂.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 222030/Stk(Cert.)/Jun/Dryer (1460-S4)
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 25/01/2023
RECEIVED DATE : 26/01/2023 ANALYTICAL DATE : 30-31/01/2023
REPORT DATE : 01/02/2023 SAMPLE CONDITION : Normal
STACK LOCATION : Dryer Off Gas (1460-S4) SITE OPERATOR : Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION : Process

STACK DESCRIPTION

Height	: 23.0	m	Gas Velocity	: 7.5	m/s
Diameter	: 1.0	m	Flow Rate*	: 308	Ncu.m/min
Temperature	: 49.0	°C	Excess Oxygen	: 20.7	%

PARAMETER	UNIT	RESULT*	STANDARD ^{1/}	REFERENCE METHOD
Particulate Matter (PM)	mg/Ncu.m.	6.2	400	U.S. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-8183

Narisa Poowasanpet

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Technical Management Team

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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 @ Actual O₂.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 222030/Stk(Cert.)/Jan/Dryer (1420-V22)
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 25/01/2023
RECEIVED DATE : 26/01/2023 ANALYTICAL DATE : 30-31/01/2023
REPORT DATE : 01/02/2023 SAMPLE CONDITION : Normal
STACK LOCATION : Dryer Off Gas (1420-V22) SITE OPERATOR : Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION : Process

STACK DESCRIPTION

Height : 23.0 m Gas Velocity : 11.2 m/s
Diameter : 0.9 m Flow Rate* : 377 Ncu.m/min
Temperature : 43.0 °C Excess Oxygen : 20.7 %

PARAMETER	UNIT	RESULT*	STANDARD ^{1/}	REFERENCE METHOD
Particulate Matter (PM)	mg/Ncu.m	3.4	400	US.EPA Method 5

Phatchara Samanchan
(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-8183

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-6419

- 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 @ Actual O₂.



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

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 222030/Stk(Cert.)/Outlet(Jan)
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 26/01/2023
RECEIVED DATE	: 27/01/2023	ANALYTICAL DATE	: 27, 30-31/01/2023
REPORT DATE	: 04/02/2023	SAMPLE CONDITION	: Normal
STACK LOCATION	: AR Boiler (Outlet)	SITE OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Mixed Anone/Diesel Oil

STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 12.2	m/s
Diameter	: 1.33	m	Flow Rate*	: 658	Ncu.m/min
Temperature	: 140.2	°C	Oxygen Content	: 10.2	%

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE
		10.2% O ₂	7% O ₂	7% O ₂	METHOD
Particulate Matter (PM)	mg/Ncu.m.	17.5	22.8	320	U.S. EPA Method 5
Sulfur Dioxide (SO ₂)	ppm	ND	ND	60	U.S. EPA Method 6
Oxide of Nitrogen (NO _x)	ppm	9.4	12.2	200	U.S. EPA Method 7

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-8183

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-จ-6419

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 Notification of the Ministry of Natural Resources and Environment, B.E.2549 @ 7%O₂.

5. ND (Non-detectable) means the concentration is less than 1.9 ppm @ Actual O₂.



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนวิภาวดีรังสิต 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	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 222030/Stk(Cert.)/Outlet(Jan)
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 26/01/2023
RECEIVED DATE	: 27/01/2023	ANALYTICAL DATE	: 27/01/2023
REPORT DATE	: 04/02/2023	SAMPLE CONDITION	: Normal
STACK LOCATION	: AR Boiler (Outlet)	OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Mixed Anone/Diesel Oil

STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 12.2	m/s
Diameter	: 1.33	m	Flow Rate*	: 658	Ncu.m/min
Temperature	: 140.2	°C	Oxygen Content	: 10.2	%

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE
		10.2% O ₂	7% O ₂	7% O ₂	
Carbon Monoxide (CO)	ppm	1.8	2.4	690	U.S. EPA Method 10

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG.NO.จ-239-จ-0001

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ค-6419

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 @ 7% O₂.

ภาคผนวก ง.3

ใบรับรองผลการตรวจวัดระดับเสียง

ใบรับรองผลการตรวจวัดระดับเสียงในชุมชน



Noise Monitoring Result : Community Noise MTR-CPL

Location : Moo 4 of Ta-Phong Sub-District

Monitor Period : 23-30 Jan 2023

SLM Model : RION NL-21

Serial No : 00187489

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 13 Jan 2023

SLM Reading / Adjust dB(A) : 93.7/0.3

Expire Date : 12 Jan 2024

Cal Sheet No.: NC-74-2023-004

Time	Equivalent Sound Pressure Level (dB(A))						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
15:00 - 16:00	60.5	53.4	61.3	55.6	53.2	51.3	53.5
16:00 - 17:00	55.6	55.8	59.3	61.6	53.1	53.9	57.7
17:00 - 18:00	52.4	54.6	52.3	58.8	52.8	57.5	58.1
18:00 - 19:00	52.8	55.7	51.9	52.8	54.1	56.2	62.6
19:00 - 20:00	53.6	55.9	53.1	52.4	52.9	55.7	60.6
20:00 - 21:00	52.4	51.1	53.4	53.8	55.6	57.8	57.3
21:00 - 22:00	51.3	50.7	51.4	53.3	54.0	51.1	53.5
22:00 - 23:00	50.7	50.2	51.6	50.9	51.1	50.5	53.4
23:00 - 00:00	50.0	49.9	50.6	50.7	50.8	50.4	55.4
00:00 - 01:00	49.2	49.1	49.3	50.6	50.0	50.3	49.6
01:00 - 02:00	48.9	49.0	49.3	49.0	49.4	49.2	48.8
02:00 - 03:00	48.7	48.6	49.0	48.7	49.0	48.7	47.9
03:00 - 04:00	50.3	49.7	48.7	48.6	49.3	47.5	48.1
04:00 - 05:00	52.7	51.7	50.5	50.1	49.7	48.2	49.5
05:00 - 06:00	56.5	56.3	52.3	53.0	51.1	50.2	50.5
06:00 - 07:00	57.7	56.7	55.8	57.1	53.2	53.4	53.9
07:00 - 08:00	56.5	59.3	57.9	57.4	59.2	58.1	55.7
08:00 - 09:00	61.6	60.1	55.9	57.1	55.3	57.6	56.6
09:00 - 10:00	56.1	58.0	63.2	59.9	60.9	58.7	59.6
10:00 - 11:00	55.2	55.7	57.3	54.8	61.5	61.4	60.2
11:00 - 12:00	52.1	52.9	55.7	54.7	54.5	56.4	57.6
12:00 - 13:00	53.5	53.8	52.6	51.5	55.0	54.0	53.2
13:00 - 14:00	57.0	53.0	53.8	53.2	51.7	52.9	52.0
14:00 - 15:00	52.2	55.0	54.8	53.7	54.7	53.9	52.8
Leq(24)*	55.1	54.8	55.8	55.2	55.0	55.2	56.4
Ldn	60.0	59.5	59.3	59.3	58.5	58.3	59.7
Lmax **	88.1	83.9	94.5	90.6	89.9	91.6	89.0
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

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda J.

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise MTR-CPL

Location : Moo 4 of Ta-Phong Sub-District

Monitor Period : 23-30 Jan 2023

SLM Model : RION NL-21

Serial No : 00187489

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 13 Jan 2023

SLM Reading / Adjust dB(A) : 93.7/0.3

Expire Date : 12 Jan 2024

Cal Sheet No.: NC-74-2023-004

Time	L90 (dB(A))						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
15:00 - 16:00	49.7	49.5	49.9	49.5	49.4	47.3	49.0
16:00 - 17:00	49.6	49.9	49.2	50.2	49.5	48.9	51.0
17:00 - 18:00	50.1	50.9	49.2	50.0	50.0	50.0	52.5
18:00 - 19:00	50.5	50.5	49.2	51.0	49.7	51.5	52.9
19:00 - 20:00	50.4	50.3	50.2	50.7	50.3	50.3	52.3
20:00 - 21:00	50.0	49.1	50.1	50.7	50.7	49.6	51.8
21:00 - 22:00	49.0	48.4	49.4	50.6	51.0	48.5	50.8
22:00 - 23:00	48.5	47.8	49.3	48.6	49.6	47.6	48.8
23:00 - 00:00	47.7	47.2	48.4	48.6	49.2	47.1	48.0
00:00 - 01:00	47.5	47.1	47.8	47.6	48.5	46.5	46.9
01:00 - 02:00	47.2	46.5	47.7	47.3	47.9	46.5	46.8
02:00 - 03:00	47.0	46.1	47.1	47.2	47.6	46.1	46.7
03:00 - 04:00	47.6	46.0	47.3	46.7	46.9	45.4	47.0
04:00 - 05:00	47.9	47.2	47.5	47.6	46.7	45.5	47.4
05:00 - 06:00	48.9	48.8	47.8	48.0	46.4	46.2	47.7
06:00 - 07:00	51.6	50.5	48.9	48.9	48.2	47.4	48.5
07:00 - 08:00	50.9	50.8	51.6	51.6	50.2	49.2	49.8
08:00 - 09:00	49.0	50.6	50.6	51.2	51.7	49.7	52.3
09:00 - 10:00	48.2	50.7	49.2	46.7	51.8	50.1	52.5
10:00 - 11:00	48.0	49.5	48.4	48.0	51.1	50.7	51.0
11:00 - 12:00	48.4	48.6	48.4	47.6	50.6	49.2	49.5
12:00 - 13:00	49.0	48.4	48.5	48.3	49.7	48.8	48.9
13:00 - 14:00	49.3	48.4	49.0	48.9	48.4	49.2	48.7
14:00 - 15:00	48.4	48.4	48.8	49.4	47.6	49.6	48.7
L90(avg)*	49.1	49.1	49.0	49.3	49.5	48.7	50.0

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

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Community Noise

MTR-CPL

Location : North Fence of Project Site

Monitor Period : 23-30 Jan 2023

SLM Model : RION NL-21

Serial No : 00487723

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 13 Jan 2023

SLM Reading / Adjust dB(A) : 93.6/0.4

Expire Date : 12 Jan 2024

Cal Sheet No.: NC-74-2023-004

Time	Equivalent Sound Pressure Level (dB(A))						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
16:00 - 17:00	57.6	57.1	56.5	56.7	57.0	55.8	56.9
17:00 - 18:00	59.1	57.9	56.5	56.5	56.6	55.6	57.2
18:00 - 19:00	60.9	58.0	56.3	56.3	56.5	55.6	57.2
19:00 - 20:00	59.7	56.7	56.4	56.2	56.3	55.6	56.5
20:00 - 21:00	58.5	57.2	56.3	56.2	56.3	57.6	56.7
21:00 - 22:00	57.5	56.6	55.7	56.9	56.0	58.1	56.8
22:00 - 23:00	57.3	56.4	56.0	56.2	56.0	58.9	56.3
23:00 - 00:00	57.4	56.1	57.0	58.0	55.5	58.3	57.1
00:00 - 01:00	56.8	56.3	58.7	59.1	55.7	57.9	57.7
01:00 - 02:00	57.3	58.1	59.0	58.8	56.4	57.0	58.5
02:00 - 03:00	56.6	56.0	56.4	57.3	56.2	56.6	56.7
03:00 - 04:00	58.2	56.4	56.7	57.4	56.3	56.5	56.9
04:00 - 05:00	59.3	58.2	57.4	57.2	57.7	56.2	57.7
05:00 - 06:00	59.9	57.4	56.0	56.9	60.5	56.5	57.2
06:00 - 07:00	57.0	56.9	56.6	57.4	59.3	57.1	57.2
07:00 - 08:00	56.8	55.7	56.5	56.7	55.6	58.1	56.2
08:00 - 09:00	61.3	56.5	57.1	57.3	55.6	59.1	56.9
09:00 - 10:00	59.7	57.5	57.7	60.1	60.6	59.1	58.8
10:00 - 11:00	57.7	57.9	57.8	57.9	57.6	57.8	57.9
11:00 - 12:00	57.7	57.8	57.3	57.2	57.0	57.5	57.8
12:00 - 13:00	57.1	57.1	57.0	58.0	56.9	57.1	57.3
13:00 - 14:00	57.1	57.8	58.6	57.7	56.9	57.9	57.4
14:00 - 15:00	57.9	57.6	57.9	57.4	57.3	57.9	57.4
15:00 - 16:00	57.3	56.7	57.5	56.8	56.5	57.4	57.4
Leq(24)*	58.4	57.1	57.1	57.5	57.2	57.4	57.3
Ldn	64.4	63.4	63.6	64.0	63.8	63.8	63.7
Lmax **	80.8	82.2	80.8	79.3	75.8	74.2	79.0
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

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise MTR-CPL

Location : North Fence of Project Site

Monitor Period : 23-30 Jan 2023

SLM Model : RION NL-21

Serial No : 00487723

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 13 Jan 2023

SLM Reading / Adjust dB(A) : 93.6/0.4

Expire Date : 12 Jan 2024

Cal Sheet No.: NC-74-2023-004

Time	L90 (dB(A))						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
16:00 - 17:00	56.9	56.3	55.9	56.4	56.7	55.4	56.4
17:00 - 18:00	57.2	57.3	56.1	56.0	56.3	55.4	56.7
18:00 - 19:00	59.8	57.5	56.1	56.0	56.1	55.4	56.8
19:00 - 20:00	58.9	56.3	55.9	55.9	56.0	55.3	56.1
20:00 - 21:00	57.9	56.2	55.8	56.0	55.9	56.6	56.1
21:00 - 22:00	56.8	55.9	55.5	56.0	55.7	56.6	56.0
22:00 - 23:00	56.8	56.0	55.6	56.0	55.5	57.9	56.0
23:00 - 00:00	57.0	55.7	55.5	56.2	55.2	57.4	56.0
00:00 - 01:00	56.3	55.4	55.7	56.6	55.4	57.1	56.0
01:00 - 02:00	56.4	55.5	55.9	56.6	55.9	56.5	56.1
02:00 - 03:00	56.3	55.6	56.1	56.7	55.8	56.1	56.2
03:00 - 04:00	56.2	55.9	56.2	56.5	55.7	56.2	56.2
04:00 - 05:00	56.4	56.1	56.1	56.1	56.0	55.9	56.1
05:00 - 06:00	56.6	56.1	55.6	55.9	56.7	55.9	56.0
06:00 - 07:00	56.5	55.9	55.9	56.0	55.8	56.4	56.0
07:00 - 08:00	56.2	55.2	55.2	56.2	55.2	56.4	55.7
08:00 - 09:00	56.1	55.2	56.3	56.2	55.2	57.1	55.7
09:00 - 10:00	56.1	56.3	56.1	56.4	56.4	57.0	56.4
10:00 - 11:00	56.2	57.0	56.6	56.5	56.2	56.4	56.8
11:00 - 12:00	56.1	56.7	56.7	56.2	55.9	56.4	56.6
12:00 - 13:00	56.0	56.6	56.4	56.6	55.9	56.2	56.2
13:00 - 14:00	56.4	56.5	56.8	56.5	55.9	56.6	56.2
14:00 - 15:00	57.0	56.7	57.4	56.6	56.3	57.2	56.2
15:00 - 16:00	56.9	56.3	57.2	56.5	56.1	57.1	56.2
L90(avg)*	56.9	56.2	56.1	56.3	55.9	56.5	56.2

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

Ladawan N.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Community Noise MTR-CPL

Location : Technology IRPC School

Monitor Period : 23-30 Jan 2023

SLM Model : RION NL-21

Serial No : 00521703

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 13 Jan 2023

SLM Reading / Adjust dB(A) : 93.8/0.2

Expire Date : 12 Jan 2024

Cal Sheet No.: NC-74-2023-004

Time	Equivalent Sound Pressure Level (dB(A))						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
14:00 - 15:00	53.8	51.1	52.2	52.8	54.3	49.2	50.0
15:00 - 16:00	56.1	51.4	51.9	52.2	53.9	49.6	50.2
16:00 - 17:00	54.1	52.6	54.7	52.9	52.9	49.6	48.7
17:00 - 18:00	53.1	51.9	52.7	52.8	56.1	48.5	51.1
18:00 - 19:00	53.4	49.7	51.5	53.5	52.2	53.9	50.6
19:00 - 20:00	51.9	48.2	51.3	52.5	50.6	49.7	48.8
20:00 - 21:00	50.4	48.7	48.9	50.7	49.4	47.7	49.4
21:00 - 22:00	50.3	51.0	49.0	48.7	50.9	47.9	48.4
22:00 - 23:00	50.8	51.7	48.7	48.9	51.2	47.9	48.8
23:00 - 00:00	50.9	51.3	49.0	49.3	51.6	48.0	49.0
00:00 - 01:00	50.8	50.2	49.1	49.6	51.8	48.3	48.5
01:00 - 02:00	51.1	49.3	48.7	49.2	50.9	48.4	48.3
02:00 - 03:00	51.2	51.5	49.1	50.6	50.2	48.8	48.5
03:00 - 04:00	51.5	50.3	49.7	51.1	49.1	48.2	48.4
04:00 - 05:00	51.9	49.5	49.6	51.2	48.9	47.8	48.3
05:00 - 06:00	54.3	49.5	50.1	51.4	49.2	48.7	48.2
06:00 - 07:00	53.9	51.4	50.7	52.2	50.7	49.1	48.8
07:00 - 08:00	53.5	52.3	53.2	54.0	52.0	51.0	50.1
08:00 - 09:00	51.0	53.0	53.9	55.5	52.2	52.0	51.9
09:00 - 10:00	49.9	54.2	51.5	53.6	50.9	51.1	52.6
10:00 - 11:00	52.1	52.4	50.9	51.1	50.2	50.5	51.2
11:00 - 12:00	52.6	52.2	51.3	50.2	51.4	50.3	49.8
12:00 - 13:00	51.0	51.9	52.3	51.9	50.7	50.7	49.7
13:00 - 14:00	51.7	56.4	54.5	51.1	48.6	48.5	49.4
Leq(24)*	52.4	51.7	51.4	51.9	51.6	49.7	49.7
Ldn	58.5	57.3	56.4	57.3	57.2	55.1	55.2
Lmax **	85.6	79.8	81.0	75.9	86.0	78.6	73.1
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

Remark : * Average time between 14:00-14:00

** Maximum Sound Pressure Level between 14:00-14:00

Ladawan N.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise MTR-CPL

Location : Technology IRPC School

Monitor Period : 23-30 Jan 2023

SLM Model : RION NL-21

Serial No : 00521703

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 13 Jan 2023

SLM Reading / Adjust dB(A) : 93.8/0.2

Expire Date : 12 Jan 2024

Cal Sheet No.: NC-74-2023-004

Time	L90 (dB(A))						
	23-24 Jan 2023	24-25 Jan 2023	25-26 Jan 2023	26-27 Jan 2023	27-28 Jan 2023	28-29 Jan 2023	29-30 Jan 2023
14:00 - 15:00	50.4	48.5	45.7	49.5	50.4	44.5	45.8
15:00 - 16:00	51.9	47.9	47.8	49.9	50.7	45.3	46.5
16:00 - 17:00	51.3	48.4	50.7	50.2	50.4	45.4	45.9
17:00 - 18:00	51.6	48.7	49.6	50.0	50.6	45.7	46.3
18:00 - 19:00	51.7	46.9	49.1	50.0	49.3	45.8	46.6
19:00 - 20:00	50.9	47.3	48.9	50.4	47.2	46.1	46.5
20:00 - 21:00	48.9	47.5	47.9	49.0	48.2	46.7	46.9
21:00 - 22:00	49.1	49.2	47.9	47.2	49.9	46.9	47.2
22:00 - 23:00	48.9	49.5	47.3	47.3	49.9	46.6	47.7
23:00 - 00:00	49.3	49.7	47.9	48.1	50.4	46.7	47.6
00:00 - 01:00	49.4	48.7	48.0	48.0	50.3	47.0	47.3
01:00 - 02:00	49.7	47.7	47.8	47.7	49.9	47.0	47.0
02:00 - 03:00	49.9	49.2	48.2	49.4	49.3	47.1	47.0
03:00 - 04:00	50.6	48.5	48.7	50.0	47.8	47.1	47.2
04:00 - 05:00	50.5	47.5	48.7	50.2	47.9	46.7	47.3
05:00 - 06:00	51.8	47.7	49.1	50.3	47.2	47.3	47.1
06:00 - 07:00	52.6	48.2	49.7	51.2	48.3	48.0	47.2
07:00 - 08:00	49.5	48.8	50.7	52.2	49.5	48.9	48.3
08:00 - 09:00	48.6	48.5	52.1	53.7	49.2	49.8	50.3
09:00 - 10:00	47.1	48.1	47.1	49.6	48.5	47.3	50.0
10:00 - 11:00	47.9	47.8	46.1	46.5	47.7	47.7	48.3
11:00 - 12:00	48.8	47.1	46.2	46.8	47.6	46.7	46.9
12:00 - 13:00	48.3	46.4	47.9	48.1	47.1	46.6	45.9
13:00 - 14:00	49.7	46.5	49.0	48.9	45.8	45.7	45.4
L90(avg)*	50.2	48.2	48.7	49.7	49.1	46.9	47.3

Remark : * Average time between 14:00-14:00

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team

ใบรับรองผลการตรวจวัดระดับเสียงที่ความถี่ต่างๆ



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

SOUND PRESSURE LEVEL AT EACH FREQUENCY REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 222030 Octave (Cert.)/Jan23
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Sound Level Meter (Octave Band)
MEASUREMENT LOCATION	: CPL Plant	CALIBRATOR	: Sound Calibrator
MEASUREMENT DATE	: 25/01/2023	CALIBRATOR TYPE	: Class 1 S/N : 0254955
SITE OPERATOR	: Mr. Tanachot Changlor	CALIBRATION REF.	: 114 dB@1 KHz

Location	Sound Pressure Level (dBA)	Sound Pressure Level at each Frequency (dBA)									
		31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1,000 Hz	2,000 Hz	4,000 Hz	8,000 Hz	16,000 Hz
Cyclohexanone (1110-K1)	88.1	34.4	52.6	60.8	68.0	82.5	79.2	82.5	81.4	75.4	57.5
SA & WLC (4140-I)	88.6	39.7	57.6	62.3	68.4	73.9	79.6	87.3	77.7	69.2	55.0
Hydroxylamine Unit (1210-PB1)	88.9	38.8	55.8	67.7	72.6	79.4	85.8	84.0	76.4	61.8	42.2
Refrigeration Unit (2510-K1)	85.9	34.7	54.3	55.4	71.5	78.3	76.5	82.7	78.9	66.8	46.6
Wastewater Treatment (4700-B1)	87.9	43.4	55.5	64.7	82.7	76.2	78.1	80.9	81.9	77.7	62.7

Ladawan W.

(Miss Ladawan Wongcharoen)

Environmental Scientist

Suk Sunthananon

(Miss Sununta Sirawuttinanon)

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.



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SOUND PRESSURE LEVEL AT EACH FREQUENCY REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030 Octave (Cert.)/May23
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Sound Level Meter (Octave Band)
MEASUREMENT LOCATION	: CPL Plant	CALIBRATOR	: Sound Calibrator
MEASUREMENT DATE	: 16/05/2023	CALIBRATOR TYPE	: Class 1 S/N : 0254955
SITE OPERATOR	: Mr. Chanaphon Oakkharaphon	CALIBRATION REF.	: 114 dB@1 KHz

Location	Sound Pressure Level (dBA)	Sound Pressure Level at each Frequency (dBA)									
		31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1,000 Hz	2,000 Hz	4,000 Hz	8,000 Hz	16,000 Hz
Cyclohexanone (1110-K1)	87.7	33.9	49.0	62.7	65.8	83.6	77.8	81.1	80.4	74.3	57.2
SA & WLC (4140-1)	84.6	34.4	50.2	59.4	63.8	69.1	75.9	82.9	75.6	68.2	54.7
Hydroxylamine Unit (1210-PB1)	84.3	35.2	51.1	59.1	69.7	75.6	80.9	79.4	71.0	59.6	45.4
Refrigeration Unit (2510-K1)	81.4	34.1	48.2	54.2	70.6	74.0	71.2	77.2	75.1	65.1	45.4
Wastewater Treatment (4700-B1)	84.3	45.2	55.2	63.2	74.9	75.2	76.0	78.2	78.6	74.8	61.2

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

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.

ใบรับรองผลการตรวจวัดระดับเสียงเฉลี่ยตลอดเวลาการทำงาน



Noise Monitoring Result : Working Noise MTR-CPL

Location : SA & WLC (4140-1)

Monitor Period : May 16, 2023

SLM Model : SCARLET ST-21D

Serial No : 820722

Site Operator : Mr.Chanapon Oakkharaplon

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : Sep 12, 2022

SLM Reading / Adjust dB(A) : 93.7/0.0

Expire Date : Sep 11, 2023

Cal Sheet No.: CR-515-2023-059

Time	Equivalent Sound Pressure Level (dB(A))	
	May 16, 2023	
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		
09:00 - 10:00		
10:00 - 11:00	86.0	
11:00 - 12:00	86.7	
12:00 - 13:00	85.9	
13:00 - 14:00	85.6	
14:00 - 15:00	86.0	
15:00 - 16:00	87.1	
16:00 - 17:00	87.5	
17:00 - 18:00	87.3	
18:00 - 19:00	86.9	
19:00 - 20:00	86.6	
20:00 - 21:00	86.6	
21:00 - 22:00	86.6	
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	86.6	
Lmax **	103.0	
Standard-12Hr	87 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 10:00-22:00

** Maximum Sound Pressure Level between 10:00-22:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-CPL

Location : Wastewater Treatment (4700-B1)	Monitor Period : Jan 25, 2023
SLM Model : CASELLA CEL-246	Serial No : 3173108
Site Operator : Mr. Tanachot Changlor	

Calibrator Model : CASELLA CEL120/2	Serial No : 2839225
Calibration Ref dB(A) : 114.0	Certified Date : Jan 13, 2023
SLM Reading / Adjust dB(A) : 114.0/0.0	Expire Date : Jan 12, 2024
Cal Sheet No.: CEL120/2-2023-005	

Time	Equivalent Sound Pressure Level (dB(A))	
	Jan 25, 2023	
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	86.6	
09:00 - 10:00	86.5	
10:00 - 11:00	86.4	
11:00 - 12:00	86.3	
12:00 - 13:00	86.3	
13:00 - 14:00	86.5	
14:00 - 15:00	86.5	
15:00 - 16:00	86.6	
16:00 - 17:00	86.7	
17:00 - 18:00	86.8	
18:00 - 19:00	87.1	
19:00 - 20:00	87.1	
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	86.6	
Lmax **	89.7	
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

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Sununta Sirawuttinanon

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-CPL

Location : Wastewater Treatment (4700-B1)

Monitor Period : May 16, 2023

SLM Model : SCARLET ST-21D

Serial No : 820723

Site Operator : Mr.Chanapon Oakkharaplon

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : Sep 12, 2022

SLM Reading / Adjust dB(A) : 93.7/0.1


Expire Date : Sep 11, 2023


Cal Sheet No.: CR-515-2023-059

Time	Equivalent Sound Pressure Level (dB(A))	
	May 16, 2023	
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		
09:00 - 10:00	86.0	
10:00 - 11:00	86.0	
11:00 - 12:00	85.8	
12:00 - 13:00	85.8	
13:00 - 14:00	86.1	
14:00 - 15:00	85.9	
15:00 - 16:00	85.8	
16:00 - 17:00	85.8	
17:00 - 18:00	86.0	
18:00 - 19:00	85.9	
19:00 - 20:00	85.9	
20:00 - 21:00	85.9	
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	85.9	
Lmax **	110.7	
Standard-12Hr	87 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 09:00-21:00

** Maximum Sound Pressure Level between 09:00-21:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-CPL

Location : SA & WLC (4140-1)
SLM Model : CASELLA CEL-246
Site Operator : Mr. Tanachot Changlor

Monitor Period : Jan 25, 2023
Serial No : 3173803

Calibrator Model : CASELLA CEL120/2
Calibration Ref dB(A) : 114.0
SLM Reading / Adjust dB(A) : 114.0/0.0
Cal Sheet No.: CEL120/2-2023-005

Serial No : 2839225
Certified Date : Jan 13, 2023
Expire Date : Jan 12, 2024

Time	Equivalent Sound Pressure Level (dB(A))	
	Jan 25, 2023	
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	83.6	
09:00 - 10:00	83.7	
10:00 - 11:00	83.1	
11:00 - 12:00	82.9	
12:00 - 13:00	83.1	
13:00 - 14:00	82.6	
14:00 - 15:00	82.6	
15:00 - 16:00	83.0	
16:00 - 17:00	83.0	
17:00 - 18:00	83.3	
18:00 - 19:00	84.8	
19:00 - 20:00	86.0	
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	83.6	
Lmax **	88.8	
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

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Sh. Sununta

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-CPL

Location : Refrigeration Unit (2500-K1)

Monitor Period : May 16, 2023

SLM Model : SCARLET ST-21D

Serial No : 820730

Site Operator : Mr.Chanapon Oakkharaplorn

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : Sep 12, 2022

SLM Reading / Adjust dB(A) : 93.7/0.1

Expire Date : Sep 11, 2023


Cal Sheet No.: CR-515-2023-059

Time	Equivalent Sound Pressure Level (dB(A))	
	May 16, 2023	
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		
09:00 - 10:00		83.2
10:00 - 11:00		83.4
11:00 - 12:00		83.0
12:00 - 13:00		83.0
13:00 - 14:00		83.0
14:00 - 15:00		83.0
15:00 - 16:00		82.9
16:00 - 17:00		82.7
17:00 - 18:00		83.0
18:00 - 19:00		83.5
19:00 - 20:00		83.1
20:00 - 21:00		83.1
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*		83.1
Lmax **		89.7
Standard-12Hr		87 dB(A)
Standard-Max		140 dB(A)

Remark : * Average time between 09:00-21:00

** Maximum Sound Pressure Level between 09:00-21:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-CPL

Location : Refrigeration Unit (2510-K1)

Monitor Period : Jan 25, 2023

SLM Model : CASELLA CEL-246

Serial No : 1443817

Site Operator : Mr. Tanachot Changlor

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Jan 13, 2023

SLM Reading / Adjust dB(A) : 114.0/0.0

Expire Date : Jan 12, 2024

Cal Sheet No.: CEL120/2-2023-005

Time	Equivalent Sound Pressure Level (dB(A))
	Jan 25, 2023
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	85.5
09:00 - 10:00	85.1
10:00 - 11:00	84.4
11:00 - 12:00	84.4
12:00 - 13:00	84.7
13:00 - 14:00	85.0
14:00 - 15:00	85.1
15:00 - 16:00	85.3
16:00 - 17:00	85.8
17:00 - 18:00	86.0
18:00 - 19:00	86.3
19:00 - 20:00	86.3
20:00 - 21:00	
21:00 - 22:00	
22:00 - 23:00	
23:00 - 24:00	
Leq(12)*	85.4
Lmax **	91.8
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 Ladawan Wongcharoen)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-CPL

Location : Hydroxylamine Unit (1210-PB1)

Monitor Period : May 16, 2023

SLM Model : SCARLET ST-21D

Serial No : 820725

Site Operator : Mt.Chanapon Oakkharaplon

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : Sep 12, 2022

SLM Reading / Adjust dB(A) : 93.7/0.1

Expire Date : Sep 11, 2023

Cal Sheet No.: CR-515-2023-059

Time	Equivalent Sound Pressure Level (dB(A))	
	May 16, 2023	
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		
09:00 - 10:00	85.8	
10:00 - 11:00	85.0	
11:00 - 12:00	84.9	
12:00 - 13:00	85.7	
13:00 - 14:00	85.5	
14:00 - 15:00	85.3	
15:00 - 16:00	84.7	
16:00 - 17:00	84.5	
17:00 - 18:00	84.5	
18:00 - 19:00	85.5	
19:00 - 20:00	85.1	
20:00 - 21:00	85.1	
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	85.2	
Lmax **	94.4	
Standard-12Hr	87 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 09:00-21:00

** Maximum Sound Pressure Level between 09:00-21:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-CPL

Location : Hydroxylamine Unit (1210-PB1)

Monitor Period : Feb 28, 2023

SLM Model : CASELLA CEL-246

Serial No : 3173350

Site Operator : Mr.Chanapon Oakkharaplon

Calibrator Model : CASELLA CEL120/2

Serial No : 2889225

Calibration Ref dB(A) : 114.0

Certified Date : Jan 13, 2023

SLM Reading / Adjust dB(A) : 114.0/0.0

Expire Date : Jan 12, 2024

Cal Sheet No.: CEL120/2-2023-020

Time	Equivalent Sound Pressure Level (dB(A))	
	Feb 28, 2023	
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	86.5	
09:00 - 10:00	87.3	
10:00 - 11:00	88.5	
11:00 - 12:00	87.1	
12:00 - 13:00	86.2	
13:00 - 14:00	86.0	
14:00 - 15:00	86.0	
15:00 - 16:00	85.9	
16:00 - 17:00	85.8	
17:00 - 18:00	86.0	
18:00 - 19:00	85.8	
19:00 - 20:00	85.9	
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	86.5	
Lmax **	91.5	
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

Ladawan W.

(Miss Ladawan Wongcharoen)
Environmental Scientist

Sole Sirawuttinanon

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-CPL

Location : Cyclohexanone (1110-K1)

Monitor Period : Jun 22, 2023

SLM Model : Citrus CR162B

Serial No : G302333

Site Operator : Miss Wiraya Patchimboon

Calibrator Model : Citrus CR515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : Dec 20, 2022

SLM Reading / Adjust dB(A) : 93.7/0.0

Expire Date : Dec 19, 2023

Cal Sheet No.: CR-515-2023-087

Time	Equivalent Sound Pressure Level (dB(A))	
	Jun 22, 2023	
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	85.7	
09:00 - 10:00	85.4	
10:00 - 11:00	85.0	
11:00 - 12:00	85.0	
12:00 - 13:00	85.1	
13:00 - 14:00	85.1	
14:00 - 15:00	85.0	
15:00 - 16:00	84.9	
16:00 - 17:00	84.9	
17:00 - 18:00	84.9	
18:00 - 19:00	85.0	
19:00 - 20:00	84.9	
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	85.1	
Lmax **	90.1	
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-CPL

Location : Cyclohexanone (1110-K1)

Monitor Period : Jan 25, 2023

SLM Model : CASELLA CEL-246

Serial No : 3173161

Site Operator : Mr. Tanachot Changlor

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Jan 13, 2023

SLM Reading / Adjust dB(A) : 114.0/0.0

Expire Date : Jan 12, 2024

Cal Sheet No.: CEL120/2-2023-005

Time	Equivalent Sound Pressure Level (dB(A))	
	Jan 25, 2023	
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	86.8	
09:00 - 10:00	86.8	
10:00 - 11:00	86.5	
11:00 - 12:00	86.3	
12:00 - 13:00	85.8	
13:00 - 14:00	85.8	
14:00 - 15:00	86.4	
15:00 - 16:00	86.4	
16:00 - 17:00	86.4	
17:00 - 18:00	86.3	
18:00 - 19:00	86.2	
19:00 - 20:00	86.2	
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	86.3	
Lmax **	88.3	
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

Ladawan W

(Miss Ladawan Wongcharoen)
Environmental Scientist

Sunth Sirawuttinanon

(Miss Sununta Sirawuttinanon)
Technical Management Team

ใบรับรองผลการตรวจวัดระดับเสียงเฉลี่ยที่ลูกจ้างได้รับ
เฉลี่ยตลอดเวลาการทำงาน (TWA)



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

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239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

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

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030 (Cert.)Jan/Noise Dose
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Noise Dosimeter
MEASUREMENT DATE	: 25/01/2023	CALIBRATOR MODEL	: RC 110 A
MEASUREMENT LOCATION	: CPL	SERIAL NO.	: 95168
SITE OPERATOR	: Mr. Tanachot Changlor	CALIBRATOR REF.	: 114 dB @1,000 Hz

USER ID	AREA/PLANT	TIME	%Dose	SOUND PRESSURE LEVEL (dBA)	
				TWA (12-hr)	STANDARD*
90696	1110-K1	07.58-19.00	49.0	80.2	83.0
91078	1210-PB1	07.58-19.00	79.8	82.3	83.0
19054	4700-B1	07.58-19.00	23.9	77.0	83.0

Ladawan W.

(Miss Ladawan Wongcharoen)

Environmental Scientist

Sununta Sirawuttinanon

(Miss Sununta Sirawuttinanon)

Technical Management Team

- Remark :**
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 4. TWA means Time Weighted Average.



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

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030 (Cert.)/Feb/Noise Dose
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Noise Dosimeter
MEASUREMENT DATE	: 28/02/2023	CALIBRATOR MODEL	: RC 110 A
MEASUREMENT LOCATION	: CPL	SERIAL NO.	: 95168
SITE OPERATOR	: Mr. Chanaphon Oakkharaphon	CALIBRATOR REF.	: 114 dB @1,000 Hz

USER ID	AREA/PLANT	TIME	%Dose	SOUND PRESSURE LEVEL (dBA)	
				TWA (12-hr)	STANDARD*
90889	4140-BI	08.02-18.57	77.5	82.1	83.0
90330	2510-KI	08.02-18.56	29.8	78.0	83.0



(Miss Ladawan Wongcharoen)

Environmental Scientist



(Miss Sununta Sirawuttinanon)

Technical Management Team

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

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030 (Cert.)/May/Noise Dose
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Noise Dosimeter
MEASUREMENT DATE	: 16/05/2023	CALIBRATOR MODEL	: RC 110 A
MEASUREMENT LOCATION	: CPL	SERIAL NO.	: 95168
SITE OPERATOR	: Miss Wiraya Patchimboon	CALIBRATOR REF.	: 114 dB @1,000 Hz

USER ID	AREA/PLANT	TIME	%Dose	SOUND PRESSURE LEVEL (dBA)	
				TWA (12-hr)	STANDARD*
90587	2510-K1	08.28-19.00	76.2	82.1	83.0
19054	4700-B1	08.28-19.00	25.0	77.2	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030 (Cert.)/Jun/Noise Dose
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Noise Dosimeter
MEASUREMENT DATE	: 22/06/2023	CALIBRATOR MODEL	: 22R
MEASUREMENT LOCATION	: CPL	SERIAL NO.	: 79781
SITE OPERATOR	: Miss Wiraya Patchimboon	CALIBRATOR REF.	: 114 dB @1,000 Hz

USER ID	AREA/PLANT	TIME	%Dose	SOUND PRESSURE LEVEL (dBA)	
				TWA (12-hr)	STANDARD*
90617	1110-K1	08.08-18.49	72.7	81.9	83.0
90830	4140-B1	08.09-18.49	65.3	81.4	83.0
90436	1210-PB1	08.08-18.51	87.5	82.7	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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ภาคผนวก ง.4

ใบรับรองผลการวิเคราะห์คุณภาพน้ำทิ้ง

**บริเวณจุดระบายน้ำเข้าระบบบำบัดน้ำเสีย (Receiving Tank)
ก่อนเข้า Equalization Cooler**



Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138258
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant



TESTING
No.0042

Lot ID: 22147826
Date Received : Jan 11, 2023
Date Reported : Jan 18, 2023
Report Number : 2514369-1

Page 1 of 1

Sample Number	22147826-1
Sampled Date	Jan 11, 2023 11:21 AM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	Jan 11, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 Degree C)	mg/L	-	2.0	670	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B	Rayong
COD	mg/L	1.5	5	1491	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	4	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	9.0	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	32.1	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	2100	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	166	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	36	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Tanasit Wongsachai ทะนันชัย 7-323-9-9460

Remark :
- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

N. Banngkit

Narumon Banchongkit
Supervisor
ทะเบียนเลขที่ 7-323-9-9445

Approved by

D. Changanon

Dej Changanon
Senior Manager
ทะเบียนเลขที่ 7-323-9-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138258
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 22147826
Date Received : Jan 11, 2023
Date Reported : Jan 18, 2023
Report Number : 2514369-2

Page 1 of 1

Sample Number	22147826-1
Sampled Date	Jan 11, 2023 11:21 AM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	Jan 11, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Flow rate	m3/hr	-	-	165	Flow meter	Rayong
Sulfate	mg/L	0.6	2	548	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Sampling By : Tanasit Wongsachai

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

Approved by

N. Banngkit

Narumon Banchongkit
Supervisor

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138258
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant



TESTING
No.0042

Lot ID: 231809
Date Received : Feb 01, 2023
Date Reported : Feb 10, 2023
Report Number : 2536065-1

Page 1 of 1

Sample Number 231809-1
Sampled Date Feb 01, 2023 11:22 AM
Sample Description Wastewater
Location Influent (S-32-002)
Date Analysis Commenced Feb 01, 2023
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 Degree C)	mg/L	-	2.0	1007	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B	Rayong
COD	mg/L	1.5	25	1736	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	5	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	9.0	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	31.7	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	1510	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	103	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	23	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Tanasit Wongsachai ทะเนษิต วงษ์ชาติ ๖-323-๙-9460

Remark :

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

Technical Management

N. Banongkit

Narumon Banchongkit
Supervisor

ทะเบียนเลขที่ ๖-323-๙-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager

ทะเบียนเลขที่ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138258
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 231809
Date Received : Feb 01, 2023
Date Reported : Feb 10, 2023
Report Number : 2536065-2

Page 1 of 1

Sample Number 231809-1
Sampled Date Feb 01, 2023 11:22 AM
Sample Description Wastewater
Location Influent (S-32-002)
Date Analysis Commenced Feb 01, 2023
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Flow rate	m3/hr	-	-	150	Flow meter	Rayong
Sulfate	mg/L	0.6	2	228	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Sampling By : Tanasit Wongsachai

Remark :

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Approved by

N. Banongkit

Narumon Banchongkit
Supervisor

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Analysis / Test Report

TESTING
No.0042

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138258
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2314693
Date Received : Mar 15, 2023
Date Reported : Mar 22, 2023
Report Number : 2562292-1

Page 1 of 1

Sample Number	2314693-1					
Sampled Date	Mar 15, 2023 12:35 PM					
Sample Description	Wastewater					
Location	Influent (S-32-002)					
Date Analysis Commenced	Mar 15, 2023					
Condition of Sample	Contained in one amber glass bottle, one BOD bottle and three plastic bottles, sample containers comply to pretreatment = preservation standards (APHA, USEPA)					

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 Degree C)	mg/L	-	2.0	516	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B	Rayong
COD	mg/L	1.5	25	1678	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	<3	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	9.2	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	36.8	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	1930	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	89.8	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	22	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Narunat thammassaro ทะเบียนเลขที่ 7-323-2-9477

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

Technical Management

N. Banngkit

Narumon Banchongkit
Supervisor
ทะเบียนเลขที่ 7-323-2-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager
ทะเบียนเลขที่ 7-323-2-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138258
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2314693
Date Received : Mar 15, 2023
Date Reported : Mar 22, 2023
Report Number : 2562292-2

Page 1 of 1

Sample Number	2314693-1					
Sampled Date	Mar 15, 2023 12:35 PM					
Sample Description	Wastewater					
Location	Influent (S-32-002)					
Date Analysis Commenced	Mar 15, 2023					
Condition of Sample	Contained in one amber glass bottle, one BOD bottle and three plastic bottles, sample containers comply to pretreatment = preservation standards (APHA, USEPA)					

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Flow rate	m3/hr	-	-	160	Flow meter	Rayong
Sulfate	mg/L	0.6	2	176	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Sampling By : Narunat thammassaro

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

Approved by

N. Banngkit

Narumon Banchongkit
Supervisor

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Analysis / Test Report



TESTING
No.0042

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O :
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2338002
Date Received : Apr 05, 2023
Date Reported : Apr 12, 2023
Report Number : 2613320-1

Page 1 of 1

Sample Number	2338002-1
Sampled Date	Apr 05, 2023 12:20 PM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	Apr 05, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 Degree C)	mg/L	-	2.0	754	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B	Rayong
COD	mg/L	1.5	25	1720	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	8.7	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	33.7	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	1530	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	205	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	32	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Tanasit Wongsachai ทะเนสิต วงษ์สชาติ ๖-323-๙-9460

Remark :
- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

N. Banachkit

Narumon Banachongkit
Supervisor
หมายเลข ๖-323-๙-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager
หมายเลข ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O :
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2338002
Date Received : Apr 05, 2023
Date Reported : Apr 12, 2023
Report Number : 2613320-2

Page 1 of 1

Sample Number	2338002-1
Sampled Date	Apr 05, 2023 12:20 PM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	Apr 05, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Flow rate	m3/hr	-	-	150	Flow meter	Rayong
Sulfate	mg/L	0.6	2	242	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Sampling By : Tanasit Wongsachai

Remark :
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Analysis / Test Report



TESTING
No.0042

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2349564
Date Received : May 15, 2023
Date Reported : May 22, 2023
Report Number : 2638667-1

Page 1 of 1

Sample Number	2349564-1
Sampled Date	May 15, 2023 11:42 AM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	May 15, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 Degree C)	mg/L	-	2.0	791	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B	Rayong
COD	mg/L	1.5	25	1502	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	4	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	8.8	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	32.7	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	1580	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	194	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	5	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Tanasit Wongsachai ทะนันชัย วี-323-9-9460

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

Technical Management

N. Banchoangkit

Narumon Banchoangkit
Supervisor
ทะเบียนเลขที่ 7-323-9-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager
ทะเบียนเลขที่ 7-323-9-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2349564
Date Received : May 15, 2023
Date Reported : May 22, 2023
Report Number : 2638667-2

Page 1 of 1

Sample Number	2349564-1
Sampled Date	May 15, 2023 11:42 AM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	May 15, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Flow rate	m3/hr	-	-	145	Flow meter	Rayong
Sulfate	mg/L	0.6	2	458	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Sampling By : Tanasit Wongsachai

Remark :
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Approved by

N. Banchoangkit

Narumon Banchoangkit
Supervisor

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Analysis / Test Report



TESTING
No.0042

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2364160
Date Received : Jun 07, 2023
Date Reported : Jun 14, 2023
Report Number : 2670555-1

Page 1 of 1

Sample Number	2364160-1
Sampled Date	Jun 07, 2023 11:00 AM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	Jun 07, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 Degree C)	mg/L	-	2.0	755	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	1076	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	4	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	8.4	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	31.0	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	1170	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	232	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	75	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Narurat thammassaro หมายเลขที่ ๖-323-๙-9477

Remark :
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Technical Management

N. Banongkit

Narumon Banchongkit
Supervisor
หมายเลขที่ ๖-323-๙-9445

Approved by

D. Chanchon

Dej Chanchon
Senior Manager
หมายเลขที่ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2364160
Date Received : Jun 07, 2023
Date Reported : Jun 14, 2023
Report Number : 2670555-2

Page 1 of 1

Sample Number	2364160-1
Sampled Date	Jun 07, 2023 11:00 AM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	Jun 07, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Flow rate	m ³ /hr	-	-	150	Flow meter	Rayong
Sulfate	mg/L	0.6	2	712	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Sampling By : Narurat thammassaro

Remark :
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บริเวณจุดระบายน้ำทิ้งหลังผ่าน Final Check Basin



Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138258
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant



TESTING
No.0042
Lot ID: 22147800

Date Received : Jan 11, 2023
Date Reported : Jan 18, 2023
Report Number : 2514352-1

Page 1 of 2

Sample Number : 22147800-1
Sampled Date : Jan 11, 2023 9:41 AM
Sample Description : Wastewater
Location : Effluent (S-32-104)
Date Analysis Commenced : Jan 11, 2023
Condition of Sample : Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B	Rayong
COD	mg/L	1.5	5	28	≤120	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	7.2	5.5-9.0	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	33.1	≤40	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	1068	≤5000 (1)	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	2.2	≤100	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	<5	≤50	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Technical Management

N. Banphit

Narumon Banphongkit
Supervisor

หมายเลขโทรศัพท์ ๖-323-๙-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager

หมายเลขโทรศัพท์ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138258
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant



TESTING
No.0042
Lot ID: 22147800

Date Received : Jan 11, 2023
Date Reported : Jan 18, 2023
Report Number : 2514352-1

Page 2 of 2

Sampling By : Tanasit Wongsachai หมายเลขโทรศัพท์ ๖-323-๙-9460

Remark :

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Technical Management

N. Banphit

Narumon Banphongkit
Supervisor

หมายเลขโทรศัพท์ ๖-323-๙-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager

หมายเลขโทรศัพท์ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138258
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 22147800
Date Received : Jan 11, 2023
Date Reported : Jan 18, 2023
Report Number : 2514352-2

Page 1 of 1

Sample Number : 22147800-1
Sampled Date : Jan 11, 2023 9:41 AM
Sample Description : Wastewater
Location : Effluent (S-32-104)
Date Analysis Commenced : Jan 11, 2023
Condition of Sample : Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Flow rate	m3/hr	*	*	99	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.6	2	301	No Standard	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Sampling By :

Remark :

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

Approved by

N. Banchookit

Narumon Banchookit
Supervisor

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138258
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 231799
Date Received : Feb 01, 2023
Date Reported : Feb 08, 2023
Report Number : 2536059-1

Page 1 of 2

Sample Number : 231799-1
Sampled Date : Feb 01, 2023 9:45 AM
Sample Description : Wastewater
Location : Effluent (S-32-104)
Date Analysis Commenced : Feb 01, 2023
Condition of Sample : Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B	Rayong
COD	mg/L	1.5	25	40	≤120	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	7.8	5.5-9.0	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	32.4	≤40	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	1500	≤5000 (1)	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	3.1	≤100	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	<5	≤50	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Technical Management

N. Banthongkit

Narumon Banchongkit
Supervisor
โทร: 09-099-9445

Approved by

D. Chongchon

Dej Chongchon
Senior Manager
โทร: 09-099-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138258
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 231799
Date Received : Feb 01, 2023
Date Reported : Feb 08, 2023
Report Number : 2536059-1

Page 2 of 2

Sampling By : Tanasit Wongsachai โทร: 09-099-9460

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

N. Banthongkit

Narumon Banchongkit
Supervisor
โทร: 09-099-9445

Approved by

D. Chongchon

Dej Chongchon
Senior Manager
โทร: 09-099-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138258
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 231799
Date Received : Feb 01, 2023
Date Reported : Feb 08, 2023
Report Number : 2536059-2

Page 1 of 1

Sample Number	231799-1
Sampled Date	Feb 01, 2023 9:45 AM
Sample Description	Wastewater
Location	Effluent (S-32-104)
Date Analysis Commenced	Feb 01, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Flow rate	m3/hr	-	-	95	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.6	2	929	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Sampling By : Tanasit Wongsachai

Remark :

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Approved by

N. Banchookit

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Analysis / Test Report



Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138258
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 2314677
Date Received : Mar 15, 2023
Date Reported : Mar 22, 2023
Report Number : 2562281-1

Page 1 of 2

Sample Number 2314677-1
Sampled Date Mar 15, 2023 9:45 AM
Sample Description Wastewater
Location Effluent (S-32-104)
Date Analysis Commenced Mar 15, 2023
Condition of Sample Contained in one amber glass bottle, one BOD bottle and three plastic bottles, sample containers comply to pretreatment + preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B	Rayong
COD	mg/L	1.5	25	<25	≤120	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	8.1	5.5-9.0	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	30.2	≤40	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	1024	≤5000 (1)	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	1.9	≤100	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	<5	≤50	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.
Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Technical Management

N. Banphit

Narumon Banchongkit
Supervisor
ทะเบียนเลขที่ 3-323-ก-9445

Approved by

D. Chuan

Dej Changchon
Senior Manager
ทะเบียนเลขที่ 3-323-ก-9442

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Analysis / Test Report



Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138258
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 2314677
Date Received : Mar 15, 2023
Date Reported : Mar 22, 2023
Report Number : 2562281-1

Page 2 of 2

Sampling By : Narunat thamasaro ทะเบียนเลขที่ 3-323-ก-9477

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

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Senior Manager
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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138258
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2314677
Date Received : Mar 15, 2023
Date Reported : Mar 22, 2023
Report Number : 2562281-2

Page 1 of 1

Sample Number	2314677-1						
Sampled Date	Mar 15, 2023 9:45 AM						
Sample Description	Wastewater						
Location	Effluent (S-32-104)						
Date Analysis Commenced	Mar 15, 2023						
Condition of Sample	Contained in one amber glass bottle, one BOD bottle and three plastic bottles, sample containers comply to pretreatment + preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Flow rate	m ³ /hr	-	-	88	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.6	2	346	No Standard	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO ₄ (E)	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Sampling By : Narunat thammassaro โทรณณเลขที่ ๖-323-๙-9477

Remark :

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

Technical Management

N. Banphit

Narumon Banphongkit
Supervisor

โทรณณเลขที่ ๖-323-๙-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager

โทรณณเลขที่ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000

P/O :

Project Name : Environmental Monitoring

Project Location : Caprolactam Plant



TESTING
No.0042

Lot ID: 2338003

Date Received : Apr 05, 2023

Date Reported : Apr 12, 2023

Report Number : 2613359-1

Page 1 of 2

Sample Number	2338003-1
Sampled Date	Apr 05, 2023 10:00 AM
Sample Description	Wastewater
Location	Effluent (S-32-104)
Date Analysis Commenced	Apr 05, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B	Rayong
COD	mg/L	1.5	25	46	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *	-	-	-	7.2	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	37.1	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	2780	≤5000 (1)	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	2.6	≤100	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	<5	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Technical Management

N. Banphit

Narumon Banchongkit
Supervisor

หมายเลขโทรศัพท์ ๖-323-๙-9445

Approved by

D. Chumma

Dej Changchon
Senior Manager

หมายเลขโทรศัพท์ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000

P/O :

Project Name : Environmental Monitoring

Project Location : Caprolactam Plant



TESTING
No.0042

Lot ID: 2338003

Date Received : Apr 05, 2023

Date Reported : Apr 12, 2023

Report Number : 2613359-1

Page 2 of 2

Sampling By : Tanasit Wongsachai หมายเลขโทรศัพท์ ๖-323-๙-9460

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

N. Banphit

Narumon Banchongkit
Supervisor

หมายเลขโทรศัพท์ ๖-323-๙-9445

Approved by

D. Chumma

Dej Changchon
Senior Manager

หมายเลขโทรศัพท์ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000

P/O :

Project Name : Environmental Monitoring

Project Location : Caprolactam Plant

Lot ID: 2338003

Date Received : Apr 05, 2023

Date Reported : Apr 12, 2023

Report Number : 2613359-2

Page 1 of 1

Sample Number	2338003-1
Sampled Date	Apr 05, 2023 10:00 AM
Sample Description	Wastewater
Location	Effluent (S-32-104)
Date Analysis Commenced	Apr 05, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Flow rate	m3/hr			75.0	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.6	2	963	No Standard	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Sampling By : Tanasit Wongsachai

Remark :

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

Approved by

N. Banongkit

Narumon Banongkit
Supervisor

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant



TESTING
No.0042
Lot ID: 2349574
Date Received : May 15, 2023
Date Reported : May 22, 2023
Report Number : 2638676-1

Page 1 of 2

Sample Number : 2349574-1
Sampled Date : May 15, 2023 9:50 AM
Sample Description : Wastewater
Location : Effluent (S-32-104)
Date Analysis Commenced : May 15, 2023
Condition of Sample : Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	*	2.0	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B	Rayong
COD	mg/L	1.5	25	33	≤120	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	*	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		*	*	7.7	5.5-9.0	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	*	*	30.4	≤40	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	*	5	912	≤5000 (1)	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	*	1.0	2.2	≤100	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	*	5	<5	≤50	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Sampling By : Tanasit Wongsachai โทร. 09-323-9442

Technical Management

N. Banphit

Narumon Banchongkit
Supervisor

โทร. 09-323-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager

โทร. 09-323-9442

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8325-21/EMAIL



Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant



TESTING
No.0042
Lot ID: 2349574
Date Received : May 15, 2023
Date Reported : May 22, 2023
Report Number : 2638676-1

Page 2 of 2

Remark :

- * LOD : Limit of Detection
- * "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- * Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
- * The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

N. Banphit

Narumon Banchongkit
Supervisor

โทร. 09-323-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager

โทร. 09-323-9442

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8325-21/EMAIL



Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2349574
Date Received : May 15, 2023
Date Reported : May 22, 2023
Report Number : 2638676-2

Page 1 of 1

Sample Number : 2349574-1
Sampled Date : May 15, 2023 9:50 AM
Sample Description : Wastewater
Location : Effluent (S-32-104)
Date Analysis Commenced : May 15, 2023
Condition of Sample : Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Flow rate	m3/hr	-	-	125	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.6	2	291	No Standard	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).

(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Sampling By : Tanasit Wongsachai

Remark :

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

Approved by

N. Banchookit

Narumon Banchookit
Supervisor

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 2364715
Date Received : Jun 07, 2023
Date Reported : Jun 14, 2023
Report Number : 2672011-1

Page 1 of 2

Sample Number	2364715-1
Sampled Date	Jun 07, 2023 11:15 AM
Sample Description	Wastewater
Location	Effluent (S-32-104)
Date Analysis Commenced	Jun 07, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOQ)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	*	2.0	2.9	≤20	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	40	≤120	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	*	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		*	*	8.3	5.5-9.0	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	*	*	29.5	≤40	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	*	5	1580	≤5000 (1)	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	*	1.0	8.7	≤100	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH ₃ (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	*	5	<5	≤50	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Technical Management

N. Banphit

Narumon Banchongkit
Supervisor
โทร: 09-323-9445

Approved by

D. Chongchon

Dej Changchon
Senior Manager
โทร: 09-323-9442

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8325-21/ EMAIL



Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 2364715
Date Received : Jun 07, 2023
Date Reported : Jun 14, 2023
Report Number : 2672011-1

Page 2 of 2

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.
Sampling By : Narumon thammassaro โทร: 09-323-9447

Remark :

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2364715
Date Received : Jun 07, 2023
Date Reported : Jun 14, 2023
Report Number : 2672011-2

Page 1 of 1

Sample Number 2364715-1
Sampled Date Jun 07, 2023 11:15 AM
Sample Description Wastewater
Location Effluent (S-32-104)
Date Analysis Commenced Jun 07, 2023
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Flow rate	m3/hr	-	-	96.00	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.5	2	733	No Standard	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Sampling By : Narunat thammaseero

Remark :

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

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ภาคผนวก ง.5

ใบรับรองผลการวิเคราะห์คุณภาพน้ำทะเล



Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138262
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0009

Lot ID: 2314705

Date Received : Mar 22, 2023

Date Reported : Mar 29, 2023

Report Number : 2562314-1

Page 1 of 6

Sample Number 2314705-1
Sampled Date Mar 22, 2023 11:10 AM
Sample Description Sea Water
Location ท่าเรือ TPI
Date Analysis Commenced Mar 22, 2023
Condition of Sample Contained in two glass vials, one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Aluminium *	mg/L	0.03	0.10	<0.10	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Mercury	mg/L	0.000003	0.00005	Not Detected	≤0.0001	In-house method : STM 05-007 based on United States Environmental Protection Agency, 2002, EPA Method 1631, Revision E	Bangkok
Microbiological Testing							
Total Coliform	MPN/100mL	-	-	<1.8	≤1000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing							
Ammonia Nitrogen *	mg/L	0.02	0.05	<0.05	≤0.95	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 (D)	Rayong
BOD (5 days at 20 Degree C) *	mg/L	-	2.0	<2.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B	Rayong
COD *	mg/L	-	40	50	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Depth *	m	-	-	11.10	No Standard	Water Level Meter	Bangkok
Dissolved Oxygen *	mg/L	-	0.1	5.7	>4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-O (C)	Rayong
Flow rate *	m3/hr	-	-	27733	No Standard	Flow meter	Rayong

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Savitree Noisangiam
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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138262
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0009
Lot ID: 2314705
Date Received : Mar 22, 2023
Date Reported : Mar 29, 2023
Report Number : 2562314-1

Page 2 of 6

Sample Number 2314705-1
Sampled Date Mar 22, 2023 11:10 AM
Sample Description Sea Water
Location ท่าเรือ TPI
Date Analysis Commenced Mar 22, 2023
Condition of Sample Contained in two glass vials, one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Oil & Grease *	mg/L	-	3	<3	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	8.1	7.0-8.5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Phosphate as P *	mg/L	0.002	0.005	Not Detected	≤0.045	In-house method based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-P (E)	Rayong
Salinity *	ppt	-	0.1	28.9	Change from lower salinity not more than 10%	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Rayong
Temperature *	Degree C	-	-	30.6	Change from natural condition not more than 2 degree C	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C *	mg/L	-	5	33600	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Suspended Solids Dried at 103-105 degree C *	mg/L	-	2	3	n/a	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong
Transparency *	m	-	-	4.0	Change from Natural condition not more than 10% of the lowest transparency	Visual Method	Rayong

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Approved by

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Sawitree Noisangiam
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Analysis / Test Report

TESTING

No.0009

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000

P/O : 4500138262

Project Name : Environmental Monitoring

Project Location : Caprolactam Plant

Lot ID: 2314705

Date Received : Mar 22, 2023

Date Reported : Mar 29, 2023

Report Number : 2562314-1

Page 3 of 6

Sample Number	2314705-1
Sampled Date	Mar 22, 2023 11:10 AM
Sample Description	Sea Water
Location	ท่าเรือ TPI
Date Analysis Commenced	Mar 22, 2023
Condition of Sample	Contained in two glass vials, one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Turbidity *	NTU	-	0.1	0.8	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2130 B	Rayong

Guideline : Notification of the National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Note : Velocity = 2.45 m/s

Sampling By : Wanlop Hunchainaow , Samart Khumphlee

Remark :

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138262
Project Name : Environmental Monitoring
Project Location: Caprolactam Plant

TESTING
No.0009

Lot ID: 2314705

Date Received : Mar 22, 2023

Date Reported : Mar 29, 2023

Report Number : 2562314-1

Page 4 of 6

Sample Number 2314705-2
Sampled Date Mar 22, 2023 11:30 AM
Sample Description Sea Water
Location ทะเลเปิดจุดที่ 1
Date Analysis Commenced Mar 22, 2023
Condition of Sample Contained in two glass vials, one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Aluminium *	mg/L	0.03	0.10	0.13	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Mercury	mg/L	0.000003	0.00005	<0.00005	≤0.0001	In-house method : STM 05-007 based on United States Environmental Protection Agency, 2002, EPA Method 1631, Revision E	Bangkok
Microbiological Testing							
Total Coliform	MPN/100mL	-	-	<1.8	≤1000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing							
Ammonia Nitrogen *	mg/L	0.02	0.05	<0.05	≤0.95	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 (D)	Rayong
BOD (5 days at 20 Degree C) *	mg/L	-	2.0	<2.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B	Rayong
COD *	mg/L	-	40	45	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Depth *	m	-	-	11.20	No Standard	Water Level Meter	Bangkok
Dissolved Oxygen *	mg/L	-	0.1	4.7	>4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-O (C)	Rayong
Flow rate *	m3/hr	-	-	13246	≤6.0	Flow meter	Rayong

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Analysis / Test Report

TESTING
No.0009

Lot ID: 2314705

Date Received : Mar 22, 2023

Date Reported : Mar 29, 2023

Report Number : 2562314-1

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000

P/O : 4500138262

Project Name : Environmental Monitoring

Project Location: Caprolactam Plant

Page 5 of 6

Sample Number 2314705-2
Sampled Date Mar 22, 2023 11:30 AM
Sample Description Sea Water
Location ทะเลเปิดจุดที่ 1
Date Analysis Commenced Mar 22, 2023
Condition of Sample Contained in two glass vials, one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Oil & Grease *	mg/L	-	3	<3	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	8.1	7.0-8.5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Phosphate as P *	mg/L	0.002	0.005	0.008	≤0.045	In-house method based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-P (E)	Rayong
Salinity *	ppt	-	0.1	29.7	Change from lower salinity not more than 10%	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Rayong
Temperature *	Degree C	-	-	30.7	Change from natural condition not more than 2 degree C	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C *	mg/L	-	5	33100	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Suspended Solids Dried at 103-105 degree C *	mg/L	-	2	<2	n/a	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong
Transparency *	m	-	-	3.9	Change from Natural condition not more than 10% of the lowest transparency	Visual Method	Rayong

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Sawitree N.

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138262
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0009
Lot ID: 2314705
Date Received : Mar 22, 2023
Date Reported : Mar 29, 2023
Report Number : 2562314-1

Page 6 of 6

Sample Number 2314705-2
Sampled Date Mar 22, 2023 11:30 AM
Sample Description Sea Water
Location ทะเลเปิดจุดที่ 1
Date Analysis Commenced Mar 22, 2023
Condition of Sample Contained in two glass vials, one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Turbidity *	NTU	-	0.1	1.3	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2130 B	Rayong

Guideline : Notification of the National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Note : Velocity = 1.46 m/s

Sampling By : Wanlop Hunchalaoow , Samart Khumphlee

Remark :

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

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138262
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2314953

Date Received : Mar 22, 2023
Date Reported : Mar 25, 2023
Report Number : 2563207-1

Page 7 of 12

Sample Number 2314953-7
Sampled Date Mar 22, 2023 7:30 AM
Sample Description Sea Water
Location ทะเลเปิดจุดที่ 1
Date Analysis Commenced Mar 23, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	<2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Wanlop Hunchainaow

Remark :

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

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N. Banchongkit

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138262
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2314953

Date Received : Mar 22, 2023
Date Reported : Mar 25, 2023
Report Number : 2563207-1

Page 8 of 12

Sample Number 2314953-8
Sampled Date Mar 22, 2023 9:30 AM
Sample Description Sea Water
Location ทะเลเปิดจุดที่ 1
Date Analysis Commenced Mar 23, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Wanlop Hunchainaow

Remark :

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138262
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2314953

Date Received : Mar 22, 2023
Date Reported : Mar 25, 2023
Report Number : 2563207-1

Page 9 of 12

Sample Number 2314953-9
Sampled Date Mar 22, 2023 11:30 AM
Sample Description Sea Water
Location ทะเลเปิดจุดที่ 1
Date Analysis Commenced Mar 23, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Wanlop Hunchainaow

Remark :

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138262
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2314953

Date Received : Mar 22, 2023
Date Reported : Mar 25, 2023
Report Number : 2563207-1

Page 10 of 12

Sample Number 2314953-10
Sampled Date Mar 22, 2023 1:30 PM
Sample Description Sea Water
Location ทะเลเปิดจุดที่ 1
Date Analysis Commenced Mar 23, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	<2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Wanlop Hunchainaow

Remark :

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

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138262
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2314953

Date Received : Mar 22, 2023
Date Reported : Mar 25, 2023
Report Number : 2563207-1

Page 11 of 12

Sample Number 2314953-11
Sampled Date Mar 22, 2023 3:30 PM
Sample Description Sea Water
Location ทะเลเปิดจุดที่ 1
Date Analysis Commenced Mar 23, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	9	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Wanlop Hunchainaow

Remark :

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

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138262
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2314953

Date Received : Mar 22, 2023
Date Reported : Mar 25, 2023
Report Number : 2563207-1

Page 12 of 12

Sample Number 2314953-12
Sampled Date Mar 22, 2023 5:30 PM
Sample Description Sea Water
Location ทะเลเบ็ดจุดที่ 1
Date Analysis Commenced Mar 23, 2023
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	<2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Wanlop Hunchainaow

Remark :

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

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ภาคผนวก ง.6

ใบรับรองผลการวิเคราะห์คุณภาพน้ำใต้ดิน



Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138262
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0009
Lot ID: 2314951
Date Received : Mar 22, 2023
Date Reported : Mar 29, 2023
Report Number : 2563198-1

Page 1 of 4

Sample Number	2314951-1							
Sampled Date	Mar 22, 2023 11:05 AM							
Sample Description	Groundwater							
Location	บ่อน้ำตื้นที่บ้านปลวกเกิด							
Date Analysis Commenced	Mar 22, 2023							
Condition of Sample	Contained in two glass vials and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)							
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Metals Testing								
Aluminium	mg/L	0.003	0.005	1.26	No Standard	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Iron	mg/L	0.003	0.005	12.7	≤0.5	≤1.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Mercury	mg/L	0.0001	0.0005	<0.0005	Not Detected	≤0.001	In-house method : STM 05-007 based on United States Environmental Protection Agency, 2002, EPA Method 1631, Revision E	Bangkok
Microbiological Testing								
Total Coliform	MPN/100mL	-	-	130000.0	<2.2	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing								
Chloride as Cl *	mg/L	0.06	0.2	46.3	≤250	≤600	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Nitrate as NO3	mg/L	0.3	1	Not Detected	≤45	≤45	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
pH at 25 degree C *		-	-	7.2	7.0-8.5	6.5-9.2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	33.7	No Standard	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong

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Approved by

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138262
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0009
Lot ID: 2314951
Date Received : Mar 22, 2023
Date Reported : Mar 29, 2023
Report Number : 2563198-1

Page 2 of 4

Sample Number	2314951-1							
Sampled Date	Mar 22, 2023 11:05 AM							
Sample Description	Groundwater							
Location	บ่อน้ำต้นที่บ้านปลวกเค็ด							
Date Analysis Commenced	Mar 22, 2023							
Condition of Sample	Contained in two glass vials and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)							
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Water Testing								
Total Dissolved Solids Dried at 180 degree C *	mg/L	-	5	226	≤600	≤1200	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Hardness as CaCO3 *	mg/L	-	1	112	≤300	≤500	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Rayong
Total Suspended Solids Dried at 103-105 degree C *	mg/L	-	5	66	No Standard	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Notification of the Ministry of Natural Resource and Environment, dated March 24, B.E.2551 (2008), published in the Royal Government Gazette, Vol. 125, Part 85 D, dated May 21, B.E.2551 (2008).
(1) Suitable Allowance, (2) Maximum allowable.

Sampling By : Tanasit Wongsachai ทะเบียนเลขที่ ว-323-จ-9460 , Panupong Manit ทะเบียนเลขที่ ว-204-จ-8600

Remark :

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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138262
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0009
Lot ID: 2314951
Date Received : Mar 22, 2023
Date Reported : Mar 29, 2023
Report Number : 2563198-1

Page 3 of 4

Sample Number 2314951-2
Sampled Date Mar 22, 2023 11:28 AM
Sample Description Groundwater
Location บ่อน้ำต้นที่บึงหน้าพิน ร.7
Date Analysis Commenced Mar 22, 2023
Condition of Sample Contained in two glass vials and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Metals Testing								
Aluminium	mg/L	0.003	0.005	0.03	No Standard	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Iron	mg/L	0.003	0.005	0.05	≤0.5	≤1.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Mercury	mg/L	0.0001	0.0005	Not Detected	Not Detected	≤0.001	In-house method : STM 05-007 based on United States Environmental Protection Agency, 2002, EPA Method 1631, Revision E	Bangkok
Microbiological Testing								
Total Coliform	MPN/100mL	-	-	1300.0	<2.2	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing								
Chloride as Cl *	mg/L	0.06	0.2	48.7	≤250	≤600	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Nitrate as NO3	mg/L	0.3	1	40.6	≤45	≤45	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
pH at 25 degree C *		-	-	7.8	7.0-8.5	6.5-9.2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	30.8	No Standard	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500138262
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0009
Lot ID: 2314951
Date Received : Mar 22, 2023
Date Reported : Mar 29, 2023
Report Number : 2563198-1

Page 4 of 4

Sample Number	2314951-2
Sampled Date	Mar 22, 2023 11:28 AM
Sample Description	Groundwater
Location	บ่อน้ำดื่มที่บ้านหน้าพัน ร.7
Date Analysis Commenced	Mar 22, 2023
Condition of Sample	Contained in two glass vials and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Water Testing								
Total Dissolved Solids Dried at 180 degree C *	mg/L	-	5	416	≤600	≤1200	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Hardness as CaCO ₃ *	mg/L	-	1	204	≤300	≤500	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Rayong
Total Suspended Solids Dried at 103-105 degree C *	mg/L	-	5	<5	No Standard	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Notification of the Ministry of Natural Resource and Environment, dated March 24, B.E.2551 (2008), published in the Royal Government Gazette, Vol. 125, Part 85 D, dated May 21, B.E.2551 (2008).
(1) Suitable Allowance, (2) Maximum allowable.

Sampling By : Tanasit Wongsachai ทะเบียนเลขที่ ว-323-จ-9460 , Panupong Mani ทะเบียนเลขที่ ว-204-จ-8600

Remark :

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- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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ภาคผนวก ง.7

ใบรับรองผลการวิเคราะห์คุณภาพสิ่งแวดล้อม
ด้านนิเวศวิทยาและการประมง



สถานีวิจัยประมงศรีราชา
101/12 หมู่ 9 ต. บางพระ
อ. ศรีราชา จ. ชลบุรี 20110
โทร./โทรสาร. (038) 311379

Client : UBE Chemicals (Asia) Public Company Limited

Address : 140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000

Project Name : Environmental Monitoring

Project Location : Caprolactam Plant

รายงานผลการวิเคราะห์แพลงก์ตอนพืช

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 22 มีนาคม 2566)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)	
	2314710-1	2314710-2
Division Cyanophyta		
Class Cyanophyceae		
Order Nostocales		
Family Oscillatoriaceae		
1. <i>Oscillatoria tenuis</i>	4,422,000	6,466,000
Family Nostocaceae		
2. <i>Pseudanabaena</i> sp.	54,000	-
Division Chromophyta		
Class Bacillariophyceae		
Order Biddulphiales		
Suborder Coscinodiscineae		
Family Thalassiosiraceae		
3. <i>Cyclotella striata</i>	67,000	98,000
4. <i>Lauderia annulata</i>	161,000	37,000

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 22 มีนาคม 2566)

(ต่อ)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)	
	2314710-1	2314710-2
5. <i>Skeletonema costatum</i>	1,675,000	781,000
6. <i>Thalassiosira subtilis</i>	54,000	-
Family Coscinodiscaceae		
7. <i>Coscinodiscus concinnus</i>	-	12,000
8. <i>Coscinodiscus granii</i>	13,000	183,000
9. <i>Coscinodiscus radiatus</i>	54,000	49,000
10. <i>Paralia sulcata</i>	13,000	-
Family Hemidiscaceae		
11. <i>Actinopterychus grundleri</i>	13,000	-
Suborder Biddulphiineae		
Family Hemiaulaceae		
12. <i>Proboscia alata</i>	27,000	49,000
13. <i>Pseudosolenia calcar-avis</i>	40,000	37,000
14. <i>Rhizosolenia imbricata</i>	40,000	12,000
15. <i>Rhizosolenia robusta</i>	13,000	-
16. <i>Rhizosolenia</i> sp.	67,000	-
17. <i>Rhizosolenia striata</i>	-	12,000
Suborder Rhizosoleniineae		
Family Rhizosoleniaceae		
18. <i>Cerataulina bicornis</i>	268,000	37,000
19. <i>Cerataulina pelagica</i>	2,680,000	2,806,000
20. <i>Eucampia zodiacus</i>	13,000	37,000
21. <i>Hemiaulus hauckii</i>	13,000	-
Family Chaetoceraceae		
22. <i>Bacteriastrum furcatum</i>	13,000	-
23. <i>Chaetoceros affinis</i>	777,000	37,000
24. <i>Chaetoceros atlanticus</i>	40,000	-

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 22 มีนาคม 2566)

(ต่อ)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อดูกบาศก์เมตร)	
	2314710-1	2314710-2
25. <i>Chaetoceros compressus</i>	54,000	24,000
26. <i>Chaetoceros curvisetus</i>	670,000	293,000
27. <i>Chaetoceros didymus</i>	13,000	37,000
28. <i>Chaetoceros diversus</i>	54,000	342,000
29. <i>Chaetoceros laciniosus</i>	107,000	134,000
30. <i>Chaetoceros lorenzianus</i>	13,000	-
31. <i>Chaetoceros mitra</i>	-	12,000
32. <i>Chaetoceros pseudocurvisetus</i>	27,000	-
33. <i>Chaetoceros radicans</i>	27,000	37,000
34. <i>Chaetoceros rostratus</i>	-	12,000
35. <i>Chaetoceros</i> sp.	804,000	110,000
36. <i>Chaetoceros teres</i>	-	24,000
Family Lithodesmaceae		
37. <i>Helicotheca tamesis</i>	27,000	24,000
Family Eupodiscaceae		
38. <i>Odontella mobiliensis</i>	13,000	-
39. <i>Odontella sinensis</i>	54,000	37,000
Order Bacillariales		
Suborder Fragilariineae		
Family Thalassionemataceae		
40. <i>Thalassionema frauenfeldii</i>	54,000	244,000
41. <i>Thalassionema nitzschioides</i>	27,000	24,000
Suborder Bacillariineae		
Family Naviculaceae		
42. <i>Pleurosigma aestuarii</i>	40,000	-
43. <i>Pleurosigma angulatum</i>	-	37,000
44. <i>Pleurosigma directum</i>	-	24,000

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 22 มีนาคม 2566)

(ต่อ)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)	
	2314710-1	2314710-2
Family Bacillariaceae		
45. <i>Nitzschia sigma</i>	-	12,000
46. <i>Nitzschia</i> sp.	938,000	281,000
47. <i>Pseudo-nitzschia pungens</i>	-	49,000
48. <i>Pseudo-nitzschia</i> sp.	1,608,000	195,000
Class Dictyochophyceae		
Order Dictyochales		
Family Dictyochophyceae		
49. <i>Dictyocha fibula</i>	13,000	37,000
Class Dinophyceae		
Order Prorocentrales		
Family Prorocentraceae		
50. <i>Prorocentrum micans</i>	40,000	146,000
Order Dinophysiales		
Family Dinophysaceae		
51. <i>Phalacroma rudgei</i>	-	12,000
Order Gonyaulacales		
Family Ceratiaceae		
52. <i>Ceratium furca</i>	121,000	85,000
53. <i>Ceratium fusus</i>	67,000	61,000
Family GoniDOMACEAE		
54. <i>Gonyaulax diegensis</i>	-	24,000
55. <i>Gonyaulax</i> sp.	40,000	12,000
Order Peridiniales		
Family Protoperidiniaceae		
56. <i>Protoperidinium conicum</i>	13,000	-
57. <i>Protoperidinium curtipes</i>	-	24,000

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 22 มีนาคม 2566)

(ต่อ)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)	
	2314710-1	2314710-2
58. <i>Protoperidinium latispinum</i>	-	12,000
59. <i>Protoperidinium pellucidum</i>	13,000	24,000
60. <i>Protoperidinium</i> sp.	-	12,000
ชนิดแพลงก์ตอนพืช	46	46
ปริมาณแพลงก์ตอนพืช	15,354,000	13,054,000
ดัชนีความหลากหลายแพลงก์ตอนพืช	2.3822	1.9253
ดัชนีความสม่ำเสมอแพลงก์ตอนพืช	0.6222	0.5029


Sample Location :

1. สถานี 2314710-1 : ท่าเรือ TPI
2. สถานี 2314710-2 : ทะเลเปิดจุดที่ 1

Condition of Sample : contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)



(นางสาวกนกวรรณ ขวาค่อน)
ผู้วิเคราะห์



(นายอลงกต อินทรชาติ)
หัวหน้าสถานีวิจัยประมงศรีราชา



สถานีวิจัยประมงศรีราชา
101/12 หมู่ 9 ต. บางพระ
อ. ศรีราชา จ. ชลบุรี 20110
โทร./โทรสาร. (038) 311379

Client : UBE Chemicals (Asia) Public Company Limited

Address : 140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000

Project Name : Environmental Monitoring

Project Location : Caprolactam Plant

รายงานผลการวิเคราะห์แพลงก์ตอนสัตว์

ตาราง ผลการวิเคราะห์แพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 22 มีนาคม 2566)

ชนิดแพลงก์ตอนสัตว์	ปริมาณแพลงก์ตอนสัตว์ (หน่วยต่อลูกบาศก์เมตร)	
	2314710-1	2314710-2
Phylum Protozoa		
Subphylum Ciliophora		
Class Ciliata		
Subclass Spirotricha		
Order Tintinnida		
Family Cyttarocylidae		
1. <i>Favella panamensis</i>	-	11,000
Family Petalotrichidae		
2. <i>Metacylis pithos</i>	-	11,000
Subclass Peritricha		
Order Peritrichida		
3. <i>Vorticella</i> sp.	14,000	-

ตาราง ผลการวิเคราะห์แพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 22 มีนาคม 2566)

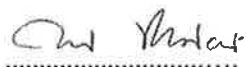
(ต่อ)

ชนิดแพลงก์ตอนสัตว์	ปริมาณแพลงก์ตอนสัตว์ (หน่วยต่อลูกบาศก์เมตร)	
	2314710-1	2314710-2
Phylum Arthropoda		
Class Crustacea		
Subclass Copepoda		
4. Copepod nauplii	72,000	95,000
Order Calanoida		
5. Calanoid copepod	-	11,000
Phylum Chordata		
Subphylum Urochordata		
Class Larvacea		
Family Oikopleuridae		
6. <i>Oikopleura</i> sp.	29,000	21,000
ชนิดแพลงก์ตอนสัตว์	3	5
ปริมาณแพลงก์ตอนสัตว์	115,000	149,000
ดัชนีความหลากหลายแพลงก์ตอนสัตว์	0.8969	1.1403
ดัชนีความสม่ำเสมอแพลงก์ตอนสัตว์	0.8164	0.7085

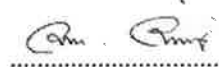
Sample Location :

1. สถานี 2314710-1 : ท่าเรือ TPI
2. สถานี 2314710-2 : ทะเลเปิดจุดที่ 1

Condition of Sample : contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)



(นางสาวกนกวรรณ ขาวค่อน)
ผู้วิเคราะห์



(นายอลงกต อินทรชาติ)
หัวหน้าสถานีวิจัยประมงศรีราชา



สถานีวิจัยประมงศรีราชา
101/12 หมู่ 9 ต. บางพระ
อ. ศรีราชา จ. ชลบุรี 20110
โทร./โทรสาร. (038) 311379

Client : UBE Chemicals (Asia) Public Company Limited

Address : 140/6 Moo 4 Tambol Tapong, Amphur Muang, Rayong, Thailand, 21000

Project name : Environmental Monitoring

Project Location : Caprolactam Plant

รายงานผลการวิเคราะห์สัตว์หน้าดิน

ตาราง ผลการวิเคราะห์สัตว์หน้าดิน (เก็บตัวอย่างวันที่ 22 มีนาคม 2566)

ชนิดสัตว์หน้าดิน	ปริมาณสัตว์หน้าดิน (ตัว/ตารางเมตร)	
	2314708-1	2314708-2
Phylum Annelida		
Class Polychaeta		
Order Capitellida		
Family Capitellidae		
<i>Heteromastus</i> sp. (ไส้เดือนทะเล)	30	-
Order Phyllodocida		
Family Nereididae		
<i>Nereis</i> sp. (แม่เพรียง)	15	15
Order Spionida		
Family Magelonidae		
<i>Magelona</i> sp. (ไส้เดือนทะเล)	15	15
Family Spionidae		
<i>Prionospio</i> sp. (ไส้เดือนทะเล)	30	15

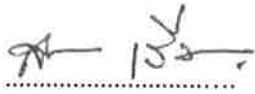
ตาราง ผลการวิเคราะห์สัตว์หน้าดิน (เก็บตัวอย่างวันที่ 22 มีนาคม 2566) (ต่อ)

ชนิดสัตว์หน้าดิน	ปริมาณสัตว์หน้าดิน (ตัว/ตารางเมตร)	
	2314708-1	2314708-2
Order Terebellida Family Terebellidae <i>Lanice</i> sp. (ไส้เดือนทะเล) <i>Nicolea</i> sp. (ไส้เดือนทะเล)	15 -	- 15
Phylum Arthropoda Class Malacostraca Order Amphipoda Family Ampeliscaidae <i>Ampelisca</i> sp. (แอมฟิพอด) Order Decapoda Family Penaeidae <i>Metapenaeus</i> sp. (กุ้งชนิดหนึ่ง)	15 -	- 15
Phylum Mollusca Class Bivalvia Order Venerida Family Tellinidae <i>Tellina</i> sp. (หอยสองฝาชนิดหนึ่ง)	30	-
Phylum Chordata Class Leptocardii Order Amphioxiformes Family Branchiostomatidae <i>Branchiostoma</i> sp. (แอมฟิออกซัส)	-	30
ชนิดสัตว์หน้าดิน	7	6
ปริมาณสัตว์หน้าดิน	150	105
ค่าดัชนีความหลากหลายสัตว์หน้าดิน	1.8867	1.7479

Sample Location : 1. สถานี 2314708-1 : ท่าเรือ TPI

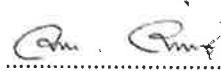
2. สถานี 2314708-2 : ทะเลเปิดจุดที่ 1

Condition of Sample : contained in one plastic zip bag



(นายสาโรจน์ เร่มคำริห์)

ผู้วิเคราะห์



(นายอลงกต อินทรชาติ)

หัวหน้าสถานีวิจัยประมงศรีราชา

ภาคผนวก ง.8

ใบรับรองผลการตรวจวัดสารเบนซีน ภายในสถานประกอบการ



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

ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 0113/66
For	: UBE Chemicals (Asia) Public Company Limited	Sampling Date	: 25/01/2023
Address	: 140/6 Moo 4 , Ta-Phong Sub-District , Muang District , Rayong Province 21000	Received Date	: 30/01/2023
Tel/Fax	: 0-3892-8700 / 0-3892-8965	Test Date	: 31/01/2023
		Report Date	: 04/02/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sorbent Adsorption
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
1320-V27	25/01/2023	Benzene	NIOSH 1501/GC FID	< 0.02	ND	1
	08:34-12:34					
1320-P17	25/01/2023	Benzene	NIOSH 1501/GC FID	< 0.02	0.12	1
	08:33-12:33					

Analyst By : Sudaporn Soonthorn
(Miss Sudaporn Soonthorn)

Approved By : Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
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 the Department of Labour Protection and Welfare, B.E.2563 (2020).

4. ND = non-detectable.



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

ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 0773/66
For	: UBE Chemicals (Asia) Public Company Limited	Sampling Date	: 15/05/2023
Address	: 140/6 Moo 4, Ta-Phong Sub-District, Muang District, Rayong Province 21000	Received Date	: 17/05/2023
Tel/Fax	: 0-3892-8700 / 0-3892-8965	Test Date	: 22/05/2023
		Report Date	: 26/05/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sorbent Adsorption
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
1320-V27	15/05/2023	Benzene	NIOSH 1501/GC FID	< 0.02	ND	I
	10:42-12:55					
1320-P17	15/05/2023	Benzene	NIOSH 1501/GC FID	< 0.02	ND	I
	10:43-12:52					

Analyst By :

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Approved By :

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

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 the Department of Labour Protection and Welfare, B.E.2560 (2017).

4. ND = non-detectable.

ภาคผนวก จ

ใบแสดงการสอบเทียบเครื่องมือ



SO2 Analyzer Performance Test

Date : 9 Jan 23

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

Analyzer Type :	SO2
Brand :	API
Model :	100A
S/N :	347

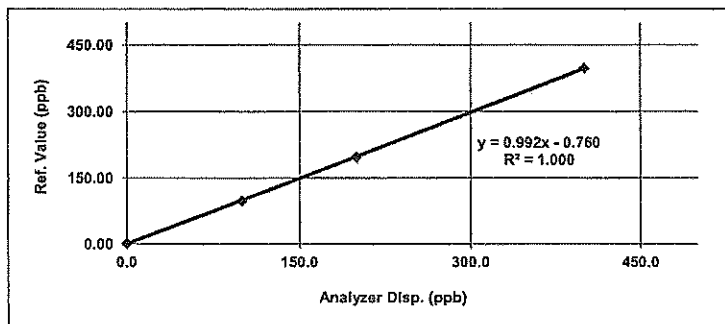
Dilutor :	Teledyne T 700 1367
Zero Air :	M701 S/N 1039
STD GAS :	EB0108319

Single Point Calibration

Supply Gas	Ref Value	Analyzer Disp.	Zero-Span Error %	Slope - Offset
Zero	0.00	0.60	-	-
Span	450.00	447.30	-	0.992

MultiPoint Calibration

Ref Value	Analyzer Disp.	Output Difference		
		Diff	Percent Diff	Percent Diff abs.
0.0	0.60	0.60	-	-
100.0	97.30	-2.70	-2.70	2.70
200.0	196.60	-3.40	-1.70	1.70
400.0	396.80	-3.20	-0.80	0.80
		Average Diff (%)		1.73

Calibrated by : RoburApproved by : Wattaya K

Analyzer Performance Test

Date : 22 Jan 21

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

Analyzer Type :	Co2
Brand :	Teledyne
Model :	360E
S/N :	143

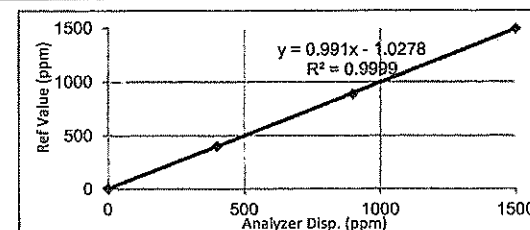
Dilutor :	Teledyne T 700 1367
Zero Air :	M701 S/N 1039
STD GAS :	S472767

Single Point Calibration

Supply Gas	Ref Value	Analyzer Disp.	Zero-Span Error %	Slope - Offset
Zero	0.00	1.00	-	-
Span	1500.00	1490.00	-0.67	0.993

MultiPoint Calibration

Ref Value	Analyzer Disp.	Output Difference		
		Diff	Percent Diff	Percent Diff abs.
0.0	2.00	2.00	-	-
400.0	395.30	-4.70	-1.18	1.18
900.0	883.50	-16.50	-1.83	1.83
1500.0	1490.00	-10.00	-0.67	0.67
		Average Diff (%)		1.23



Transfer Function Test results :

$$Y = 0.991x - 1.0278$$

Calibrated by : Wattaya KApproved by : Wattaya K



SO2 Analyzer Performance Test

Date : 9 Jan 23

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

Analyzer Type :	SO2
Brand :	API
Model :	100A
S/N :	1715

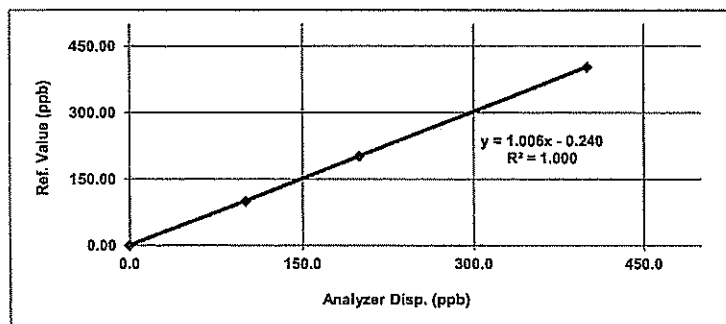
Dilutor :	Teledyne T 700 1367
Zero Air :	M701 S/N 1039
STD GAS :	EB0108319

Single Point Calibration

Supply Gas	Ref Value	Analyzer Disp.	Zero-Span Error %	Slope - Offset
Zero	0.00	0.20	-	-
Span	450.00	449.90	-	1.005

MultiPoint Calibration

Ref Value	Analyzer Disp.	Output Difference		
		Diff	Percent Diff	Percent Diff abs.
0.0	0.20	0.20	-	-
100.0	99.50	-0.50	-0.50	0.50
200.0	201.30	1.30	0.65	0.65
400.0	402.10	2.10	0.53	0.53
		Average Diff (%)		0.56

Calibrated by : PanlaniApproved by : W. Haya

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 :	2387

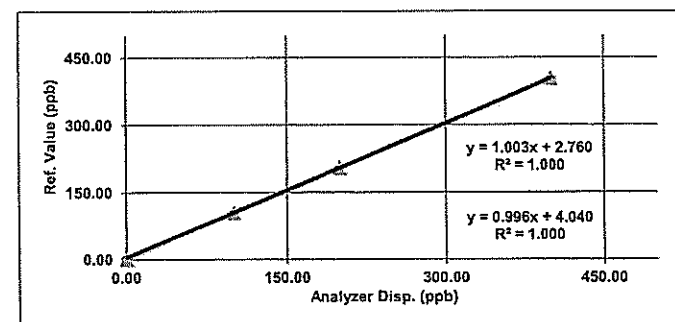
Dilutor :	Teledyne 700E 587
Zero Air :	M701 S/N 1044
STD GAS :	EB0108319

NOX-NO Single Point Calibration

Supply Gas	Ref Value	NOX Analyzer Disp.	NO Analyzer Disp.	Slope - Offset
Zero	0.0	2.5	1.1	1.003
Span	450.0	453.5	452.20	0.996

NOX-NO MultiPoint Calibration

Ref Value	NOX Analyzer Disp.	NO Analyzer Disp.	Output Difference	
			NOx Percent Diff abs.	NO Percent Diff abs.
0.00	2.50	1.10	-	-
100.00	105.30	104.90	5.3	4.9
200.00	204.00	203.90	2.0	2.0
400.00	401.90	403.20	0.5	0.8
		Average Diff (%)	2.6	2.6

Calibrated by : PanlaniApproved by : W. Haya



CONTROL UNIT CALIBRATION

(Metric units, mm)

Date 10 Jan 23

Initial Final Average

Barometric press, Pb 757 757 757 mmHg

Dry Gas Meter Data

Console No. M50-08

Metering System ID

DGM Number 971415

DGM Model ES-110

Calibrated by : Montri P.

Reference Dry Gas Meter Data

Serial No. 358794

Model S110

Correction factor (Yr) 1.0079

Last Calibration Date 9 Dec 22

Orifice manometer setting, ΔH mm H2O	Ref. DGM Volume V _r Liters	DGM Volume V _m Liters	Temperature (°C)				Time Θ 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	98.5	25	25	24	24.5	8.43	1.0203	40.4451
25.0	100.0	100.1	25	25	24	24.5	6.08	1.0028	42.0902
50.0	100.0	99.2	25	25	24	24.5	4.33	1.0095	42.7141
76.0	100.2	98.7	25	25	24	24.5	3.57	1.0141	43.8087
100.0	100.0	98.7	25	25	24	24.5	3.57	1.0097	44.6653
150.0	100.1	96.8	25	25	24	24.5	2.57	1.0256	44.8662
Average								1.0137	43.0983

Approved by : Ladawan W.



PITOT TUBE CALIBRATION

Calibration Location: SECOT

Calibration Date : 06-01-2023

Calibrated duct No.: 1

Calibration Standard Pitot tube data

Pitot No. : Std-01

Coefficient (Cp) : 1

Type S Pitot No. : PS20-02

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	7.50	10.75	0.8353	0.0032
2	7.50	11.00	0.8257	-0.0064
3	7.50	10.75	0.8353	0.0032

C_{P(A),avg} 0.8321

B Side Calibration

Run No.	ΔPstd (mm H ₂ O)	ΔPs (mm H ₂ O)	Cp(s)	Deviation, δ Cp(s) - Cp(B)
1	7.50	10.75	0.8353	-0.0033
2	7.50	10.50	0.8452	0.0066
3	7.50	10.75	0.8353	-0.0033

C_{P(B),avg} 0.8386

|CP(A)-CP(B)| = 0.0065

C_{P(Avg)} = 0.8353

Approved by : Ladawan W.

*** 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 10 Jan 23

Initial Final Average
Barometric press, Pb 757 757 757 mmHg

Dry Gas Meter Data

Console No. M50-07

Serial No. 358794

Metering System ID

Model S110

DGM Number 90331

Correction factor (Yr) 1.0079

DGM Model MST-C2-1

Last Calibration Date 9 Dec 22

Calibrated by Montri P.

Reference Dry Gas Meter Data

Orifice manometer setting, ΔH mm H2O	Ref. DGM Volume V _r Liters	DGM Volume V _m Liters	Temperature (°C)				Time Θ 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	100.1	101.7	25	25	24	24.5	8.93	0.9884	45.3322
25.0	99.9	100.6	25	25	24	24.5	6.43	0.9964	47.1706
50.0	100.0	100.9	25	25	24	24.5	4.62	0.9922	48.4861
76.0	100.3	100.6	25	25	24	24.5	3.72	0.9955	47.5272
100.0	100.1	99.7	25	25	24	24.5	3.72	1.0006	46.9823
150.0	100.3	100.0	25	25	24	24.5	2.70	0.9948	49.4744
Average								0.9947	47.4955

Approved by : Ladawan W.



PITOT TUBE CALIBRATION

Calibration Location: SECOT

Calibration Date : 06-01-2023

Calibrated duct No.: 1

Calibration Standard Pitot tube data

Pitot No. : Std-01

Coefficient (Cp) : 1

Type S Pitot No. : PS20-01

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	7.50	10.75	0.8353	-0.0033
2	7.50	10.50	0.8452	0.0066
3	7.50	10.75	0.8353	-0.0033

C_{P(A)},avg 0.8386

B Side Calibration

Run No.	ΔPstd (mm H ₂ O)	ΔPs (mm H ₂ O)	Cp(s)	Deviation, δ Cp(s) - Cp(B)
1	7.50	10.50	0.8452	0.0033
2	7.50	10.75	0.8353	-0.0066
3	7.50	10.50	0.8452	0.0033

C_{P(B)},avg 0.8419

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

C_{P(Avg)} = 0.8402

Approved by : Ladawan W.

*** 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 ***



SOUND LEVEL METER CALIBRATION

Calibration Location: SECOT

Calibration Date: Jan 23, 23

SOUND LEVEL CALIBRATOR

Brand	Model	Serial No.	Calibrated (dB)	Frequency (Hz)
RION	NC-74	34283648	94.0	1000

No.	Brand	Model	Serial No.	Microphone Serial No.	SLM Reading (dB)	dB Adjust
13	RION	NL-21	00521703	85215	93.8	0.2
34	RION	NL-21	00187489	117711	93.7	0.3
66	RION	NL-21	00487723	118993	93.6	0.4

Calibrated by : Ladawan W. Approved by : Preeda S.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

ISO 9001:2015
CALIBRATION 0119

Certificate No.: CP20230033EA

Operation No.: CP2023010024

Certificate of Calibration

Equipment: Sound Calibrator

Manufacturer: RION

Model/Type: NC-74

Serial No.: 34283648

ID No.: -

Customer: SECOT Co., Ltd.

Address: 239 Rimklongprapa Rd., Bangsue,
Bangkok 10800 Thailand

Received Date: 10 January 2023

Calibrated Date: 13 January 2023

Issued Date: 16 January 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.

Certificate No.: CP20230033EA

Calibration Report

Equipment: Sound Calibrator
Manufacturer: RION
Model/Type: NC-74
Serial No.: 34283648
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	2661000	AA-1020-22	14 June 2023
2) Waveform Generator	33511B	MY52302264	CK20220058EA	19 June 2023
3) Audio Analyzing DMM	2015-P	4079144	E1U221042	16 March 2023
4) Pressure humidity and Temperature Transmitter	PTU301	F0640002	CL1-P220024 CD20220165EA	17 March 2023 24 July 2023

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 Frequency (Hz)	Specified Sound Pressure level (dB)	Measured value (dB)	Deviated value ^[1] (dB)	Acceptance limit ^[3] (dB)
1000	94	94.24	0.24	±0.25

2. Function : Frequency

Normal Sound Pressure level (dB)	Specified Frequency (Hz)	Measured value (Hz)	Deviated value ^[2] (%)	Acceptance limit ^[3] (%)
94	1000	1003.0	0.3	±0.7

Certificate No.: CP20230033EA

Calibration Report

3. Function : Total distortion + noise

Normal Sound Pressure level (dB)	Normal Frequency (Hz)	Measured value ^[4] (%)	Acceptance limit ^[5] (%)
94	1000	1.3	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. Using the 1/2-inch microphone adaptor NC-74-002.

2. Acceptance limit was IEC 60942:2017 Class 1.

3. The coverage factor $k = 2.00$

-- End of Report --



SOUND LEVEL METER CALIBRATION

Calibration Location: SECOT

Calibration Date: Jan 25, 23

SOUND LEVEL CALIBRATOR

Brand	Model	Serial No.	Calibrated (dB)	Frequency (Hz)		
CASELLA	CEL120/2	2839225	114.0	1000		
No.	Brand	Model	Serial No.	Microphone Serial No.	SLM Reading (dB)	dB Adjust
4	CASELLA	CEL-246	1443817	1443817	114.0	0.0
6	CASELLA	CEL-246	3173108	3173108	114.0	0.0
8	CASELLA	CEL-246	3173135	3173135	114.0	0.0
10	CASELLA	CEL-246	3173161	3173161	114.0	0.0
12	CASELLA	CEL-246	3173303	3173303	114.0	0.0

Calibrated by :

Ladawan W.

Approved by :

Suk Sittichai


 ELECTRICAL AND ELECTRONICS INSTITUTE
 FOUNDATION FOR INDUSTRIAL DEVELOPMENT

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Phraek Sa, Mueang Samut Prakan, Samut Prakan 10280

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



Certificate No.: CP20230032EA

Operation No.: CP2023010023

Certificate of Calibration

Equipment: Sound Calibrator

Manufacturer: CASELLA

Model/Type: CEL-120/2

Serial No.: 2839225

ID No.: -

Customer: SECOT Co., Ltd.

Address: 239 Rimklongprapa Rd., Bangsue,
Bangkok 10800 Thailand

Received Date: 10 January 2023

Calibrated Date: 13 January 2023

Issued Date: 16 January 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.

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Certificate No.: CP20230032EA

Calibration Report

Equipment: Sound Calibrator
Manufacturer: CASELLA
Model/Type: CEL-120/2
Serial No.: 2839225
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	2661000	AA-1020-22	14 June 2023
2) Waveform Generator	33511B	MY52302264	CK20220058EA	19 June 2023
3) Audio Analyzing DMM	2015-P	4079144	E1U221042	16 March 2023
4) Pressure humidity and Temperature Transmitter	PTU301	F0640002	CL1-P220024 CD20220165EA	17 March 2023 24 July 2023

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	114	114.25	0.25	±0.40

2. Function : Frequency

Normal Sound	Specified Frequency	Measured value	Deviated value ^[2]	Acceptance limit ^[3]
Pressure level (dB)	(Hz)	(Hz)	(%)	(%)
114	1000	1000.0	0.0	±1.7

Certificate No.: CP20230032EA

Calibration Report

3. Function : Total distortion + noise

Normal	Normal	Measured value ^[4]	Acceptance limit ^[5]
Sound Pressure level (dB)	Frequency (Hz)	(%)	(%)
114	1000	0.2	3.0

Uncertainty of measurement

Function	Uncertainty	Maximum-permitted uncertainty of measurement
Sound pressure level	0.10 dB	0.35 dB
Frequency	0.10 %	0.20 %
Total distortion + noise	0.40 %	1.00 %

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 2.

2. The coverage factor $k = 2.00$

-- End of Report --



SOUND LEVEL METER CALIBRATION

Calibration Location: SECOT

Calibration Date: Feb 28, 23

SOUND LEVEL CALIBRATOR

Brand	Model	Serial No.	Calibrated (dB)	Frequency (Hz)		
CASELLA	CEL120/2	2839225	114.0	1000		
No.	Brand	Model	Serial No.	Microphone Serial No.	SLM Reading (dB)	dB Adjust
25	CASELLA	CEL-246	3173350	3173350	114.0	0.0

Calibrated by : Ladawan W. Approved by : Sukh Suthmanon



NOISE DOSE METER CALIBRATION

Calibration Location: SECOT

Calibration Date: Jun 22, 23

ACOUSTIC CALIBRATOR

Brand	Model	Serial No.	Calibrated (dB)	Frequency (Hz)		
PULSAR	22R	79781	114.00	1000		
No.	Brand	Model	Serial No.	Reading (dB)	dB Adjust	
1	Pulsar	22	PB632	114.2	-0.2	
2	Pulsar	22	PB636	114.1	-0.1	
3	Pulsar	22	PB643	113.7	0.3	

Calibrated by : [Signature] Approved by : Sukh Suthmanon

CERTIFICATE OF CALIBRATION

ISSUED BY Noisemeters

DATE OF ISSUE 28 April 2023 CERTIFICATE NUMBER 191319

NoiseMeters
Acoustic House
Bridlington Road
Hunmanby
YO14 0PH
United Kingdom
www.noisemeters.com

NoiseMeters

Page 1 of 1

Test engineer:
Rebecca Thomas
Electronically signed:

doseBadge Reader

Instrument

Manufacturer: Pulsar Instruments Plc Serial Number: 79781
Model Number: Model 22R Notes:

Calibration Procedure

The tests were carried out in accordance with the requirements of IEC 60942:2003 where applicable.

Date of Calibration: 26 April 2023

Functionality Results

Function	Result
Keypad	Pass
Battery Power	Pass
Display	Pass
Communication	Pass
2 way IR link	Pass
Clock	Pass

Calibration Results

	Level (dB)	Frequency (Hz)	Distortion (% THD + Noise)
Result	114.00	999.0	0.47
Uncertainty	± 0.11	± 0.14	± 0.10
Tolerances	± 0.60	± 2.00	± 4.00

No adjustments were made during this calibration.

Environmental Conditions

Pressure: 101.00 kPa
Temperature: 22.4 °C
Humidity: 33.7 %

Notes

This certificate provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. The results within this certificate relate only to the items calibrated. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%.



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Mechanical Engineering Standards Laboratory Soi 1, Bangpoo Industrial Estate, Muang, Samutprakan 10280, Thailand.

Request No.23-66/0270

MTC.No.23-66/0270-01

Number of page(s) 2

CALIBRATION CERTIFICATE

Nomenclature : DRYCAL

Manufacturer : Mesa Labs

Serial No.: 114069

Model : Defender 520-H

Scale range : 300 ml/min to 30,000 ml/min

Subdivision : (0.0001, 0.001) L/min

Submitted by : SECOT CO.,LTD.

239, Rimklongprapa Road, Bangsue,

Bangkok 10800, Thailand.

Received date : 23 February 2023 Condition of measured item : Normal

Calibration date : 7 March 2023

Standard :

Standard	Certificate No.	Date due	Traceability
RTD Thermometer	PSL-T 643/65	1-Jun-24	TISTR
Primary Flow Calibrator S/N 119521	MW-0012-21	31-Mar-23	NIMT
Primary Flow Calibrator S/N 119216	MW-0013-21	25-Mar-23	NIMT

Calibrated by : Terasak Panna

(Mr.Terasak Panna)

Approved by :

(Ms.Kirana Luanghirun)

Director

Mechanical Engineering Standards Laboratory

Ref. 2013266022300798001

Issued Date 13 March 2023

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FM.8LMTC.002 Rev.4

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Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Mechanical Engineering Standards Laboratory Soi 1, Bangpoo Industrial Estate, Muang, Samutprakan 10280, Thailand.

Request No.23-66/0270

2/2

MTC.No.23-66/0270-01

Calibration point : (1.5, 5.0, 10, 15, 25) L/min

Ambient condition : Temperature (23 ± 3) °C , Relative humidity (55 ± 15) %

Atmospheric pressure (1010±13) hPa

Calibration method : The flowmeter (UUC) was calibrated by comparison method with standard flowmeter according to CP-370.01.

The reported value is the value that converted to value at reference condition within pressure and temperature of the actual gas entering the UUC

Measurement data :

UUC Value (L/min)	Standard Value (L/min)	Temperature (°C)	Pressure (hPa)	Deviation (%)	Uncertainty (%)
1.5038	1.5112	24.852	1008.50	-0.49	0.86
5.0113	5.0314	24.854	1008.82	-0.40	0.86
10.077	10.058	24.851	1009.71	+0.19	0.96
15.071	15.038	24.900	1010.91	+0.22	0.96
25.077	24.983	24.914	1014.55	+0.38	0.96

The reported expanded uncertainties are based on standard uncertainties multiplied by a coverage factor $k=2$, which provides a level of confidence of approximately 95%.

The end of calibration certificate.

T-6.

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FM.BLMTC.002 Rev.4

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Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th



ELECTRICAL AND ELECTRONICS INSTITUTE
FOUNDATION FOR INDUSTRIAL DEVELOPMENT

Certificate No.: CP20220368EA

Calibration Report

3. Function : Total distortion + noise

Normal Sound Pressure level (dB)	Normal Frequency (Hz)	Measured value ^[4] (%)	Acceptance limit ^[5] (%)
94	1000	0.9	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. The coverage factor $k = 2.00$

-- End of Report --

CERTIFICATE OF CALIBRATION

ISSUED BY Noisemeters

DATE OF ISSUE 16 March 2023 CERTIFICATE NUMBER 189327

NoiseMeters

NoiseMeters
Acoustic House
Bridlington Road
Hunmanby
YO14 0PH
United Kingdom
www.noisemeters.com

Page 1 of 1

Test engineer:
Nigel Smith
Electronically signed:



doseBadge Reader

Instrument

Manufacturer: Cirrus Research plc
Model Number: RC:110A

Serial Number: 95168
Notes:

Calibration Procedure

The tests were carried out in accordance with the requirements of IEC 60942:2003 where applicable.

Date of Calibration: 16 March 2023

Functionality Results

Function	Result
Keypad	Pass
Battery Power	Pass
Display	Pass
Communication	Pass
2 way IR link	Pass
Clock	Pass

Calibration Results

	Level (dB)	Frequency (Hz)	Distortion (% THD + Noise)
Initial	113.90	999.3	0.61
Adjusted	114.00	999.2	0.61
Uncertainty	± 0.11	± 0.14	± 0.10
Tolerances	± 0.60	± 2.00	± 4.00

Environmental Conditions

Pressure: 99.27 kPa
Temperature: 23.3 °C
Humidity: 37.6 %

Notes

This certificate provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. The results within this certificate relate only to the items calibrated. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%.

ภาคผนวก น

วิธีการตรวจวัดและวิเคราะห์คุณภาพสิ่งแวดล้อม

ตารางที่ จ-1 วิธีการตรวจวัดและวิเคราะห์คุณภาพสิ่งแวดล้อม

โครงการโรงงานผลิตคาโปรแลคตัม บริษัท อุเบะ เคมิคอลส์ (เอเชีย) จำกัด (มหาชน)

พารามิเตอร์	วิธีการตรวจวัด	วิธีการวิเคราะห์
1. คุณภาพอากาศในบรรยากาศ		
- ความเร็วและทิศทางลม (Wind Speed/ Wind Direction)	Wind Vane and Cup Anemometer	ASTM : D5741-96
- ฝุ่นละอองรวม (TSP)	High Volume Air Sampler	Pre-Post Weight Difference
- ฝุ่นละอองขนาดเล็กไม่เกิน 10 ไมครอน (PM-10)	Size Selective Inlet High Volume Air Sampler	Pre-Post Weight Difference
- ก๊าซไนโตรเจนไดออกไซด์ (NO ₂)	Instrumental Reference Method	Chemiluminescence
- ก๊าซซัลเฟอร์ไดออกไซด์ (SO ₂)	Instrumental Reference Method	UV Fluorescence
- ก๊าซคาร์บอนมอนอกไซด์ (CO)	Instrumental Reference Method	Non-Dispersive Infrared Detection
2. คุณภาพอากาศจากปล่องระบายอากาศ		
- ฝุ่นละออง (PM)	Isokinetic Stack Sampling Technique	Pre-Post Weight Difference (U.S. EPA Method 5)
- ก๊าซซัลเฟอร์ไดออกไซด์ (SO ₂)	Impingment Absorption	Barium-thorin Titration Method (U.S. EPA Method 6)
- ก๊าซออกไซด์ของไนโตรเจน (NO _x)	Vacuum Flask	Phenoldisulfonic Acid Method (U.S. EPA Method 7)
- ก๊าซคาร์บอนมอนอกไซด์ (CO)	Bag Sampling	Non-dispersive Infrared Detection (U.S. EPA Method 10)
- ก๊าซแอมโมเนียที่ละลาย (NH ₃ Slip)	Impingment Absorption	CTM-027/Ion Chromatography
3. ระดับเสียง		
- ระดับเสียงเฉลี่ย 24 ชั่วโมง (Leq(24))	Sound Pressure Level Meter	-
- ระดับเสียงเปอร์เซ็นต์ไทล์ที่ 90 (L ₉₀)	Sound Pressure Level Meter	-
- ระดับเสียงสูงสุด (Lmax)	Sound Pressure Level Meter	-
- การจัดทำ Noise Contour Map	Sound Pressure Level Meter	โปรแกรม SURFER
- ระดับเสียงที่ความถี่ต่างๆ	Octave Band Analyzer	-
- ระดับเสียงเฉลี่ย 12 ชั่วโมง (Leq(12))	Sound Pressure Level Meter	-
- ปริมาณเสียงสะสมที่ตัวพนักงาน (TWA)	Noise Dosimeter	-

ตารางที่ จ-1 วิธีการตรวจวัดและวิเคราะห์คุณภาพสิ่งแวดล้อม

โครงการโรงงานผลิตคาโปรแลคตัม บริษัท อุเบ เคมิคอลส์ (เอเชีย) จำกัด (มหาชน) (ต่อ)

พารามิเตอร์	วิธีการตรวจวัด	วิธีการวิเคราะห์
4. คุณภาพน้ำทิ้ง		
- อัตราการไหล (Flow Rate)	Flow Meter	-
- อุณหภูมิ (Temperature)	Grab Sampling	Thermometer
- ความเป็นกรด-ด่าง (pH)	Grab Sampling	Electrometic Method
- ของแข็งแขวนลอย (SS)	Grab Sampling	Dried at 103-105 °C
- ปริมาณของแข็งละลายน้ำทั้งหมด (TDS)	Grab Sampling	Dried at 103-105 °C
- บีโอดี (BOD ₅)	Grab Sampling	5-Day BOD Test, Membrane Electrode
- น้ำมันและไขมัน (Oil & Grease)	Grab Sampling	Partition-Gravimetric
- ซีโอดี (COD)	Grab Sampling	Close Reflux, Titrimetic
5. คุณภาพน้ำทะเล		
- ความเร็วกระแสน้ำ (Velocity)	Flow Meter	-
- อุณหภูมิ (Temperature)	Grab Sampling	Thermometer
- ความเป็นกรด-ด่าง (pH)	Grab Sampling	Electrometic Method
- ความลึกน้ำ (Depth)	Grab Sampling	Meter Line
- ความโปร่งแสง (Transparency)	Grab Sampling	Secchi Disc
- ของแข็งแขวนลอย (SS)	Grab Sampling	Dried at 103-105 °C
- ปริมาณออกซิเจนละลาย (DO)	Grab Sampling	Membrane Electrode
- ปริมาณของแข็งละลายน้ำทั้งหมด (TDS)	Grab Sampling	Dried at 103-105 °C
- บีโอดี (BOD ₅)	Grab Sampling	5-Day BOD Test, Membrane Electrode
- น้ำมันและไขมัน (Oil & Grease)	Grab Sampling	Partition-Gravimetric
- ซีโอดี (COD)	Grab Sampling	Close Reflux, Titrimetic
- ความขุ่น (Turbidity)	Grab Sampling	Nephelometric
- ความเค็ม (Salinity)	Grab Sampling	Electrical Conductivity
- ไนโตรเจนในรูปแอมโมเนีย (NH ₃ -N)	Grab Sampling	Distillation and Titrimetic
- แบคทีเรียในกลุ่มโคลิฟอร์มทั้งหมด (Total Coliform Bacteria)	Grab Sampling	Multiple Tube Fermentation Technique
- ฟอสเฟต (PO ₄ -P)	Grab Sampling	Ascorbic Acid

ตารางที่ ก-1 วิธีการตรวจวัดและวิเคราะห์คุณภาพสิ่งแวดล้อม

โครงการโรงงานผลิตคาโปรแลคตัม บริษัท อุเบ เคมีคอลส์ (เอเชีย) จำกัด (มหาชน) (ต่อ)

พารามิเตอร์	วิธีการตรวจวัด	วิธีการวิเคราะห์
5. คุณภาพน้ำทะเล (ต่อ)		
- ปรอท (Hg)	Grab Sampling	Cold-Vapour Fluorescence
6. คุณภาพน้ำใต้ดิน		
- ความเป็นกรด-ด่าง (pH)	Grab Sampling	Electrometric Method
- ปริมาณของแข็งละลายน้ำทั้งหมด (TDS)	Grab Sampling	Dried at 103-105 °C
- ไนเตรต-ไนโตรเจน (NO ₃ -N)	Grab Sampling	Cadmium Reduction Electrometric
- คลอไรด์ (Cl ⁻)	Grab Sampling	Argentometric
- เหล็กทั้งหมด (Fe)	Grab Sampling	Digestion, Direct-Air Acetylene Flame
- ปรอท (Hg)	Grab Sampling	Cold-Vapor Atomic Absorption Spectrometric
- ความกระด้างทั้งหมด (Hardness)	Grab Sampling	EDTA Titrimetric
- แบคทีเรียในกลุ่มโคลิฟอร์มทั้งหมด (Total Coliform Bacteria)	Grab Sampling	Multiple Tube Fermentation Technique
7. นิเวศวิทยาทางทะเลและการประมง		
- แพลงก์ตอนและสัตว์หน้าดิน	Grab Sampling	Counting Technique
8. สารเบนซีนในพื้นที่ที่มีการทำงานเกี่ยวข้องกับสารเบนซีน	Sorbent Tube	Gas Chromatography (NIOSH 1501)

ภาคผนวก ข

ใบอนุญาตขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
จากกรมโรงงานอุตสาหกรรม

คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน

วันที่ 7 เดือน เมษายน พ.ศ. 2566

ข้าพเจ้า () ผู้รับใบอนุญาตประกอบกิจการโรงงาน.....

(/) บริษัท/ห้างหุ้นส่วนจำกัด / บริษัท ชีกลอ จำกัด.....

ตั้งอยู่ที่เลขที่ 239 หมู่ที่ - ต.รอก/ชอย -

ถนน ร่มกอก-ประปา ตำบล/แขวง บางซื่อ

อำเภอ/เขต บางซื่อ จังหวัด กรุงเทพฯ รหัสไปรษณีย์ 10800

โทรศัพท์ 02-9593600 โทรสาร 02-9593535

ได้รับทราบระเบียบกรมโรงงานอุตสาหกรรมว่าด้วยการขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน พ.ศ. 2560 โดยตลอดแล้วและยินยอมปฏิบัติตามระเบียบฯทุกประการ และได้แนบเอกสารต่างๆ ตามรายการเอกสารประกอบการพิจารณา (แบบ ปอ.1-1) มาพร้อมนี้

รายการขอดำเนินการ

การดำเนินการ	รายละเอียด (รายการ)				
	น้ำเสีย/น้ำทิ้ง	น้ำใต้ดิน	อากาศเสีย	สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว	ดิน
[] ขอขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน					
[/] ต่ออายุห้องปฏิบัติการวิเคราะห์เอกชน	46	123	27	34	122
[] เปลี่ยนแปลงสารมลพิษที่วิเคราะห์ (/) เพิ่มสารมลพิษ () ยกเลิกสารมลพิษ		2	1		2
[] เปลี่ยนแปลงบุคลากร (/) เพิ่มบุคลากร () ยกเลิกบุคลากร	จำนวน 16.....ราย (รายละเอียดตาม แบบ ปว.1) จำนวน.....ราย (รายละเอียดตาม แบบ ปว.1-1)				
[] ยกเลิกห้องปฏิบัติการวิเคราะห์เอกชน					
[] อื่นๆ ..โปรดระบุ.....					

จึงเรียนมาเพื่อโปรดพิจารณา

นายวิชาญ วัฒนศิริ
 วันที่รับเรื่อง 7 เม.ย. 66 เวลา 14.05
 จ.จ.ต.ช.
 F-ED-LR-01-1 (ฉบับร่าง)

ลงชื่อ.....

(นายชรรชัย เกียรติกิจ)

ผู้มีอำนาจลงนามแทนนิติบุคคล

ประทับตรา (ตัว)





ที่ อก ๐๓๑๐(๑)/ ๑๗๔ ๕

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๐ ๕ กุมภาพันธ์ ๒๕๖๕

เรื่อง เปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท ซีคอฟ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๒๘ มกราคม ๒๕๖๕

ตามหนังสือที่อ้างถึง บริษัท ซีคอฟ จำกัด ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ๖-๒๓๙๔
สถานที่ตั้งเลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร ขอเปลี่ยนแปลง
บุคลากรของห้องปฏิบัติการวิเคราะห์ ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว มีความเห็นดังนี้

๑. ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๔ ราย

- | | |
|--------------------------------------|------------------------------|
| ๑) นางสาวโชติมาส ไทยเจริญ | ทะเบียนเลขที่ ๖-๒๓๙๔-๖-๐๐๐๖ |
| ๒) นางสาวณัฐศิริ เลิศธีรพัฒน์ | ทะเบียนเลขที่ ๖-๒๓๙๔-๖-๐๔๒๓ |
| ๓) นางสาวเกษวรินทร์ ศิลศึก | ทะเบียนเลขที่ ๖-๒๓๙๔-๖-๐๔๒๔ |
| ๔) นางสาวจิรนนท์ จิตพิริยะ ปิยะธนากร | ทะเบียนเลขที่ ๖-๒๓๙๔-๖-๐๗๒๓๒ |

๒. ให้เพิ่มผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑ ราย

- | | |
|----------------------------|-----------------------------|
| นางสาวณัฐศิริ เลิศธีรพัฒน์ | ทะเบียนเลขที่ ๖-๒๓๙๔-๖-๐๐๐๑ |
|----------------------------|-----------------------------|

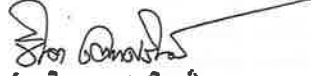
๓. ให้เพิ่มเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๒ ราย

- | | |
|-------------------------------------|-----------------------------|
| ๑) นางสาวสุตาพร สุนทร | ทะเบียนเลขที่ ๖-๒๓๙๔-๖-๐๐๐๑ |
| ๒) นางสาวสณัญญลักษณ์ อินทรประสิทธิ์ | ทะเบียนเลขที่ ๖-๒๓๙๔-๖-๐๐๐๒ |

อนึ่ง หนังสือฉบับนี้จะหมดอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ที่ อก ๐๓๑๐(๑)/๑๓๘๐๔ ลงวันที่ ๒๑ ตุลาคม ๒๕๖๓ คือในวันที่ ๒ พฤษภาคม ๒๕๖๖ ทั้งนี้ สามารถยื่นคำ
ขอผ่านระบบอิเล็กทรอนิกส์ได้ที่หน้าเว็บไซต์กรมโรงงานอุตสาหกรรม ตาม QR Code ท้ายหนังสือฉบับนี้

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นางจินดา เดชะศรีนทร์)

ผู้อำนวยการกองวิจัยและเฝ้าระวังมลพิษโรงงาน
ปฏิบัติการตามแผนปฏิบัติการโรงงานอุตสาหกรรม



ยื่นคำขอผ่านระบบอิเล็กทรอนิกส์

กองวิจัยและเฝ้าระวังมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๔๔

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



ที่ อก ๐๓๑๐(๑)/ ๑ ๑ ๘ ๐ ๕

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ เขตราชเทวี
กรุงเทพมหานคร ๑๐๔๐๐

๒๑ ตุลาคม ๒๕๖๓

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท ซีคอฟ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๒๔ มีนาคม ๒๕๖๓

สิ่งที่ส่งมาด้วย ๑. รายชื่อผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑ แผ่น

๒. รายชื่อเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๑ แผ่น

๓. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๒ แผ่น

ตามหนังสือที่อ้างถึง บริษัท ซีคอฟ จำกัด ขอต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการ
วิเคราะห์เอกชน เลขทะเบียน ๖-๒๓๙๔ สถานที่ตั้งเลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ
กรุงเทพมหานคร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท ซีคอฟ จำกัด ต่ออายุหนังสือรับขึ้นทะเบียน
ห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑๐ ราย ตามสิ่งที่ส่งมาด้วย ๑

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓๑ ราย ตามสิ่งที่ส่งมาด้วย ๒

ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย จำนวน ๔๖ รายการ น้ำได้ดิน
จำนวน ๑๒๓ รายการ อากาศเสีย จำนวน ๒๗ รายการ สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน ๓๔ รายการ
และดิน จำนวน ๑๒๒ รายการ รวมทั้งสิ้นจำนวน ๓๕๒ รายการ ตามสิ่งที่ส่งมาด้วย ๓

หนังสือฉบับนี้จะหมดอายุในวันที่ ๒ พฤษภาคม ๒๕๖๖ หากประสงค์จะต่ออายุหนังสือ
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อ
กรมโรงงานอุตสาหกรรมภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ซึ่งคำขอต่ออายุดังกล่าวขอรับได้ที่กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นางจินดา เดชะศรีนทร์)

ผู้อำนวยการกองวิจัยและเฝ้าระวังมลพิษโรงงาน
ปฏิบัติการตามแผนปฏิบัติการโรงงานอุตสาหกรรม

กองวิจัยและเฝ้าระวังมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๒๐๒ ๔๐๐๒ ๐ ๒๒๐๒ ๔๑๔๖

โทรสาร ๐ ๒๒๕๔ ๓๒๐๘ ๐ ๒๒๕๔ ๓๔๑๕

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ซีคोट จำกัด

เลขทะเบียน ว-๒๓๙

ที่ ออก ๐๓๑๐(๑)/ ๑ ๑ ๘ ๐ ๕

ลงวันที่ ๒๑ ตุลาคม ๒๕๖๓

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑๐ ราย

๑) นางสาวสุวิทย์ เกียรติไกรอุดม	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๘๒๐
๒) นางสาวอารยา ทิพย์รักษ์	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๘๖๓
๓) นายขรรชัย เกียรติไกรอุดม	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๙๗๕
๔) นางสาวเชมชุตตา อินทร์ศรี	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๙๗๖
๕) นางสาวปรีดา สมใจ	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๙๗๘
๖) นางสาวอรุณญา มาตา	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๙๗๙
๗) นางสาวลดาวัลย์ วงศ์เจริญ	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๙๘๐
๘) นางสาวมณีวรรณ เกตวันดี	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๙๘๒
๙) นางสาวนริสา ภูวสรเพ็ชญ์	ทะเบียนเลขที่ ว-๒๓๙-ค-๖๔๑๙
๑๐) นางสาวศิริวรรณ นิมสง่า	ทะเบียนเลขที่ ว-๒๓๙-ค-๖๔๒๐

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ซีคोट จำกัด

เลขทะเบียน ว-๒๓๙

ที่ ออก ๐๓๑๐(๑)/ ๑ ๑ ๘ ๐ ๕

ลงวันที่ ๒๑ ตุลาคม ๒๕๖๓

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓๑ ราย

๑) นางสาวสุรัชต์ ชัยธรรม	ทะเบียนเลขที่ ว-๒๓๙-จ-๕๘๒๕
๒) นางสาวสุธาทิพย์ เทียนเตี้ย	ทะเบียนเลขที่ ว-๒๓๙-จ-๕๘๒๙
๓) นางสาวสุนันทา ศิริวัฒนานนท์	ทะเบียนเลขที่ ว-๒๓๙-จ-๕๙๘๓
๔) นายบวร ศิษย์ยะ	ทะเบียนเลขที่ ว-๒๓๙-จ-๕๙๘๖
๕) นางสาวเกศรินทร์ วรเดชวิทยา	ทะเบียนเลขที่ ว-๒๓๙-จ-๕๙๙๑
๖) นายอนิวัฒน์ พิมวันนา	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๐๐๑
๗) นายชิตพล สมประสงค์	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๐๐๒
๘) นางสาวศศิธร พรหมประเสริฐ	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๐๐๓
๙) นายศิวนนท์ กุลวงษ์	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๐๐๕
๑๐) นางสาวโชติมาส ไทยเจริญ	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๐๐๖
๑๑) นางสาวปิยวิญญู สุระโคตร	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๔๒๑
๑๒) นางสาวณัฐศิริ เลิศธีรพัฒน์	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๔๒๓
๑๓) นางสาวเกษวรินทร์ ศิลศึก	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๔๒๔
๑๔) นางสาวอลิษา คณิรานนท์	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๓๑
๑๕) นางสาวจิรนนท์ จัตุพะศรี ปิยะชนากกร	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๓๒
๑๖) นางสาวสิริวรรณ แก้วชิงดวง	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๓๓
๑๗) นางสาวปัทมวรรณ สุวรรณวิโรจน์	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๓๔
๑๘) นางสาวกนิษฐา เจริญเชื้อ	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๓๖
๑๙) นายจิรากร ลิ้มศิลา	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๓๗
๒๐) นายชนาธิป สิงห์เกษมศักดิ์	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๓๘
๒๑) นายวัชรกานต์ ประมาคะเด	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๔๐
๒๒) นายทอง เสงฆ์กุล	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๔๒
๒๓) นางสาวกฤษณา จันทุม	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๘๐๒
๒๔) นางสาวพรนภา บุตรธรรม	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๘๐๓
๒๕) นางสาวธาริณี อาจปลิว	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๘๐๔
๒๖) นายธนโชติ ช่างลื้อ	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๘๐๖
๒๗) นางสาวพัชรา สมานฉันท	ทะเบียนเลขที่ ว-๒๓๙-จ-๘๐๘๓
๒๘) นางสาวจุฑารัตน์ แจ่มเรือน	ทะเบียนเลขที่ ว-๒๓๙-จ-๘๔๔๓
๒๙) นางสาวจนิศดา กุ้ยอ่อน	ทะเบียนเลขที่ ว-๒๓๙-จ-๘๔๓๗
๓๐) นางสาววรัญญา เขียนมัน	ทะเบียนเลขที่ ว-๒๓๙-จ-๘๔๓๘
๓๑) นางสาวจิรารัตน์ นุริตมนต์	ทะเบียนเลขที่ ว-๒๓๙-จ-๘๔๓๙

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ซีคอฟ จำกัด

เลขทะเบียน ว-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑๘๐๔

ลงวันที่ ๒๑ ตุลาคม ๒๕๖๓

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๕๒ รายการ

นำเสีย จำนวน 46 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
2	Arsenic	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
3	Barium	1) Digestion, Direct Nitrous Oxide-Acetylene Flame Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
4	α-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
5	β-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
6	γ-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
7	δ-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
8	Biochemical Oxygen Demand	1) 5-Day BOD Test, Azide Modification Method ^[4] 2) 5-Day BOD Test, Membrane Electrode Method ^[4]
9	Cadmium	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4]



(นางริกาญจน์ ฉัตรสกุลใจ)

ผู้อำนวยการศูนย์มาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ
และทะเบียนห้องปฏิบัติการ

10 Chemical...

-๒-

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
10	Chemical Oxygen Demand	1) Open Reflux, Titrimetric method ^[4] 2) Close 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	2,4-D	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
17	4,4'-DDD	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
18	4,4'-DDE	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
19	4,4'-DDT	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
20	Dieldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]



(นางริกาญจน์ ฉัตรสกุลใจ)

ผู้อำนวยการศูนย์มาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ
และทะเบียนห้องปฏิบัติการ

21 Endosulfan I...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
21	Endosulfan I	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
22	Endosulfan II	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
23	Endosulfan Sulfate	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
24	Endrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
25	Endrin Aldehyde	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
26	Formaldehyde	Distillation, Colorimetric Method ^[3]
27	Free Chlorine	1) Iodometric Method ^[4] 2) DPD Colorimetric Method ^[4]
28	Heptachlor	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
29	Heptachlor epoxide	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
30	Hexavalent Chromium	1) Colorimetric Method ^[4] 2) Extraction, Air-Acetylene Flame Method ^[4]
31	Lead	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4]

2/10/20

(นางริกาญจน์ จัตรสกลวิไล)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

32 Manganese...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
32	Manganese	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4]
33	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[4]
34	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
35	Nickel	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4]
36	Oil & Grease	1) Liquid-Liquid, Partition-Gravimetric Method ^[4] 2) Soxhlet Extraction Method ^[4]
37	pH	Electrometric Method ^[4]
38	Phenols	1) Distillation, Chloroform Extraction Method ^[4] 2) Distillation, Direct Photometric Method ^[4]
39	Selenium	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
40	Sulfide	1) Iodometric method ^[4] 2) Methylene blue method ^[4]
41	Temperature	Laboratory and Field Methods ^[4]
42	Total Dissolved Solids	Dried at 180 °C ^[4]
43	Total Kjeldahl Nitrogen	1) Macro Kjeldahl Method ^[4] 2) Semi-Micro Kjeldahl Method ^[4]
44	Total Suspended Solids	Dried at 103-105 °C ^[4]
45	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]
46	Zinc	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4]

21/10/20

(นางริกาญจน์ ฉัตรสกุลวิไล)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการบริหารท่าอากาศยาน

น้ำใต้ดิน...

น้ำใต้ดิน จำนวน 123 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]
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]

อีกหน้า

16 Beryllium...

(นางริกาญจน์ จัตุรสุลวโร)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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]
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]

อีกหน้า

32 2-Chlorophenol...

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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]
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]



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42 Dibenz(a,h)...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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]
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]



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59 2,4-Dimethylphenol...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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 Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
65	Endrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
66	Ethylbenzene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
67	Fluoranthene	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	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]

73 n-Hexane...

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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 Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
76	γ -HCH	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
77	Hexachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
78	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
79	Indeno(1,2,3-cd)pyrene	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...

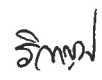
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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
85	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
86	Methyl bromide	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
87	Methylene chloride	Purge and Trap Gas Chromatographic/ 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	Polychlorinated Biphenyls - PCB-1016 - PCB-1221 - PCB-1232 - PCB-1242 - PCB-1248 - PCB-1254 - PCB-1260	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
96	Pentachlorophenol	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]


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97 pH...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
97	pH	Electrometric method ^[4]
98	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
99	Phenol	1) Distillation, Chloroform Extraction Method ^[4] 2) Distillation, Direct Photometric Method ^[4] 3) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
100	Pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
101	Selenium	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
102	Silver	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
103	Styrene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
104	1,1,2,2-Tetrachloroethane	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
105	Tetrachloroethylene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
106	Toluene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
107	TPH (C ₅ -C ₈)	Purge and Trap, Gas Chromatographic/ Mass spectrometric Method ^[7,9]
108	TPH (C ₈ -C ₁₆)	1) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[6,8] 2) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass spectrometric Method ^[6,9]
109	TPH (C ₁₆ -C ₃₅)	1) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[6,8] 2) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass spectrometric Method ^[6,9]
110	1,2,4-Trichlorobenzene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
111	1,1,1-Trichloroethane	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]


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112 1,1,2-Trichloroethane...

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



(นางกรกฎณ์ นังศรีวงศ์)

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2 Arsenic...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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]
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, Analysis by ISO/IEC 17025 Accredited Laboratory or Analysis by Department of Industrial Works Registered Laboratory (Dioxins/Furans Analysis Approved) ^[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]



(นางกรกฎณ์ นังศรีวงศ์)

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14 Hydrogen Sulfide...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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]
19	Opacity	Ringelmann's Method ^[2]
20	Oxide of Nitrogen	1) Absorption Sampling, Ion Chromatographic Method ^[5] 2) Absorption Sampling, Phenoldisulfonic acid 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) 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	Isokinetic Sampling, Gravimetric Method ^[5]

วิมล

(นางริกาญจน์ ฉัตรสกุลวิไล)

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26 Vanadium...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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]

สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน 34 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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, Digestion, Inductively Coupled Plasma Method ^[1,6,14]

วิมล

(นางริกาญจน์ ฉัตรสกุลวิไล)

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3) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
5	Beryllium	3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 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]
6	Cadmium	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]
7	Chlordane	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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
8	Chromium	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]
9	Chromium (III)	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method; Waste Extraction, Colorimetric Method; Calculation Method ^[1,6,15,17] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method; Waste Extraction, Colorimetric Method; Calculation Method ^[1,6,16,17]



(นางริกาญจน์ ฉัตรสกุลใจ)

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และทะเบียนห้องปฏิบัติการ

3) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
10	Chromium (VI)	3) Digestion, Flame Atomic Absorption Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^[7,8,15,17] 4) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^[7,8,14,17] 1) Waste Extraction, Colorimetric Method ^[1,17] 2) Alkaline Digestion, Colorimetric Method ^[8,17]
11	Cobalt	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
12	Copper	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]
13	2,4-D	1) Waste Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,24] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[24]
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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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 ^[1,9,26]



(นางริกาญจน์ ฉัตรสกุลใจ)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

และทะเบียนห้องปฏิบัติการ

3) Soxhlet...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
16	DDT	3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26] 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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22]

4) Soxhlet...

วิมล

(นางริกาญจน์ ฉัตรสกุลวิไล)

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
20	Lead	4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26] 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]
21	Lindane	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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
22	Mercury	1) Waste Extraction, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[1,18] 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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
24	Molybdenum	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]

25 Nickel...

วิมล

(นางริกาญจน์ ฉัตรสกุลวิไล)

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และทะเบียนห้องปฏิบัติการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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 ^[1,24] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[24]
28	pH	Electrometric Method ^[30,31]
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, Inductively Coupled Plasma Method ^[7,14]
30	Silver	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 ^[1,12,25] 2) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[12,25]

(นางรวิภาญจน์ ฉัตรสกุลวิไล)

33 Vanadium...

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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]

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
3	Aldrin	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
4	Anthracene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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 ^[11,22]
8	Barium	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]

9 Benz(a)anthracene...

(นางรวิภาญจน์ ฉัตรสกุลวิไล)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ
และทะเบียนห้องปฏิบัติการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
9	Benzo(a)anthracene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26)
10	Benzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(13,25)
11	Benzo(b)fluoranthene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26)
12	Benzo(k)fluoranthene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26)
13	Benzoic acid	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
14	Benzo(a)pyrene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26)
15	Benzo(g,h,i)perylene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26)
16	Beryllium	Digestion, Inductively Coupled Plasma Method ^(7,14)
17	Bis(2-chloroethyl)ether	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26)
18	Bis(2-ethylhexyl)phthalate	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26)
19	Bromodichloromethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(13,25)
20	Bromoform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(13,25)
21	Butanol	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(13,25)
22	Butyl benzyl phthalate	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26)
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 ^(10,26)
25	Carbon disulfide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(13,25)
26	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(13,25)

27 Chlordane...

(นางรวิภาญจน์ อัครสกุลวิไล)
ผู้อำนวยการศูนย์มาตรฐานวิธีการวิเคราะห์มลพิษ
และทะเบียนห้องปฏิบัติการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
27	Chlordane	1) Ultrasonic Extraction, Gas Chromatographic Method ^(11,22) 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)
28	p-Chloroaniline	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26)
29	Chlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(13,25)
30	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(13,25)
31	Chloroform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(13,25)
32	2-Chlorophenol	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26)
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 Method ^(7,8,15,17) 2) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation Method ^(7,8,14,17)
35	Chromium (VI)	Alkaline Digestion, Colorimetric Method ^(8,17)
36	Chrysene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,26)
37	Cyanide	1) Extraction, Distillation, Titrimetric Method ^(27,28,29) 2) Extraction, Distillation, Colorimetric Method ^(27,28,29)
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 ^(11,26)
40	DDE	1) Ultrasonic Extraction, Gas Chromatographic Method ^(11,22) 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,26)

41 DDT...

(นางรวิภาญจน์ อัครสกุลวิไล)
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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
41	DDT	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]
42	Dibenz(a,h)anthracene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
43	Di-n-butyl phthalate	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
44	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
45	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
46	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
47	3,3'-Dichlorobenzidine	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
48	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
49	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
50	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
51	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
52	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
53	2,4-Dichlorophenol	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]
54	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
55	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
56	1,3-Dichloropropene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]



(นางริกาญจน์ จิตตรสกุลไชย)

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57 Dieldrin...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
57	Dieldrin	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]
58	Diethyl phthalate	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
59	2,4-Dimethylphenol	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]
60	2,4-Dinitrophenol	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]
61	2,4-Dinitrotoluene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
62	2,6-Dinitrotoluene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
63	Di-n-Octyl phthalate	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
64	Endosulfan	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]
65	Endrin	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]
66	Ethylbenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
67	Fluoranthene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
68	Fluorene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
69	Heptachlor	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]

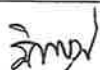


(นางริกาญจน์ จิตตรสกุลไชย)

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70 Heptachlor epoxide...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
70	Heptachlor epoxide	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
71	Hexachlorobenzene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
72	Hexachloro-1,3-butadiene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
73	n-Hexane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
74	α -HCH	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
75	β -HCH	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
76	γ -HCH	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
77	Hexachlorocyclopentadiene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
78	Hexachloroethane	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
79	Indeno(1,2,3-cd)pyrene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
80	Isophorone	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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]



(นางริกาญจน์ จิตตรสุกุลไธ)

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83 Mercury...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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 ^[11,26]
86	Methyl bromide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
87	Methylene chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
88	2-Methylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
89	2-Methylnaphthalene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
90	Methyl tert-butyl ether	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
91	Naphthalene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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 ^[10,26]
94	N-Nitrosodiphenylamine	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
95	Polychlorinated Biphenyls - Aroclor 1016 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260	Soxhlet Extraction, Gas Chromatographic Method ^[10,23]



(นางริกาญจน์ จิตตรสุกุลไธ)

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และทะเบียนห้องปฏิบัติการ

96 Pentachlorophenol...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
96	Pentachlorophenol	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[24]
97	Phenanthrene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
98	Phenol	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]
99	Pyrene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
100	Selenium	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[7,20] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
101	Silver	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
102	Styrene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
103	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
104	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
105	Toluene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
106	TPH (C ₅ -C ₉)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
107	TPH (C ₈ -C ₁₆)	1) Soxhlet Extraction, Gas Chromatographic Method ^[10,21] 2) Soxhlet Extraction, Gas Chromatographic/ Mass spectrometric Method ^[10,21]
108	TPH (C ₁₆ -C ₃₅)	1) Soxhlet Extraction, Gas Chromatographic Method ^[10,21] 2) Soxhlet Extraction, Gas Chromatographic/ Mass spectrometric Method ^[10,25]
109	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
110	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]

111 1,1,2-Trichloroethane...

(นางริกาญจน์ จัตรสกุลไธ)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ
ศูนย์มาตรฐานห้องปฏิบัติการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
111	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
112	Trichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
113	2,4,5-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]
114	2,4,6-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]
115	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
116	Vanadium	Digestion, Inductively Coupled Plasma Method ^[7,14]
117	Vinyl chloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
118	m-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
119	o-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
120	p-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
121	Xylene (Total)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
122	Zinc	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]

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(นางริกาญจน์ จัตรสกุลไธ)

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วิภาญ

(นางรวิภาญจน์ ฉัตรสกุลวิไล)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

และทะเบียนห้องปฏิบัติการ

ภาคผนวก ข

ใบรับรองความสามารถห้องปฏิบัติการและขอขยาย
การรับรองห้องปฏิบัติการทดสอบ ตาม ISO/IEC 17025
จากสำนักงานมาตรฐานอุตสาหกรรม (สมอ.)



ใบรับรองเลขที่ 20T173/1151

ใบรับรองห้องปฏิบัติการ

อาศัยอำนาจตามความในพระราชบัญญัติการมาตรฐานแห่งชาติ พ.ศ. ๒๕๕๑

เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

ออกใบรับรองฉบับนี้ให้

บริษัท ซีคอฟ จำกัด

มีห้องปฏิบัติการตั้งอยู่เลขที่

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร

ได้รับการรับรองความสามารถห้องปฏิบัติการทดสอบ

ตามมาตรฐานเลขที่ มอก. 17025-2561 (ISO/IEC 17025 : 2017)

ข้อกำหนดทั่วไปว่าด้วยความสามารถห้องปฏิบัติการทดสอบและสอบเทียบ

หมายเลขการรับรองที่ ทดสอบ ๐๓๙๔

โดยมีสาขาการรับรองตามรายละเอียดแนบท้ายใบรับรอง

ตั้งแต่ วันที่ ๙ กันยายน พ.ศ. ๒๕๖๓

ถึง วันที่ ๘ กันยายน พ.ศ. ๒๕๖๖

ออกให้ ณ วันที่ ๒๓ กันยายน ๒๕๖๓

(นายวีระศักดิ์ วันทกิจธนวิทย์)

รองเลขาธิการ ปฏิบัติราชการแทน

เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม



กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

รายละเอียดแนบท้ายใบรับรองห้องปฏิบัติการทดสอบ

ใบรับรองเลขที่ 20T173/1151

ชื่อห้องปฏิบัติการ

ที่อยู่

หมายเลขการรับรองที่

สถานภาพห้องปฏิบัติการ

ห้องปฏิบัติการทดสอบ บริษัท ซีคอฟ จำกัด

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร

ทดสอบ 0394

☒ ถาวร ☐ นอกสถานที่ ☐ ชั่วคราว ☐ เคลื่อนที่

สาขาการทดสอบ	รายการทดสอบ	วิธีทดสอบ
สาขาสิ่งแวดล้อม 1. น้ำและน้ำเสีย (water and wastewater)	- Arsenic 0.000 5 mg/l to 0.090 0 mg/l - Arsenic 0.05 mg/l to 4.50 mg/l - Barium 0.02 mg/l to 4.50 mg/l - Cadmium 0.01 mg/l to 4.50 mg/l - Chromium 0.01 mg/l to 4.50 mg/l - Copper 0.02 mg/l to 4.50 mg/l - Iron 0.05 mg/l to 9.00 mg/l - Lead 0.03 mg/l to 4.50 mg/l - Manganese 0.01 mg/l to 9.00 mg/l - Nickel 0.01 mg/l to 4.50 mg/l - Zinc 0.02 mg/l to 9.00 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

ฉบับที่ 1 ตั้งแต่ วันที่ 9 กันยายน 2563

หน้า 1/5

กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

รายละเอียดแนบท้ายใบรับรองห้องปฏิบัติการทดสอบ

ใบรับรองเลขที่ 20T173/1151

หมายเลขการรับรองที่ ทดสอบ 0394

สถานภาพห้องปฏิบัติการ ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

สาขาการทดสอบ	รายการทดสอบ	วิธีทดสอบ
สาขาสังแวดล้อม		
1. น้ำและน้ำเสีย (ต่อ) (water and wastewater) (cont.)	- COD 100 mg/l to 4 000 mg/l	- Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 23 rd edition, 2017, Part 5220 D
2. คุณภาพอากาศ (air quality)		
2.1 บริเวณทำงาน (workplace)	- Total dust 0.10 mg/filter to 2.00 mg/filter - Respirable dust 0.10 mg/filter to 2.00 mg/filter - Benzene 1.10 µg/tube to 420 µg/tube - Toluene 1.10 µg/tube to 420 µg/tube - Total xylenes 2.20 µg/tube to 840 µg/tube • m,p-xylene 1.10 µg/tube to 420 µg/tube • o-xylene 1.10 µg/tube to 420 µg/tube	- NIOSH Manual of Analytical Methods (NMAM), method 0500, 4 th edition, 15 th August 1994 (Exclude Sampling) - NIOSH Manual of Analytical Method(NMAM), method 0600, 4 th edition, 15 th January 1998 (Exclude Sampling) - NIOSH Manual of Analytical Methods (NMAM) , method 1501, 4 th edition, 15 th March 2003 (Exclude Sampling)

ฉบับที่ 1 ตั้งแต่ วันที่ 9 กันยายน 2563 หน้า 2/5

กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

รายละเอียดแนบท้ายใบรับรองห้องปฏิบัติการทดสอบ

ใบรับรองเลขที่ 20T173/1151

หมายเลขการรับรองที่ ทดสอบ 0394

สถานภาพห้องปฏิบัติการ ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

สาขาการทดสอบ	รายการทดสอบ	วิธีทดสอบ
สาขาสังแวดล้อม		
2. คุณภาพอากาศ (ต่อ) (air quality) (cont.)		
2.2 อากาศในปล่องระบาย อากาศ (stack)	- Sulfur dioxide 1.00 mg/l to 16 000 mg/l (solution)	- US.EPA , Code of Federal Regulations, 40 CFR 60 appendix A, Method 6, July 2019 (Exclude Sampling)
2.3 บรรยากาศทั่วไป (ambient air)	- Hydrogen fluoride 5 µg/sample to 400 µg/sample - Hydrogen chloride 5 µg/sample to 400 µg/sample - Volatile organic compounds (VOCs) • Chloroethene 0.05 µg/m ³ to 51.00 µg/m ³ • 1,3 - butadiene 0.04 µg/m ³ to 44.00 µg/m ³ • Bromomethane 0.08 µg/m ³ to 77.00 µg/m ³ • Acrolein 0.05 µg/m ³ to 45.00 µg/m ³ • Acrylonitrile 0.04 µg/m ³ to 43.00 µg/m ³ • Dichloromethane 0.14 µg/m ³ to 69.00 µg/m ³ • Carbon disulfide 0.06 µg/m ³ to 62.00 µg/m ³ • Trichloromethane 0.20 µg/m ³ to 97.00 µg/m ³	- In-house method : WI-7.2-1-22 based on US.EPA, Code of Federal Regulations, 40 CFR 60 appendix A Method 26, 2019 (Exclude Sampling) - In-house method :WI-7.2-1-24 based on US.EPA , Compendium Method TO - 15, EPA / 625 / R-96 / 010b, January 1999 (Include sampling)

ฉบับที่ 1 ตั้งแต่ วันที่ 9 กันยายน 2563 หน้า 3/5

กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

รายละเอียดแนบท้ายใบรับรองห้องปฏิบัติการทดสอบ
ใบรับรองเลขที่ 20T173/1151

หมายเลขการรับรองที่ ทดสอบ 0394
สถานภาพห้องปฏิบัติการ ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

สาขาการทดสอบ	รายการทดสอบ	วิธีทดสอบ
<p>สาขาส่งแวดล้อม</p> <p>2. คุณภาพอากาศ (ต่อ) (air quality) (cont.)</p> <p>2.3 บรรยากาศทั่วไป (ต่อ) (ambient air) (cont.)</p>	<p>- Volatile organic compounds (VOCs) (cont.)</p> <ul style="list-style-type: none"> • 1,2 - dichloroethane 0.08 $\mu\text{g}/\text{m}^3$ to 80.00 $\mu\text{g}/\text{m}^3$ • Benzene 0.06 $\mu\text{g}/\text{m}^3$ to 63.00 $\mu\text{g}/\text{m}^3$ • Carbon tetrachloride 0.25 $\mu\text{g}/\text{m}^3$ to 125 $\mu\text{g}/\text{m}^3$ • Trichloroethylene 0.21 $\mu\text{g}/\text{m}^3$ to 107 $\mu\text{g}/\text{m}^3$ • 1,2 - dichloropropane 0.18 $\mu\text{g}/\text{m}^3$ to 92.00 $\mu\text{g}/\text{m}^3$ • Tetrachloroethylene 0.27 $\mu\text{g}/\text{m}^3$ to 135 $\mu\text{g}/\text{m}^3$ • 1,2 - dibromoethane 0.31 $\mu\text{g}/\text{m}^3$ to 153 $\mu\text{g}/\text{m}^3$ • 1,1,2,2 - tetrachloroethane 0.69 $\mu\text{g}/\text{m}^3$ to 137 $\mu\text{g}/\text{m}^3$ 	<p>- In-house method :WI-7.2-1-24 US.EPA , Compendium Method TO - 15, EPA / 625 / R-96 / 010b, January 1999 (Include sampling)</p>

รายละเอียดแนบท้ายใบรับรองห้องปฏิบัติการทดสอบ
ใบรับรองเลขที่ 20T173/1151

หมายเลขการรับรองที่ ทดสอบ 0394
สถานภาพห้องปฏิบัติการ ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

สาขาการทดสอบ	รายการทดสอบ	วิธีทดสอบ
<p>สาขาส่งแวดล้อม</p> <p>2. คุณภาพอากาศ (ต่อ) (air quality) (cont.)</p> <p>2.3 บรรยากาศทั่วไป (ต่อ) (ambient air) (cont.)</p>	<p>- Volatile organic compounds (VOCs) (cont.)</p> <ul style="list-style-type: none"> • Benzyl chloride 0.52 $\mu\text{g}/\text{m}^3$ to 103 $\mu\text{g}/\text{m}^3$ • 1,4 - dichlorobenzene 0.24 $\mu\text{g}/\text{m}^3$ to 120 $\mu\text{g}/\text{m}^3$ 	<p>- In-house method :WI-7.2-1-24 US.EPA , Compendium Method TO - 15, EPA / 625 / R-96 / 010b, January 1999 (Include sampling)</p>

ออกให้ ณ วันที่ 13 กันยายน 2563



(นายวีระกิตติ์ รินทกิจธำวิท)
รองเลขาธิการ ปฏิบัติราชการแทน
เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม