

ภาคผนวก ง

ใบรับรองผลการตรวจวัดและวิเคราะห์

## ภาคผนวก ง.1

### ใบรับรองผลการตรวจวัดคุณภาพอากาศในบรรยากาศ



## Meteorological Monitoring Results : Wind Rose

### MTR-CPL

Location : Technology IRPC School

Monitor period : 19-26 Jan 2024

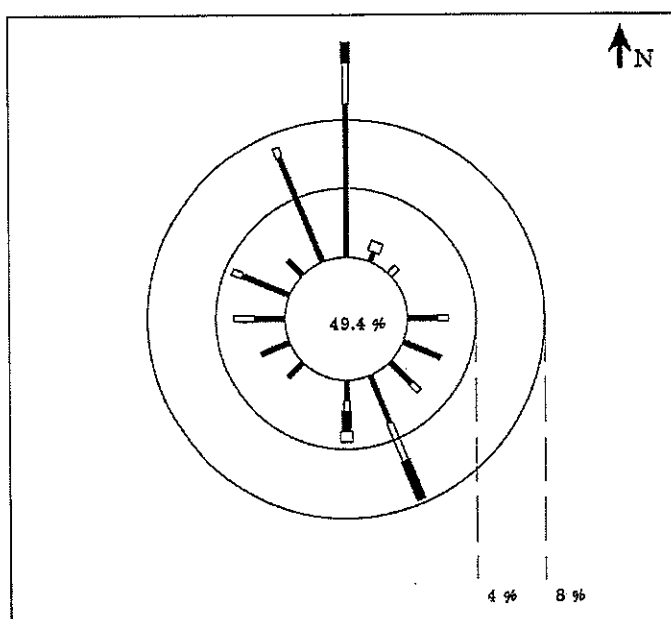
Wind Speed Model : NRG Symphonie

Serial No : A5091

Wind Direction Model : NRG Symphonie

Serial No : A5091

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	0.0893	0.0238	0.0119	0.0000	0.0000	0.0000	0.1250
NNE	0.0060	0.0000	0.0000	0.0060	0.0000	0.0000	0.0119
NE	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0179	0.0060	0.0000	0.0000	0.0000	0.0000	0.0238
ESE	0.0238	0.0000	0.0000	0.0000	0.0000	0.0000	0.0238
SE	0.0179	0.0060	0.0000	0.0000	0.0000	0.0000	0.0238
SSE	0.0298	0.0238	0.0238	0.0000	0.0000	0.0000	0.0774
S	0.0119	0.0060	0.0119	0.0060	0.0000	0.0000	0.0357
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0119	0.0000	0.0000	0.0000	0.0000	0.0000	0.0119
WSW	0.0179	0.0000	0.0000	0.0000	0.0000	0.0000	0.0179
W	0.0179	0.0119	0.0000	0.0000	0.0000	0.0000	0.0298
WNW	0.0298	0.0060	0.0000	0.0000	0.0000	0.0000	0.0357
NW	0.0119	0.0000	0.0000	0.0000	0.0000	0.0000	0.0119
NNW	0.0655	0.0060	0.0000	0.0000	0.0000	0.0000	0.0714
CALM	0.4940						



Application : WindPro Ver.1.0

Control : 16 Direction Calculation With

Calm Wind &lt; 0.5 m/s

Data Unit : Direction in Deg.

Wind Speed in m/s

0.5-1 1-2 2-3 3-4 4-6 &gt; 6

WIND SPEED (m/s)

NOTE : Frequencies indicate direction from which the wind is blowing

File Control : R:\Database\Windrose\FileControl\Win-223030-Technology IRPC School 19-26 Jan 2024

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-CPL

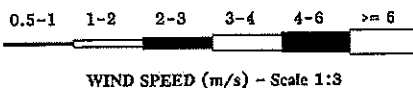
Location : Technology IRPC School  
 Wind Speed Model : NRG Symphonie  
 Wind Direction Model : NRG Symphonie

Monitor period : 19-26 Jan 2024

Serial No : A5091

Serial No : A5091

Time	19-20 Jan 2024		20-21 Jan 2024		21-22 Jan 2024		22-28 Jan 2024	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
14:00 - 15:00	2.2	S	1.3	S	2.9	SSE	0.3	SSW
15:00 - 16:00	0.3	W	0.2	WSW	0.8	WSW	0.4	SSW
16:00 - 17:00	1.4	WNW	1.4	SSE	3.0	S	0.5	W
17:00 - 18:00	0.6	WNW	0.4	NW	0.5	SW	0.5	WSW
18:00 - 19:00	0.6	WNW	0.3	NW	0.5	W	0.2	SW
19:00 - 20:00	0.5	N	0.3	NW	0.6	WNW	0.2	NNW
20:00 - 21:00	0.3	N	0.2	NW	0.3	WNW	0.6	NNW
21:00 - 22:00	0.6	N	0.6	SSE	0.5	WNW	0.6	NNW
22:00 - 23:00	0.5	SE	0.2	SSE	0.3	SE	0.3	N
23:00 - 24:00	0.4	E	0.2	ESE	0.2	SE	0.3	NNW
00:00 - 01:00	0.6	ESE	0.2	SSE	0.6	E	0.5	NNW
01:00 - 02:00	0.2	SSW	0.6	SSE	0.2	SSW	0.6	NNW
02:00 - 03:00	0.2	N	0.3	SSW	0.6	SSE	0.4	N
03:00 - 04:00	0.5	NNW	1.9	SSE	0.2	SSE	0.5	NNE
04:00 - 05:00	0.4	N	0.6	N	0.2	SSE	0.5	N
05:00 - 06:00	0.4	NNW	0.2	NNW	0.5	NNW	0.5	ESE
06:00 - 07:00	0.2	NNW	0.4	NNW	0.4	N	0.3	E
07:00 - 08:00	0.5	NNW	0.4	NNW	0.2	NNW	0.3	SSE
08:00 - 09:00	0.5	E	0.2	NW	0.2	N	0.6	ESE
09:00 - 10:00	0.3	SE	0.5	NNW	0.2	WSW	0.2	SE
10:00 - 11:00	1.7	SSE	0.2	W	0.3	SSW	0.4	SSE
11:00 - 12:00	0.4	SSE	2.2	S	0.6	S	0.4	SE
12:00 - 13:00	0.2	WSW	0.5	S	2.5	SSE	0.9	ESE
13:00 - 14:00	1.5	W	0.2	SSW	1.7	SSE	2.3	SSE
Wind Rose								



File Control :R:\Database\Windrose\FileControl\Win-223030-Technology IRPC School 19-26 Jan 2024

(Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

(Miss Preeda Somjai)  
 Technical Management Team



# Meteorological Monitoring Results : Wind Rose

## MTR-CPL

Location : Technology IRPC School

Monitor period : 19-26 Jan 2024

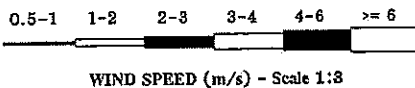
Wind Speed Model : NRG Symphonie

Serial No : A5091

Wind Direction Model : NRG Symphonie

Serial No : A5091

Time	23-24 Jan 2024		24-25 Jan 2024		25-26 Jan 2024		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
14:00 - 15:00	0.4	E	0.3	NNW	0.5	NW	
15:00 - 16:00	1.3	SE	0.6	N	1.5	W	
16:00 - 17:00	0.6	SSE	0.5	WSW	0.8	WNW	
17:00 - 18:00	0.5	SSE	0.2	W	0.3	WNW	
18:00 - 19:00	0.2	E	0.2	W	0.5	SW	
19:00 - 20:00	0.3	ESE	0.4	W	0.6	N	
20:00 - 21:00	0.2	ENE	0.5	SE	0.3	N	
21:00 - 22:00	0.5	E	0.4	N	0.6	N	
22:00 - 23:00	0.4	E	0.2	NNW	0.4	N	
23:00 - 24:00	0.5	NNW	0.2	N	0.4	N	
00:00 - 01:00	0.2	N	0.5	W	0.3	N	
01:00 - 02:00	0.4	NNW	0.6	NNW	0.3	N	
02:00 - 03:00	0.3	NNE	1.7	NNW	0.3	NNE	
03:00 - 04:00	0.3	N	0.5	NW	0.8	N	
04:00 - 05:00	1.2	E	2.0	N	0.5	N	
05:00 - 06:00	0.4	E	1.5	N	0.6	N	
06:00 - 07:00	0.2	N	0.5	NNW	0.9	N	
07:00 - 08:00	0.6	N	0.5	N	3.2	NNE	
08:00 - 09:00	0.4	N	0.6	N	0.2	NE	
09:00 - 10:00	2.3	N	0.4	SW	0.6	SE	
10:00 - 11:00	1.3	N	2.0	SSE	1.0	N	
11:00 - 12:00	1.9	N	0.5	N	1.6	NE	
12:00 - 13:00	0.4	N	0.3	SSE	0.4	W	
13:00 - 14:00	0.4	N	0.4	SE	0.4	ENE	
Wind Rose							



File Control : R:\Database\Windrose\FileControl\NWin-223030-Technology IRPC School 19-26 Jan 2024

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor period : 19-26 Jan 2024

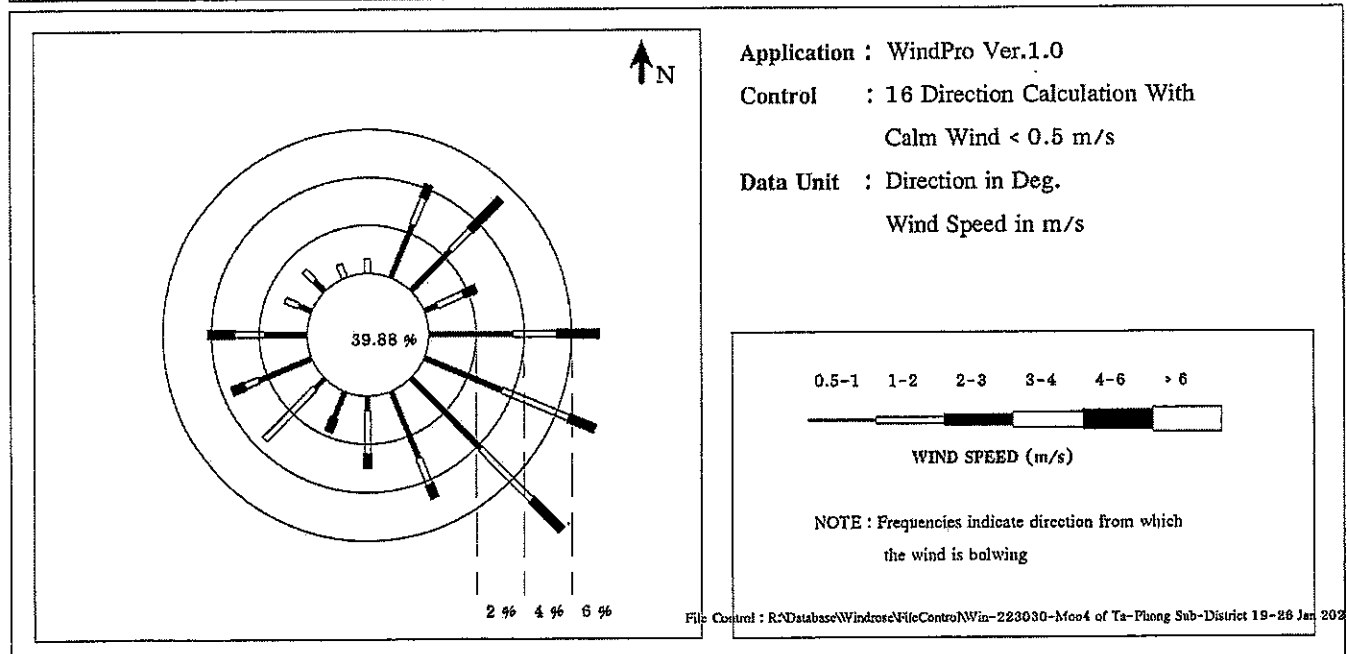
Wind Speed Model : NRG Symphonie

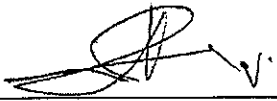
Serial No : A5084

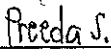
Wind Direction Model : NRG Symphonie

Serial No : A5084

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
NNE	0.0238	0.0119	0.0060	0.0000	0.0000	0.0000	0.0417
NE	0.0238	0.0119	0.0179	0.0000	0.0000	0.0000	0.0536
ENE	0.0060	0.0119	0.0060	0.0000	0.0000	0.0000	0.0238
E	0.0357	0.0179	0.0179	0.0000	0.0000	0.0000	0.0714
ESE	0.0357	0.0298	0.0119	0.0000	0.0000	0.0000	0.0774
SE	0.0417	0.0298	0.0179	0.0000	0.0000	0.0000	0.0893
SSE	0.0298	0.0119	0.0060	0.0000	0.0000	0.0000	0.0476
S	0.0060	0.0179	0.0060	0.0000	0.0000	0.0000	0.0298
SSW	0.0119	0.0000	0.0060	0.0000	0.0000	0.0000	0.0179
SW	0.0060	0.0298	0.0000	0.0000	0.0000	0.0000	0.0357
WSW	0.0238	0.0060	0.0060	0.0000	0.0000	0.0000	0.0357
W	0.0179	0.0119	0.0119	0.0000	0.0000	0.0000	0.0417
WNW	0.0060	0.0060	0.0000	0.0000	0.0000	0.0000	0.0119
NW	0.0060	0.0060	0.0000	0.0000	0.0000	0.0000	0.0119
NNW	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
CALM	0.3988						



  
 (Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

  
 (Miss Preeda Somjai)  
 Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor period : 19-26 Jan 2024

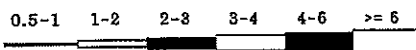
Wind Speed Model : NRG Symphonie

Serial No : A5084

Wind Direction Model : NRG Symphonie

Serial No : A5084

Time	19-20 Jan 2024		20-21 Jan 2024		21-22 Jan 2024		22-23 Jan 2024	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
15:00 - 16:00	1.5	WNW	0.6	SSW	0.3	WNW	0.2	SSW
16:00 - 17:00	0.8	SSW	0.6	WSW	1.4	WSW	1.9	W
17:00 - 18:00	1.6	NW	0.4	WSW	0.6	W	0.6	W
18:00 - 19:00	0.2	WNW	0.2	W	1.9	NNW	2.2	SE
19:00 - 20:00	1.1	E	1.9	SE	1.4	SW	0.2	ESE
20:00 - 21:00	1.0	ESE	0.2	SE	1.9	E	0.5	SE
21:00 - 22:00	0.6	SSE	0.5	ESE	0.3	SSE	1.8	ENE
22:00 - 23:00	0.6	SE	0.4	SSE	0.5	S	0.9	ESE
23:00 - 24:00	0.3	ESE	0.2	ESE	0.2	SE	0.2	E
00:00 - 01:00	1.5	S	2.4	S	0.2	ESE	0.3	SE
01:00 - 02:00	1.3	SE	0.3	SSW	0.4	SE	1.8	NE
02:00 - 03:00	0.3	E	0.5	WSW	0.3	ESE	0.5	ENE
03:00 - 04:00	2.0	E	0.3	SW	0.6	SE	1.9	ESE
04:00 - 05:00	0.4	E	0.6	WSW	0.2	ESE	0.6	ESE
05:00 - 06:00	1.3	E	1.8	SE	2.3	SSW	0.6	SE
06:00 - 07:00	2.1	ENE	1.9	NE	2.0	ESE	0.3	SSE
07:00 - 08:00	1.4	ESE	1.9	S	1.2	NNE	0.3	S
08:00 - 09:00	0.3	ESE	0.5	ESE	0.3	NE	0.6	SSE
09:00 - 10:00	0.5	SE	0.6	WNW	1.5	SE	0.4	ESE
10:00 - 11:00	1.6	W	0.4	NW	2.2	NNE	1.9	SW
11:00 - 12:00	0.7	NW	0.7	W	0.8	WSW	0.6	SW
12:00 - 13:00	1.3	SW	0.4	SW	1.4	N	1.0	SSE
13:00 - 14:00	0.3	WSW	0.3	SW	1.2	SW	0.6	SSE
14:00 - 15:00	0.2	WSW	2.5	W	0.2	SW	0.6	SSE
Wind Rose								



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

File Control : R:\Database\WindroseFileControl\Win-228030-Moo4 of Ta-Phong Sub-District 19-26 Jan 2024

(Miss Katesarin Vorradetwittaya)  
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 : 19-26 Jan 2024

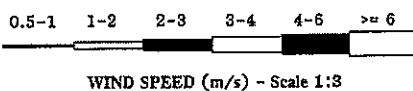
Wind Speed Model : NRG Symphonie

Serial No : A5084


Wind Direction Model : NRG Symphonie


Serial No : A5084

Time	23-24 Jan 2024		24-25 Jan 2024		25-26 Jan 2024		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
15:00 - 16:00	0.4	SSE	0.4	NNE	2.2	W	
16:00 - 17:00	1.4	SW	0.5	NE	0.4	WNW	
17:00 - 18:00	0.2	SSW	0.5	E	2.4	NE	
18:00 - 19:00	2.3	SSE	0.4	NNE	0.2	NE	
19:00 - 20:00	0.3	ESE	0.5	NNE	2.5	E	
20:00 - 21:00	1.5	S	0.6	NE	2.1	E	
21:00 - 22:00	0.7	SE	0.6	NNE	0.6	E	
22:00 - 23:00	0.6	SE	0.6	NE	0.6	E	
23:00 - 24:00	0.4	E	0.2	NE	0.3	N	
00:00 - 01:00	0.4	E	2.2	ESE	0.3	NE	
01:00 - 02:00	1.8	ENE	2.1	NE	0.3	NE	
02:00 - 03:00	0.6	E	0.3	N	0.2	NNE	
03:00 - 04:00	1.3	ESE	0.4	NNE	0.2	NE	
04:00 - 05:00	0.6	ESE	0.6	NNE	0.4	NE	
05:00 - 06:00	0.6	ESE	0.3	NE	0.2	NE	
06:00 - 07:00	0.3	ESE	1.0	ESE	0.4	NE	
07:00 - 08:00	0.2	SE	2.1	NE	2.5	SE	
08:00 - 09:00	1.0	NNE	0.4	NE	0.2	ESE	
09:00 - 10:00	0.3	ENE	0.5	E	0.4	ESE	
10:00 - 11:00	0.6	NE	1.9	SE	0.7	NNE	
11:00 - 12:00	0.4	N	0.3	SE	2.2	SE	
12:00 - 13:00	0.3	NNE	0.4	S	0.4	E	
13:00 - 14:00	0.4	NNE	0.5	SSE	0.5	E	
14:00 - 15:00	0.4	NE	2.5	WSW	1.5	SSE	
Wind Rose							



File Control :R:\Database\Windrose\FileControl\Win-223030-Moo4 of Ta-Phong Sub-District 19-26 Jan 2024

  
 (Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

  
 (Miss Preeda Somjai)  
 Technical Management Team





## Ambient Air Monitoring Results : Nitrogen dioxide MTR-CPL

Location : Technology IRPC School	Monitor Period : 19-26 Jan 2024
Analyzer Model : API 200A	Station No : Mobile 10
Serial No : 2385	Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E	Serial No : 587
Calibration Gas Cylinder I.D.: EB0108319	
Certified Date : 03 Jan 2024	Cal Concentration (ppb) : 0,100,200,400
Expire Date : 02 Jan 2025	

Time	NO2 Concentration (ppm)						
	19-20 Jan 2024	20-21 Jan 2024	21-22 Jan 2024	22-23 Jan 2024	23-24 Jan 2024	24-25 Jan 2024	25-26 Jan 2024
14:00 - 15:00	0.0087	0.0059	0.0058	0.0102	0.0097	0.0118	0.0116
15:00 - 16:00	0.0098	0.0079	0.0076	0.0117	0.0100	0.0138	0.0112
16:00 - 17:00	0.0122	0.0099	0.0082	0.0130	0.0099	0.0118	0.0081
17:00 - 18:00	0.0122	0.0081	0.0126	0.0120	0.0154	0.0067	0.0118
18:00 - 19:00	0.0124	0.0109	0.0109	0.0119	0.0050	0.0098	0.0124
19:00 - 20:00	0.0124	0.0111	0.0126	0.0063	0.0097	0.0093	0.0111
20:00 - 21:00	0.0176	0.0128	0.0050	0.0146	0.0089	0.0096	0.0132
21:00 - 22:00	0.0105	0.0051	0.0112	0.0112	0.0126	0.0102	0.0125
22:00 - 23:00	0.0022	0.0131	0.0106	0.0081	0.0087	0.0062	0.0080
23:00 - 00:00	0.0153	0.0172	0.0104	0.0111	0.0098	0.0065	0.0076
00:00 - 01:00	0.0086	0.0080	0.0096	0.0126	0.0106	0.0081	0.0073
01:00 - 02:00	0.0053	0.0060	0.0058	0.0049	0.0071	0.0072	0.0050
02:00 - 03:00	0.0088	0.0068	0.0084	0.0071	0.0076	0.0083	0.0066
03:00 - 04:00	0.0067	0.0062	0.0070	0.0066	0.0070	0.0050	0.0055
04:00 - 05:00	0.0060	0.0068	0.0091	0.0080	0.0068	0.0072	0.0088
05:00 - 06:00	0.0050	0.0090	0.0090	0.0086	0.0081	0.0060	0.0074
06:00 - 07:00	0.0057	0.0076	0.0113	0.0090	0.0061	0.0078	0.0071
07:00 - 08:00	0.0078	0.0078	0.0099	0.0137	0.0091	0.0084	0.0088
08:00 - 09:00	0.0086	0.0097	0.0108	0.0107	0.0101	0.0081	0.0086
09:00 - 10:00	0.0133	0.0102	0.0092	0.0122	0.0110	0.0101	0.0117
10:00 - 11:00	0.0069	0.0054	0.0090	0.0109	0.0102	0.0113	0.0087
11:00 - 12:00	0.0060	0.0078	0.0107	0.0097	0.0099	0.0109	0.0088
12:00 - 13:00	0.0086	0.0063	0.0094	0.0085	0.0094	0.0091	0.0097
13:00 - 14:00	0.0086	0.0062	0.0092	0.0096	0.0112	0.0101	0.0102
Average-24Hr*	0.0092	0.0086	0.0093	0.0101	0.0092	0.0089	0.0092
Max-1Hr	0.0176	0.0172	0.0126	0.0146	0.0154	0.0138	0.0132
Min-1Hr	0.0022	0.0051	0.0050	0.0049	0.0050	0.0050	0.0050
Standard-1Hr	0.17 ppm(320 ug/cu.m)						
Standard-24Hr	-						

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Ambient Air Monitoring Results : Nitrogen dioxide MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor Period : 19-26 Jan 2024

Analyzer Model : API 200A

Station No : SS2-03

Serial No : 2387

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

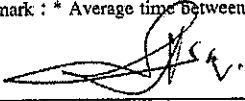
Certified Date : 05 Jan 2024

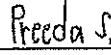
Cal Concentration (ppb) : 0,100,200,400

Expire Date : 04 Jan 2025

Time	NO2 Concentration (ppm)						
	19-20 Jan 2024	20-21 Jan 2024	21-22 Jan 2024	22-23 Jan 2024	23-24 Jan 2024	24-25 Jan 2024	25-26 Jan 2024
15:00 - 16:00	0.0079	0.0080	0.0089	0.0103	0.0062	0.0118	0.0091
16:00 - 17:00	0.0104	0.0077	0.0095	0.0103	0.0110	0.0125	0.0052
17:00 - 18:00	0.0108	0.0076	0.0092	0.0111	0.0122	0.0046	0.0116
18:00 - 19:00	0.0113	0.0134	0.0080	0.0135	0.0035	0.0077	0.0096
19:00 - 20:00	0.0111	0.0103	0.0105	0.0035	0.0093	0.0072	0.0068
20:00 - 21:00	0.0140	0.0103	0.0042	0.0141	0.0071	0.0081	0.0115
21:00 - 22:00	0.0105	0.0015	0.0134	0.0103	0.0097	0.0081	0.0112
22:00 - 23:00	0.0011	0.0124	0.0067	0.0095	0.0091	0.0083	0.0097
23:00 - 00:00	0.0125	0.0138	0.0104	0.0093	0.0070	0.0065	0.0071
00:00 - 01:00	0.0065	0.0086	0.0101	0.0095	0.0093	0.0079	0.0072
01:00 - 02:00	0.0041	0.0037	0.0053	0.0051	0.0050	0.0048	0.0074
02:00 - 03:00	0.0084	0.0049	0.0074	0.0070	0.0040	0.0072	0.0081
03:00 - 04:00	0.0048	0.0080	0.0080	0.0057	0.0048	0.0059	0.0078
04:00 - 05:00	0.0063	0.0075	0.0066	0.0056	0.0058	0.0063	0.0067
05:00 - 06:00	0.0071	0.0057	0.0087	0.0043	0.0077	0.0064	0.0067
06:00 - 07:00	0.0047	0.0056	0.0070	0.0093	0.0069	0.0061	0.0068
07:00 - 08:00	0.0084	0.0088	0.0099	0.0123	0.0091	0.0075	0.0093
08:00 - 09:00	0.0080	0.0090	0.0110	0.0095	0.0065	0.0093	0.0087
09:00 - 10:00	0.0086	0.0093	0.0102	0.0113	0.0074	0.0091	0.0107
10:00 - 11:00	0.0083	0.0040	0.0105	0.0101	0.0082	0.0085	0.0080
11:00 - 12:00	0.0065	0.0046	0.0089	0.0101	0.0085	0.0079	0.0096
12:00 - 13:00	0.0059	0.0062	0.0078	0.0076	0.0085	0.0069	0.0073
13:00 - 14:00	0.0073	0.0048	0.0105	0.0058	0.0088	0.0115	0.0103
14:00 - 15:00	0.0063	0.0074	0.0076	0.0050	0.0093	0.0071	0.0114
Average-24Hr*	0.0080	0.0076	0.0088	0.0088	0.0077	0.0078	0.0087
Max-1Hr	0.0140	0.0138	0.0134	0.0141	0.0122	0.0125	0.0116
Min-1Hr	0.0011	0.0015	0.0042	0.0035	0.0035	0.0046	0.0052
Standard-1Hr	0.17 ppm(320 ug/cu.m)						
Standard-24Hr	-						

Remark : \* Average time Between 15:00-15:00

  
 (Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

  
 (Miss Preeda Somjai)  
 Technical Management Team



## Ambient Air Monitoring Results : Sulfur dioxide

### MTR-CPL

Location : Technology IRPC School

Monitor Period : 19-26 Jan 2024

Analyzer Model : Thermo 43C

Station No : Mobile 10

Serial No : 60771-328-2

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 04 Jan 2024

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

Expire Date : 03 Jan 2025

Time	SO2 Concentration (ppm)						
	19-20 Jan 2024	20-21 Jan 2024	21-22 Jan 2024	22-23 Jan 2024	23-24 Jan 2024	24-25 Jan 2024	25-26 Jan 2024
14:00 - 15:00	0.0058	0.0021	0.0033	0.0030	0.0037	0.0022	0.0060
15:00 - 16:00	0.0038	0.0039	0.0062	0.0052	0.0043	0.0020	0.0039
16:00 - 17:00	0.0049	0.0065	0.0056	0.0048	0.0039	0.0055	0.0026
17:00 - 18:00	0.0042	0.0029	0.0064	0.0042	0.0049	0.0032	0.0049
18:00 - 19:00	0.0062	0.0049	0.0051	0.0036	0.0043	0.0039	0.0069
19:00 - 20:00	0.0025	0.0045	0.0042	0.0055	0.0047	0.0025	0.0027
20:00 - 21:00	0.0051	0.0070	0.0058	0.0033	0.0033	0.0035	0.0042
21:00 - 22:00	0.0064	0.0039	0.0032	0.0062	0.0027	0.0050	0.0067
22:00 - 23:00	0.0035	0.0022	0.0039	0.0024	0.0038	0.0020	0.0037
23:00 - 00:00	0.0039	0.0028	0.0038	0.0030	0.0039	0.0035	0.0035
00:00 - 01:00	0.0026	0.0064	0.0048	0.0044	0.0070	0.0024	0.0035
01:00 - 02:00	0.0049	0.0023	0.0049	0.0027	0.0029	0.0042	0.0069
02:00 - 03:00	0.0068	0.0032	0.0052	0.0033	0.0028	0.0026	0.0035
03:00 - 04:00	0.0046	0.0061	0.0024	0.0070	0.0061	0.0044	0.0051
04:00 - 05:00	0.0068	0.0068	0.0027	0.0067	0.0025	0.0065	0.0070
05:00 - 06:00	0.0048	0.0037	0.0069	0.0034	0.0068	0.0042	0.0064
06:00 - 07:00	0.0038	0.0068	0.0044	0.0063	0.0046	0.0044	0.0027
07:00 - 08:00	0.0058	0.0047	0.0040	0.0052	0.0037	0.0021	0.0057
08:00 - 09:00	0.0068	0.0064	0.0025	0.0046	0.0034	0.0038	0.0054
09:00 - 10:00	0.0047	0.0066	0.0021	0.0031	0.0034	0.0063	0.0060
10:00 - 11:00	0.0023	0.0020	0.0038	0.0028	0.0026	0.0053	0.0038
11:00 - 12:00	0.0026	0.0020	0.0055	0.0037	0.0057	0.0065	0.0051
12:00 - 13:00	0.0022	0.0043	0.0056	0.0053	0.0055	0.0062	0.0063
13:00 - 14:00	0.0063	0.0039	0.0050	0.0057	0.0030	0.0062	0.0054
Average-24Hr*	0.0046	0.0044	0.0045	0.0044	0.0041	0.0041	0.0049
Max-1Hr	0.0068	0.0070	0.0069	0.0070	0.0070	0.0065	0.0070
Min-1Hr	0.0022	0.0020	0.0021	0.0024	0.0025	0.0020	0.0026
Standard-1Hr	0.30 ppm(780 ug/cu.m)						
Standard-24Hr	0.12 ppm(300 ug/cu.m)						

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

(Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

(Miss Preeda Somjai)  
 Technical Management Team



## Ambient Air Monitoring Results : Sulfur dioxide MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor Period : 19-26 Jan 2024

Analyzer Model : Thermo 43C

Station No : SS2-03

Serial No : 0607415773

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 04 Jan 2024

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

Expire Date : 03 Jan 2025

Time	SO2 Concentration (ppm)						
	19-20 Jan 2024	20-21 Jan 2024	21-22 Jan 2024	22-23 Jan 2024	23-24 Jan 2024	24-25 Jan 2024	25-26 Jan 2024
15:00 - 16:00	0.0044	0.0035	0.0040	0.0021	0.0034	0.0014	0.0040
16:00 - 17:00	0.0020	0.0044	0.0049	0.0038	0.0028	0.0030	0.0038
17:00 - 18:00	0.0053	0.0057	0.0039	0.0037	0.0023	0.0027	0.0022
18:00 - 19:00	0.0028	0.0029	0.0055	0.0031	0.0048	0.0021	0.0023
19:00 - 20:00	0.0040	0.0038	0.0032	0.0048	0.0032	0.0021	0.0036
20:00 - 21:00	0.0046	0.0044	0.0048	0.0039	0.0037	0.0037	0.0030
21:00 - 22:00	0.0049	0.0052	0.0034	0.0043	0.0023	0.0020	0.0016
22:00 - 23:00	0.0060	0.0026	0.0025	0.0022	0.0038	0.0043	0.0035
23:00 - 00:00	0.0033	0.0015	0.0026	0.0034	0.0036	0.0031	0.0045
00:00 - 01:00	0.0031	0.0036	0.0045	0.0032	0.0050	0.0036	0.0030
01:00 - 02:00	0.0028	0.0046	0.0042	0.0035	0.0051	0.0046	0.0032
02:00 - 03:00	0.0055	0.0035	0.0032	0.0032	0.0035	0.0029	0.0024
03:00 - 04:00	0.0052	0.0027	0.0043	0.0023	0.0024	0.0019	0.0031
04:00 - 05:00	0.0033	0.0043	0.0045	0.0038	0.0052	0.0037	0.0033
05:00 - 06:00	0.0036	0.0055	0.0016	0.0031	0.0029	0.0051	0.0036
06:00 - 07:00	0.0046	0.0045	0.0040	0.0020	0.0036	0.0033	0.0048
07:00 - 08:00	0.0037	0.0026	0.0030	0.0027	0.0043	0.0039	0.0040
08:00 - 09:00	0.0025	0.0037	0.0034	0.0053	0.0039	0.0014	0.0033
09:00 - 10:00	0.0035	0.0041	0.0036	0.0043	0.0048	0.0042	0.0043
10:00 - 11:00	0.0031	0.0026	0.0026	0.0029	0.0036	0.0036	0.0027
11:00 - 12:00	0.0024	0.0025	0.0029	0.0039	0.0025	0.0050	0.0040
12:00 - 13:00	0.0039	0.0023	0.0047	0.0039	0.0043	0.0037	0.0052
13:00 - 14:00	0.0024	0.0033	0.0049	0.0032	0.0033	0.0050	0.0040
14:00 - 15:00	0.0032	0.0029	0.0033	0.0033	0.0031	0.0033	0.0035
Average-24Hr*	0.0038	0.0036	0.0037	0.0034	0.0036	0.0033	0.0035
Max-1Hr	0.0060	0.0057	0.0055	0.0053	0.0052	0.0051	0.0052
Min-1Hr	0.0020	0.0016	0.0015	0.0020	0.0023	0.0014	0.0016
Standard-1Hr	0.30 ppm(780 ug/cu.m)						
Standard-24Hr	0.12 ppm(300 ug/cu.m)						

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Ambient Air Monitoring Results : Carbon monoxide MTR-CPL

Location : Technology IRPC School

Monitor Period : 19-26 Jan 2024

Analyzer Model : API 300A

Station No : Mobile 10

Serial No : 1343

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 05 Jan 2024

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

Expire Date : 04 Jan 2025

Time	CO Concentration (ppm)						
	19-20 Jan 2024	20-21 Jan 2024	21-22 Jan 2024	22-23 Jan 2024	23-24 Jan 2024	24-25 Jan 2024	25-26 Jan 2024
14:00 - 15:00	0.3	0.4	0.4	0.4	0.5	0.6	0.4
15:00 - 16:00	0.3	0.4	0.3	0.3	0.3	0.6	0.4
16:00 - 17:00	0.5	0.4	0.4	0.5	0.3	0.2	0.6
17:00 - 18:00	0.4	0.5	0.3	0.4	0.2	0.4	0.4
18:00 - 19:00	0.3	0.5	0.5	0.3	0.5	0.4	0.4
19:00 - 20:00	0.5	0.6	0.4	0.5	0.5	0.5	0.5
20:00 - 21:00	0.6	0.3	0.3	0.5	0.4	0.4	0.5
21:00 - 22:00	0.2	0.4	0.3	0.4	0.6	0.4	0.4
22:00 - 23:00	0.4	0.5	0.5	0.3	0.3	0.6	0.4
23:00 - 00:00	0.5	0.5	0.4	0.5	0.4	0.6	0.5
00:00 - 01:00	0.3	0.4	0.5	0.3	0.4	0.6	0.6
01:00 - 02:00	0.4	0.4	0.6	0.5	0.3	0.4	0.3
02:00 - 03:00	0.4	0.4	0.5	0.4	0.4	0.4	0.5
03:00 - 04:00	0.3	0.3	0.3	0.2	0.4	0.5	0.4
04:00 - 05:00	0.5	0.5	0.3	0.5	0.5	0.6	0.5
05:00 - 06:00	0.3	0.4	0.3	0.5	0.5	0.5	0.5
06:00 - 07:00	0.3	0.3	0.4	0.3	0.5	0.6	0.4
07:00 - 08:00	0.5	0.4	0.4	0.4	0.6	0.6	0.5
08:00 - 09:00	0.5	0.3	0.5	0.6	0.5	0.5	0.4
09:00 - 10:00	0.5	0.3	0.3	0.4	0.5	0.4	0.5
10:00 - 11:00	0.4	0.2	0.4	0.4	0.6	0.6	0.4
11:00 - 12:00	0.3	0.3	0.3	0.4	0.6	0.5	0.5
12:00 - 13:00	0.3	0.4	0.4	0.3	0.6	0.4	0.3
13:00 - 14:00	0.4	0.4	0.4	0.4	0.3	0.5	0.5
Average-24Hr*	0.4	0.4	0.4	0.4	0.4	0.5	0.5
Max-1Hr	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Min-1Hr	0.2	0.2	0.3	0.2	0.2	0.2	0.3
Standard-1Hr	30 ppm(34.2 mg/cu.m)						
Standard-24Hr	-						

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Ambient Air Monitoring Results : Carbon monoxide MTR-CPL

Location : Moo4 of Ta-Phong Sub-District	Monitor Period : 19-26 Jan 2024
Analyzer Model : Thermo 48C	Station No : SS2-03
Serial No : 362	Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E	Serial No : 587
Calibration Gas Cylinder I.D.: EB0108319	
Certified Date : 05 Jan 2024	Cal Concentration (ppb) : 0,100,200,400
Expire Date : 04 Jan 2025	

Time	CO Concentration (ppm)						
	19-20 Jan 2024	20-21 Jan 2024	21-22 Jan 2024	22-23 Jan 2024	23-24 Jan 2024	24-25 Jan 2024	25-26 Jan 2024
15:00 - 16:00	0.2	0.2	0.4	0.5	0.3	0.6	0.4
16:00 - 17:00	0.2	0.5	0.4	0.3	0.4	0.5	0.2
17:00 - 18:00	0.4	0.4	0.4	0.4	0.5	0.4	0.4
18:00 - 19:00	0.5	0.3	0.5	0.4	0.4	0.6	0.4
19:00 - 20:00	0.4	0.3	0.3	0.2	0.6	0.6	0.4
20:00 - 21:00	0.5	0.5	0.3	0.3	0.5	0.5	0.3
21:00 - 22:00	0.5	0.1	0.5	0.4	0.4	0.4	0.5
22:00 - 23:00	0.1	0.5	0.3	0.4	0.4	0.4	0.6
23:00 - 00:00	0.4	0.6	0.3	0.4	0.5	0.6	0.4
00:00 - 01:00	0.6	0.5	0.4	0.3	0.5	0.5	0.5
01:00 - 02:00	0.4	0.2	0.5	0.5	0.6	0.6	0.3
02:00 - 03:00	0.3	0.4	0.3	0.2	0.5	0.5	0.4
03:00 - 04:00	0.5	0.5	0.4	0.3	0.5	0.3	0.5
04:00 - 05:00	0.3	0.4	0.5	0.4	0.5	0.6	0.4
05:00 - 06:00	0.5	0.2	0.5	0.3	0.4	0.6	0.3
06:00 - 07:00	0.3	0.4	0.4	0.3	0.6	0.4	0.5
07:00 - 08:00	0.3	0.3	0.5	0.5	0.4	0.5	0.4
08:00 - 09:00	0.3	0.5	0.6	0.4	0.4	0.5	0.4
09:00 - 10:00	0.5	0.6	0.5	0.4	0.6	0.4	0.6
10:00 - 11:00	0.6	0.3	0.4	0.4	0.6	0.4	0.4
11:00 - 12:00	0.5	0.4	0.3	0.5	0.6	0.6	0.5
12:00 - 13:00	0.3	0.4	0.4	0.4	0.5	0.6	0.3
13:00 - 14:00	0.3	0.4	0.4	0.5	0.6	0.3	0.5
14:00 - 15:00	0.5	0.4	0.5	0.3	0.4	0.3	0.3
Average-24Hr*	0.4	0.4	0.4	0.4	0.5	0.5	0.4
Max-1Hr	0.6	0.6	0.6	0.5	0.6	0.6	0.6
Min-1Hr	0.1	0.1	0.3	0.2	0.3	0.3	0.2
Standard-1Hr	30 ppm(34.2 mg/cu.m)						
Standard-24Hr	-						

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

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


### AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : UBE Chemicals (Asia) Public Co., Ltd. REFERENCE NO. : 223030 Amb (Cert.)/Jan/TSP  
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 19-26/01/2024  
RECEIVED DATE : 30/01/2024 ANALYTICAL DATE : 01-02/02/2024  
REPORT DATE : 05/02/2024 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)	19-20/01/2024	mg/m <sup>3</sup>	0.123	0.090	0.330	40 CFR 50 App. B
	20-21/01/2024	mg/m <sup>3</sup>	0.062	0.072		
	21-22/01/2024	mg/m <sup>3</sup>	0.057	0.073		
	22-23/01/2024	mg/m <sup>3</sup>	0.084	0.082		
	23-24/01/2024	mg/m <sup>3</sup>	0.067	0.106		
	24-25/01/2024	mg/m <sup>3</sup>	0.089	0.116		
	25-26/01/2024	mg/m <sup>3</sup>	0.087	0.097		

  
(Miss Pornnapa Budthum)

Analyst

  
(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. : 223030 Amb (Cert.)/Jan/PM-10  
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 19-26/01/2024  
RECEIVED DATE : 30/01/2024 ANALYTICAL DATE : 01-02/02/2024  
REPORT DATE : 05/02/2024 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)	19-20/01/2024	mg/m <sup>3</sup>	0.061	0.040	0.120	40 CFR 50 App. J
	20-21/01/2024	mg/m <sup>3</sup>	0.047	0.032		
	21-22/01/2024	mg/m <sup>3</sup>	0.043	0.030		
	22-23/01/2024	mg/m <sup>3</sup>	0.054	0.035		
	23-24/01/2024	mg/m <sup>3</sup>	0.065	0.051		
	24-25/01/2024	mg/m <sup>3</sup>	0.070	0.057		
	25-26/01/2024	mg/m <sup>3</sup>	0.073	0.034		



(Miss Pornnapa Budthum)

Analyst



(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).



## ภาคผนวก ง.2

ใบรับรองผลการตรวจวัดคุณภาพอากาศจากปล่องระบายอากาศ



บริษัท ซีคอต จำกัด  
SECOT CO., LTD.

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemical (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030/Sik(Cert.)/Jan/RTO
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 25/01/2024
RECEIVED DATE	: 26/01/2024	ANALYTICAL DATE	: 30/01/2024
REPORT DATE	: 02/02/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: Outlet of RTO Stack	SITE OPERATOR	: Mr. Rommadon Lemmad
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: LPG
STACK DESCRIPTION			


Height	: 35.0	m	Gas Velocity	: 9.9	m/s
Diameter	: 1.95	m	Flow Rate*	: 1,105	Ncu.m/min
Temperature	: 153.3	°C	Excess Oxygen	: 13.7	%

PARAMETER	UNIT	RESULT*		STANDARD <sup>1/</sup>	REFERENCE METHOD
		13.7%O <sub>2</sub>	7%O <sub>2</sub>		
Oxide of Nitrogen (NO <sub>x</sub> )	ppm	4.7	9.0	200	US. EPA Method 7

  
(Miss Pornnapa Budthum)

Analyst

REG.NO.จ-239-จ-0018

  
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-0010

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

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

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

4. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,  
B.E.2549 @ 7% O<sub>2</sub>.



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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 223030/Stk(Cert.)/Jan/RTO  
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 25/01/2024  
RECEIVED DATE : 26/01/2024 ANALYTICAL DATE : 29/01/2024  
REPORT DATE : 02/02/2024 SAMPLE CONDITION : Normal  
STACK LOCATION : Outlet of RTO Stack SITE OPERATOR : Mr. Rommadon Lemmad  
SOURCE DESCRIPTION : Combustion FUEL TYPE : LPG  
STACK DESCRIPTION

Height : 35.0 m Gas Velocity : 9.9 m/s  
Diameter : 1.95 m Flow Rate\* : 1,105 Nm<sup>3</sup>/min  
Temperature : 153.3 °C Excess Oxygen : 13.7 %

PARAMETER	UNIT	RESULT*		STANDARD <sup>1/</sup>	REFERENCE METHOD
		13.7%O <sub>2</sub>	7%O <sub>2</sub>		
Carbon Monoxide (CO)	ppm	19.3	37.2	690	US. EPA Method 10

Sudaporn S.  
(Miss Sudaporn Soonthorn)  
Analyst  
REG.NO.จ-239-จ-0001

Narisa Poowasanpetch  
(Miss Narisa Poowasanpetch)  
Technical Management Team  
REG.NO.จ-239-ท-0010

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

4. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,  
B.E.2549 @ 7% O<sub>2</sub>.



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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 223030/Stk(Cert.)/Jan/HTS Furnace  
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 24/01/2024  
RECEIVED DATE : 26/01/2024 ANALYTICAL DATE : 26/01/2024  
REPORT DATE : 02/02/2024 SAMPLE CONDITION : Normal  
STACK LOCATION : HTS Furnace Off Gas SITE OPERATOR : Mr. Rommadon Lemmad  
SOURCE DESCRIPTION : Combustion FUEL TYPE : LPG+H<sub>2</sub>  
STACK DESCRIPTION

Height : 30.0 m Gas Velocity : 3.9 m/s  
Diameter : 1.24 m Flow Rate\* : 109 Ncu.m/min  
Temperature : 385.3 °C Excess Oxygen : 4.5 %

PARAMETER	UNIT	RESULT*		STANDARD <sup>1/</sup>	REFERENCE METHOD
		4.5% O <sub>2</sub>	7% O <sub>2</sub>		
Oxides of Nitrogen (NO <sub>x</sub> )	ppm	19.6	16.7	200	US. EPA Method 7

(Miss Pornnapa Budthum)

Analyst

REG.NO.จ-239-ก-0018

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ก-0010

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3. \* At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.  
4. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment, B.E.2549 @ 7% O<sub>2</sub>.



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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemical (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030/Std(Cert.)/Mar/NOx
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 28/03/2024
RECEIVED DATE	: 29/03/2024	ANALYTICAL DATE	: 29/03/2024
REPORT DATE	: 09/04/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: Waste Gas Treatment Off Gas	SITE OPERATOR	: Mr. Rommadon Lemmad
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: LPG+H <sub>2</sub>

#### STACK DESCRIPTION

Height	: 37.0	m	Gas Velocity	: 39.3	m/s
Diameter	: 0.9	m	Flow Rate*	: 861	Ncu.m/min
Temperature	: 180.2	°C	Excess Oxygen	: 5.7	%

PARAMETER	UNIT	RESULT*		STANDARD <sup>1/</sup>	REFERENCE METHOD
		5.7% O <sub>2</sub>	7% O <sub>2</sub>		
Oxides of Nitrogen (NO <sub>x</sub> )	ppm	65.8	60.1	200	US. EPA Method 7

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.2-239-ก-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.2-239-ก-0010

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

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

4. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,  
B.E.2549 @ 7% O<sub>2</sub>.



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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemical (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030/Slk(Cert.)/Mar/WGT
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 28/03/2024
RECEIVED DATE	: 29/03/2024	ANALYTICAL DATE	: 04/04/2024
REPORT DATE	: 09/04/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: Waste Gas Treatment Off Gas	SITE OPERATOR	: Mr. Rommadon Lemmad
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: LPG+H <sub>2</sub>

#### STACK DESCRIPTION

Height	: 37.0	m	Gas Velocity	: 39.3	m/s
Diameter	: 0.9	m	Flow Rate*	: 861	Ncu.m/min
Temperature	: 180.2	°C	Excess Oxygen	: 5.7	%

PARAMETER	UNIT	RESULT*		STANDARD	REFERENCE METHOD
		5.7% O <sub>2</sub>	7% O <sub>2</sub>		
Ammonia (NH <sub>3</sub> )	ppm	4.5	4.1	-	US. EPA Method CTM-027

Janista Kui-on  
(Miss Janista Kui-on)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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

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. : 223030/Stk(Cert.)/Jan/Column Ds  
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 22/01/2024  
RECEIVED DATE : 23/01/2024 ANALYTICAL DATE : 26/01/2024  
REPORT DATE : 02/02/2024 SAMPLE CONDITION : Normal  
STACK LOCATION : Column Ds Off Gas SITE OPERATOR : Mr. Rommadon Lemmad  
SOURCE DESCRIPTION : Process

#### STACK DESCRIPTION

Height : 25.0 m Gas Velocity : 14.2 m/s  
Diameter : 0.5 m Flow Rate\* : 94 Ncu.m/min  
Temperature : 194.5 °C Excess Oxygen : 7.2 %

PARAMETER	UNIT	RESULT*	STANDARD <sup>1/</sup>	REFERENCE METHOD
Sulfur Dioxide (SO <sub>2</sub> )	ppm	ND	500	US. EPA Method 6



(Miss Pornnapa Budthum)

Analyst

REG.NO.จ-239-จ-0018



(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-0010

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

4. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,

B.E.2549 @ Actual O<sub>2</sub>.

5. ND (Non-detectable) means the concentration is less than 1.9 ppm @ Actual O<sub>2</sub>.



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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 223030/Stk(Cert.)/Jan/Column Si  
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 22/01/2024  
RECEIVED DATE : 23/01/2024 ANALYTICAL DATE : 24-26/01/2024  
REPORT DATE : 02/02/2024 SAMPLE CONDITION : Normal  
STACK LOCATION : Column Si Off Gas SITE OPERATOR : Mr. Rommadon Lemmad  
SOURCE DESCRIPTION : Process

#### STACK DESCRIPTION

Height : 23.0 m Gas Velocity : 53.9 m/s  
Diameter : 0.5 m Flow Rate\* : 568 Ncu.m/min  
Temperature : 39.8 °C Excess Oxygen : 9.1 %

PARAMETER	UNIT	RESULT*	STANDARD <sup>1/</sup>	REFERENCE METHOD
Particulate Matter (PM)	mg/Ncu.m.	4.4	320	US. EPA Method 5
Sulfur Dioxide (SO <sub>2</sub> )	ppm	ND	500	US. EPA Method 6

  
(Miss Pornnapa Budthum)

Analyst

REG.NO.จ-239-ก-0018

  
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ก-0010

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4. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,  
B.E.2549 @ Actual O<sub>2</sub>.

5. ND (Non-detectable) means the concentration is less than 1.9 ppm @ Actual O<sub>2</sub>.





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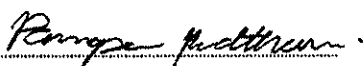
## STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 223030/Stk(Cert.)/Jan/Outlet of 2<sup>nd</sup> Absorption  
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 24/01/2024  
RECEIVED DATE : 26/01/2024 ANALYTICAL DATE : 26/01/2024  
REPORT DATE : 02/02/2024 SAMPLE CONDITION : Normal  
STACK LOCATION : Outlet of 2<sup>nd</sup> Absorption Tower Off Gas SITE OPERATOR : Mr. Rommadon Lemmad  
SOURCE DESCRIPTION : Process

### STACK DESCRIPTION

Height	: 35.0	m	Gas Velocity	: 11.0	m/s
Diameter	: 0.9	m	Flow Rate*	: 379	Ncu.m/min
Temperature	: 34.2	°C	Excess Oxygen	: 3.2	%

PARAMETER	UNIT	RESULT*	STANDARD <sup>1/</sup>	REFERENCE METHOD
Sulfur Dioxide (SO <sub>2</sub> )	ppm	ND	500	US. EPA Method 6



(Miss Pornnapa Budthum)

Analyst

REG.NO.7-239-ก-0018



(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.7-239-ก-0010

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

4. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,

B.E.2549 @ Actual O<sub>2</sub>.

5. ND (Non-detectable) means the concentration is less than 1.9 ppm @ Actual O<sub>2</sub>.



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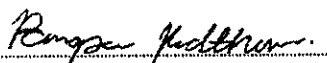
### STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemical (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030/Stk(Cert.)/Jan/Combined
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 25/01/2024
RECEIVED DATE	: 26/01/2024	ANALYTICAL DATE	: 26-30/01/2024
REPORT DATE	: 02/02/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: Combined Stack (Incinerator Unit 4400)	SITE OPERATOR	: Mr. Rommadon Lemmad
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Mixed Anone

#### STACK DESCRIPTION

Height	: 90.0	m	Gas Velocity	: 9.0	m/s
Diameter	: 0.37	m	Flow Rate*	: 43.0	Ncu.m/min
Temperature	: 75.5	°C	Excess Oxygen	: 10.8	%

PARAMETER	UNIT	RESULT*		STANDARD <sup>1/</sup>	REFERENCE METHOD
		10.8% O <sub>2</sub>	7% O <sub>2</sub>		
Particulate Matter (PM)	mg/Ncu.m.	4.7	6.5	320	US. EPA Method 5
Sulfur Dioxide (SO <sub>2</sub> )	ppm	ND	ND	60	US. EPA Method 6
Oxides of Nitrogen (NO <sub>x</sub> )	ppm	52.6	72.4	200	US. EPA Method 7



(Miss Pornnapa Budthum)

Analyst

REG.NO.7-239-ก-0018



(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.7-239-ก-0010

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4. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,  
B.E.2549 @ 7% O<sub>2</sub>.

5. ND (Non-detectable) means the concentration is less than 1.9 ppm @ Actual O<sub>2</sub>.



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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 223030/Stk(Cert.)/Jan/Combined  
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 25/01/2024  
RECEIVED DATE : 26/01/2024 ANALYTICAL DATE : 29/01/2024  
REPORT DATE : 02/02/2024 SAMPLE CONDITION : Normal  
STACK LOCATION : Combined Stack (Incinerator Unit 4400) SITE OPERATOR : Mr. Rommadon Lemmad  
SOURCE DESCRIPTION : Combustion FUEL TYPE : Mixed Anone

#### STACK DESCRIPTION

Height : 90.0 m Gas Velocity : 9.0 m/s  
Diameter : 0.37 m Flow Rate\* : 43.0 Ncu.m/min  
Temperature : 75.5 °C Excess Oxygen : 10.8 %

PARAMETER	UNIT	RESULT*		STANDARD <sup>1/</sup>	REFERENCE METHOD
		10.8% O <sub>2</sub>	7% O <sub>2</sub>		
Carbon Monoxide (CO)	ppm	5.3	7.3	690	US. EPA Method 10

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG.NO.จ-239-ท-0001

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-0010

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4. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,  
B.E.2549 @ 7% O<sub>2</sub>.



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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 22330/Stk(Cert.)/Jan/Dryer (1410-V17)  
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 23/01/2024  
RECEIVED DATE : 24/01/2024 ANALYTICAL DATE : 24-25/01/2024  
REPORT DATE : 29/01/2024 SAMPLE CONDITION : Normal  
STACK LOCATION : Dryer Off Gas (1410-V17) SITE OPERATOR : Mr. Rommadon Lemmad  
SOURCE DESCRIPTION : Process

#### STACK DESCRIPTION


Height : 23.0 m Gas Velocity : 21.1 m/s  
Diameter : 0.9 m Flow Rate\* : 662 Ncu.m/min  
Temperature : 64.0 °C Excess Oxygen : 20.8 %

PARAMETER	UNIT	RESULT*	STANDARD <sup>1/</sup>	REFERENCE METHOD
Particulate Matter (PM)	mg/Ncu.m.	2.1	400	US. EPA Method 5

  
(Miss Pornnapa Budthum)

Analyst

REG.NO.จ-239-ท-0018

  
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-0010

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

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

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

4. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,  
B.E.2549 @ Actual O<sub>2</sub>.



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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 223030/Stk(Cert.)/Mar/Dryer (1460-S4)  
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 28/03/2024  
RECEIVED DATE : 29/03/2024 ANALYTICAL DATE : 29/03-01/04/2024  
REPORT DATE : 05/04/2024 SAMPLE CONDITION : Normal  
STACK LOCATION : Dryer Off Gas (1460-S4) SITE OPERATOR : Mr. Rommadon Lemmad  
SOURCE DESCRIPTION : Process

#### STACK DESCRIPTION

Height	: 23.0	m	Gas Velocity	: 6.9	m/s
Diameter	: 1.0	m	Flow Rate*	: 283	Ncu.m/min
Temperature	: 52.0	°C	Excess Oxygen	: 20.8	%

PARAMETER	UNIT	RESULT*	STANDARD <sup>1/</sup>	REFERENCE METHOD
Particulate Matter (PM)	mg/Ncu.m.	1.3	400	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-0010

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

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

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

4. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,  
B.E.2549 @ Actual O<sub>2</sub>.



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.	: 223030/Stk(Cert.)/Jan/Dryer (1420-V22)
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 23/01/2024
RECEIVED DATE	: 23/01/2024	ANALYTICAL DATE	: 24-25/01/2024
REPORT DATE	: 29/01/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: Dryer Off Gas (1420-V22)	SITE OPERATOR	: Mr. Rommadon Lemmad
SOURCE DESCRIPTION	: Process		

#### STACK DESCRIPTION

Height	: 32.5	m	Gas Velocity	: 11.4	m/s
Diameter	: 0.9	m	Flow Rate*	: 370	Ncu.m/min
Temperature	: 54.4	°C	Excess Oxygen	: 20.6	%

PARAMETER	UNIT	RESULT*	STANDARD <sup>1/</sup>	REFERENCE METHOD
Particulate Matter (PM)	mg/Ncu.m.	1.5	400	US.EPA Method 5



(Miss Pornnapa Budthum)

Analyst

REG.NO.จ-239-ก-0018



(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ก-0010

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

4. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,  
B.E.2549 @ Actual O<sub>2</sub>.



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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030/Stk(Cert.)/Outlet(Jan)
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 26/01/2024
RECEIVED DATE	: 29/01/2024	ANALYTICAL DATE	: 29-30/01/2024
REPORT DATE	: 05/02/2024	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	: 13.6	m/s
Diameter	: 1.33	m	Flow Rate*	: 786	Ncu.m/min
Temperature	: 109.8	°C	Oxygen Content	: 8.8	%

PARAMETER	UNIT	RESULT*		STANDARD <sup>U</sup>	REFERENCE
		8.8% O <sub>2</sub>	7% O <sub>2</sub>	7% O <sub>2</sub>	METHOD
Particulate Matter (PM)	mg/Ncu.m.	2.1	2.4	320	US. EPA Method 5
Sulfur Dioxide (SO <sub>2</sub> )	ppm	ND	ND	60	US. EPA Method 6
Oxide of Nitrogen (NO <sub>x</sub> )	ppm	15.4	17.7	200	US. EPA Method 7

  
(Miss Pornnapa Budthum)

Analyst

REG.NO.7-239-ก-0018

  
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.7-239-ก-0010

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

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

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

4. <sup>U</sup> Notification of the Ministry of Industry, B.E.2549 and Notification of the Ministry of Natural Resources and Environment, B.E.2549 @ 7%O<sub>2</sub>.

5. ND (Non-detectable) means the concentration is less than 1.9 ppm @ Actual O<sub>2</sub>.



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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030/Stk(Cert.)/Outlet(Jan)
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 26/01/2024
RECEIVED DATE	: 29/01/2024	ANALYTICAL DATE	: 01/02/2024
REPORT DATE	: 05/02/2024	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	: 13.6 m/s
Diameter	: 1.33 m	Flow Rate*	: 786 Ncu.m/min
Temperature	: 109.8 °C	Oxygen Content	: 8.8 %

PARAMETER	UNIT	RESULT*		STANDARD <sup>1/</sup>	REFERENCE
		8.8% O <sub>2</sub>	7% O <sub>2</sub>	7% O <sub>2</sub>	METHOD
Carbon Monoxide (CO)	ppm	28.7	33.0	690	US. EPA Method 10

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG.NO.จ-239-จ-0001

Narisa Poowasanetch

(Miss Narisa Poowasanetch)

Technical Management Team

REG.NO.จ-239-ท-0010

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

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

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

4. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,  
B.E.2549 @ 7% O<sub>2</sub>.



### ภาคผนวก ง.3

#### ใบรับรองผลการตรวจวัดระดับเสียง

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## ใบรับรองผลการตรวจวัดระดับเสียงในชุมชน



## Noise Monitoring Result : Community Noise

### MTR-CPL

Location : Technology IRPC School

Monitor Period : 19-26 Jan 2024

SLM Model : Cirrus CR162B

Serial No : G300833

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 92.9/0.8

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-020

Time	Equivalent Sound Pressure Level (dB(A))						
	19-20 Jan 2024	20-21 Jan 2024	21-22 Jan 2024	22-23 Jan 2024	23-24 Jan 2024	24-25 Jan 2024	25-26 Jan 2024
14:00 - 15:00	49.9	48.7	48.2	50.0	58.4	48.1	65.7
15:00 - 16:00	73.2	48.8	49.2	50.4	57.1	51.2	61.4
16:00 - 17:00	67.7	53.5	50.4	50.5	50.4	53.2	52.4
17:00 - 18:00	50.4	57.0	53.6	50.2	49.2	49.0	49.0
18:00 - 19:00	50.0	54.6	52.3	58.9	48.9	46.6	66.0
19:00 - 20:00	48.3	60.3	51.2	56.2	48.7	46.0	44.9
20:00 - 21:00	47.8	64.1	59.9	61.7	59.7	45.5	44.5
21:00 - 22:00	47.5	52.5	58.7	47.7	59.0	46.9	45.0
22:00 - 23:00	48.0	49.1	47.2	61.8	44.2	46.1	45.6
23:00 - 00:00	48.1	49.1	47.8	46.4	43.5	45.2	50.1
00:00 - 01:00	47.2	47.4	47.3	44.7	43.9	45.7	44.8
01:00 - 02:00	46.1	46.7	46.4	46.5	45.2	45.2	45.7
02:00 - 03:00	47.5	46.4	45.5	44.4	44.9	44.6	45.4
03:00 - 04:00	47.7	45.9	46.8	45.3	44.1	44.6	45.9
04:00 - 05:00	47.6	46.7	48.7	42.8	45.6	45.2	45.7
05:00 - 06:00	48.7	49.3	49.5	46.9	45.4	46.2	46.4
06:00 - 07:00	50.6	50.8	50.8	49.1	47.5	49.0	48.0
07:00 - 08:00	50.1	50.0	52.7	51.8	54.7	55.4	55.0
08:00 - 09:00	48.2	47.6	48.2	50.4	48.6	48.5	47.0
09:00 - 10:00	46.0	46.7	48.8	50.7	49.9	46.2	46.2
10:00 - 11:00	46.2	46.8	51.1	51.3	52.2	46.5	44.1
11:00 - 12:00	47.2	47.8	52.0	50.3	49.9	46.9	44.9
12:00 - 13:00	47.1	49.1	49.3	64.2	50.7	49.8	46.2
13:00 - 14:00	49.3	48.9	50.9	59.8	48.4	55.8	49.5
Leq(24)*	60.7	54.0	52.1	55.8	52.7	49.3	56.4
Ldn	61.5	56.8	55.8	60.3	54.7	53.4	57.7
Lmax **	94.6	76.7	76.0	76.9	76.1	74.3	92.9
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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S  
(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Background Noise

### MTR-CPL

Location : Technology IRPC School

Monitor Period : 19-26 Jan 2024

SLM Model : Cirrus CR162B

Serial No : G800833

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 92.9/0.8

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-020

Time	L90 (dB(A))						
	19-20 Jan 2024	20-21 Jan 2024	21-22 Jan 2024	22-23 Jan 2024	23-24 Jan 2024	24-25 Jan 2024	25-26 Jan 2024
14:00 - 15:00	46.5	46.4	46.3	47.4	46.9	44.4	49.2
15:00 - 16:00	46.5	46.8	46.3	47.9	48.0	46.1	49.8
16:00 - 17:00	47.3	47.1	46.6	47.9	47.7	44.9	48.0
17:00 - 18:00	47.4	48.1	47.5	47.6	47.1	44.1	45.8
18:00 - 19:00	47.2	47.7	47.5	46.8	46.1	44.0	43.5
19:00 - 20:00	46.2	46.6	46.0	45.7	45.6	44.2	43.3
20:00 - 21:00	46.2	47.4	44.9	44.9	43.3	44.4	43.4
21:00 - 22:00	46.1	46.7	44.9	43.9	43.1	44.4	44.0
22:00 - 23:00	46.5	46.9	45.2	43.3	43.2	45.2	43.8
23:00 - 00:00	47.1	47.4	45.8	43.7	42.7	44.3	44.3
00:00 - 01:00	46.1	46.1	46.3	43.2	43.3	44.5	43.9
01:00 - 02:00	44.8	45.3	45.1	44.8	44.5	44.3	44.4
02:00 - 03:00	45.0	44.7	44.1	42.9	43.9	43.7	44.5
03:00 - 04:00	46.4	43.9	44.7	43.1	43.0	43.6	44.7
04:00 - 05:00	46.5	44.7	47.3	41.4	44.3	43.8	44.7
05:00 - 06:00	46.6	46.8	47.1	43.2	43.4	44.8	44.5
06:00 - 07:00	47.9	47.8	48.1	45.9	44.3	46.1	45.3
07:00 - 08:00	47.2	47.1	47.7	47.4	45.3	47.1	45.5
08:00 - 09:00	43.2	44.1	43.2	46.4	45.7	44.2	44.0
09:00 - 10:00	42.8	42.4	44.0	45.1	45.8	43.1	43.3
10:00 - 11:00	43.8	42.9	45.3	44.9	44.8	43.6	41.6
11:00 - 12:00	44.5	45.0	46.2	46.6	45.9	43.1	41.2
12:00 - 13:00	44.5	45.1	45.9	46.5	44.2	42.2	40.3
13:00 - 14:00	45.3	46.1	47.0	47.2	43.8	45.2	43.2
L90(avg)*	46.1	46.2	46.1	45.7	45.1	44.5	45.0

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Community Noise MTR-CPL

Location : Moo 4 of Ta-Phong Sub-District

Monitor Period : 19-26 Jan 2024

SLM Model : Cirrus CR162B

Serial No : G300769

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 94.5/-0.8

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-020

Time	Equivalent Sound Pressure Level (dB(A))						
	19-20 Jan 2024	20-21 Jan 2024	21-22 Jan 2024	22-23 Jan 2024	23-24 Jan 2024	24-25 Jan 2024	25-26 Jan 2024
15:00 - 16:00	53.0	55.2	53.5	51.8	55.6	55.1	55.2
16:00 - 17:00	52.6	53.6	52.3	52.5	53.5	55.7	54.7
17:00 - 18:00	53.3	54.1	52.3	53.1	52.2	54.2	55.0
18:00 - 19:00	51.7	52.4	51.1	53.4	52.1	54.0	51.8
19:00 - 20:00	51.4	51.6	51.4	56.9	51.6	53.4	55.6
20:00 - 21:00	51.4	51.2	50.7	52.4	54.5	55.1	50.9
21:00 - 22:00	51.2	50.9	49.4	49.7	49.4	50.1	50.2
22:00 - 23:00	50.2	51.1	50.9	50.6	49.1	49.7	50.1
23:00 - 00:00	50.7	51.5	51.0	48.0	48.2	48.8	49.5
00:00 - 01:00	51.7	51.1	50.1	47.4	47.5	49.2	48.8
01:00 - 02:00	50.9	50.3	51.7	49.3	48.5	48.0	48.5
02:00 - 03:00	50.7	49.9	50.4	48.2	48.8	48.2	48.5
03:00 - 04:00	48.3	50.2	50.9	47.9	48.5	48.4	48.6
04:00 - 05:00	49.6	50.8	51.0	49.3	49.2	50.8	48.7
05:00 - 06:00	52.4	53.5	52.8	50.4	52.6	52.4	53.1
06:00 - 07:00	57.5	56.3	55.9	55.8	55.9	57.1	56.1
07:00 - 08:00	55.5	56.3	56.0	56.1	55.8	56.4	56.4
08:00 - 09:00	54.3	53.9	53.6	54.5	58.1	55.2	55.8
09:00 - 10:00	51.6	55.4	53.5	56.0	55.3	53.8	54.1
10:00 - 11:00	55.2	51.9	50.3	52.3	52.5	53.6	54.2
11:00 - 12:00	52.5	51.3	52.3	54.4	54.5	53.4	51.9
12:00 - 13:00	52.5	52.1	53.0	54.9	55.1	53.4	51.0
13:00 - 14:00	53.1	53.0	51.0	55.2	56.5	55.7	51.0
14:00 - 15:00	54.4	52.3	52.5	56.7	57.0	55.1	58.3
Leq(24)*	52.8	52.9	52.3	53.3	53.7	53.6	53.4
Ldn	58.8	58.8	58.5	57.8	58.0	58.5	58.2
Lmax **	83.9	80.5	75.8	90.7	80.9	80.1	83.3
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

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

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

(Miss Katesarin Vorradeewittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Background Noise MTR-CPL

Location : Moo 4 of Ta-Phong Sub-District

Monitor Period : 19-26 Jan 2024

SLM Model : Cirrus CR162B

Serial No : G300769

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023


SLM Reading / Adjust dB(A) : 94.5/-0.8

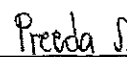
Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-020

Time	L90 (dB(A))						
	19-20 Jan 2024	20-21 Jan 2024	21-22 Jan 2024	22-23 Jan 2024	23-24 Jan 2024	24-25 Jan 2024	25-26 Jan 2024
15:00 - 16:00	49.0	51.0	50.6	49.2	50.3	49.1	50.6
16:00 - 17:00	49.9	51.3	50.0	49.4	49.7	49.1	51.9
17:00 - 18:00	51.0	51.9	50.1	50.1	48.9	49.3	50.9
18:00 - 19:00	50.2	51.1	50.0	50.1	49.2	50.2	49.4
19:00 - 20:00	50.1	50.0	49.0	49.5	49.7	51.1	49.6
20:00 - 21:00	49.5	49.1	48.4	48.8	47.5	49.8	48.9
21:00 - 22:00	48.8	49.0	47.6	47.0	48.1	48.9	48.0
22:00 - 23:00	48.1	49.4	48.1	46.6	47.4	48.1	48.5
23:00 - 00:00	49.0	50.3	49.8	46.3	46.9	47.6	47.9
00:00 - 01:00	50.4	50.0	49.1	45.7	46.6	47.3	47.6
01:00 - 02:00	49.8	49.2	50.6	47.7	46.4	46.6	47.3
02:00 - 03:00	49.1	49.0	49.4	46.0	46.4	47.1	47.3
03:00 - 04:00	46.9	49.4	49.5	45.6	46.1	47.2	46.9
04:00 - 05:00	47.9	49.7	49.7	45.6	47.3	47.3	47.1
05:00 - 06:00	48.6	50.2	48.8	46.3	47.2	47.8	47.8
06:00 - 07:00	50.1	49.8	50.1	48.9	49.2	49.9	49.6
07:00 - 08:00	49.8	49.4	50.0	50.4	51.0	50.9	50.8
08:00 - 09:00	48.5	49.0	48.8	49.8	50.3	49.8	50.6
09:00 - 10:00	48.0	49.1	49.1	49.6	49.7	48.5	48.2
10:00 - 11:00	48.3	48.1	48.7	48.6	49.4	48.9	47.9
11:00 - 12:00	48.9	48.2	49.5	49.2	50.1	48.4	47.7
12:00 - 13:00	49.1	48.9	49.5	49.0	50.0	48.1	47.5
13:00 - 14:00	49.5	48.8	48.7	49.7	49.7	49.9	48.1
14:00 - 15:00	50.0	49.8	48.7	49.9	49.9	50.7	49.0
L90(avg)*	49.3	49.8	49.4	48.6	48.9	49.0	48.9

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

  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

  
(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Community Noise MTR-CPL

Location : North Fence of Project Site

Monitor Period : 19-26 Jan 2024

SLM Model : Cirrus CR162B

Serial No : G300892

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 91.8/1.9

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-020

Time	Equivalent Sound Pressure Level (dB(A))						
	19-20 Jan 2024	20-21 Jan 2024	21-22 Jan 2024	22-23 Jan 2024	23-24 Jan 2024	24-25 Jan 2024	25-26 Jan 2024
16:00 - 17:00	56.6	56.1	55.8	56.1	55.9	56.6	56.6
17:00 - 18:00	56.6	56.4	55.3	56.8	56.9	57.0	56.4
18:00 - 19:00	57.2	56.8	55.7	56.4	56.2	57.0	56.4
19:00 - 20:00	56.4	56.6	55.1	56.2	56.0	56.4	56.0
20:00 - 21:00	56.5	56.4	55.3	56.2	56.0	56.8	55.8
21:00 - 22:00	55.7	56.5	55.3	56.3	56.1	56.9	55.6
22:00 - 23:00	55.5	56.4	55.3	56.2	55.9	56.3	55.7
23:00 - 00:00	55.4	56.5	55.5	56.3	56.1	56.3	55.2
00:00 - 01:00	56.2	56.4	55.5	55.5	54.9	56.3	55.2
01:00 - 02:00	56.0	55.8	55.4	55.1	54.4	56.5	55.5
02:00 - 03:00	56.4	55.9	55.0	55.1	54.2	56.6	55.5
03:00 - 04:00	56.2	56.1	55.5	55.3	54.4	56.7	55.6
04:00 - 05:00	56.5	56.2	55.1	55.7	55.0	56.8	55.6
05:00 - 06:00	56.5	56.7	55.6	56.5	56.4	56.9	56.4
06:00 - 07:00	56.6	56.6	55.4	56.4	56.7	57.2	56.1
07:00 - 08:00	55.7	56.0	55.1	56.1	56.5	57.1	55.7
08:00 - 09:00	57.9	55.6	54.7	56.2	56.7	57.2	55.8
09:00 - 10:00	56.4	55.8	55.3	56.7	57.2	58.0	56.0
10:00 - 11:00	56.4	56.2	55.9	56.9	57.4	57.4	56.0
11:00 - 12:00	56.3	56.4	56.1	56.6	57.0	57.4	56.0
12:00 - 13:00	55.8	56.3	55.3	56.7	56.7	59.7	55.7
13:00 - 14:00	55.6	56.7	55.5	56.7	57.2	57.7	57.0
14:00 - 15:00	56.0	56.0	56.7	57.0	57.3	58.1	57.8
15:00 - 16:00	56.7	56.3	56.4	56.8	57.1	57.5	56.5
Leq(24)*	56.3	56.3	55.5	56.3	56.3	57.2	56.0
Ldn	62.6	62.7	61.8	62.3	62.0	63.2	62.2
Lmax **	77.5	69.9	73.1	64.6	67.3	69.8	80.7
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

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

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda J.  
(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Background Noise

### MTR-CPL

Location : North Fence of Project Site

Monitor Period : 19-26 Jan 2024

SLM Model : Cirrus CR162B

Serial No : G300892

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 91.8/1.9

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-020

Time	L90 (dB(A))						
	19-20 Jan 2024	20-21 Jan 2024	21-22 Jan 2024	22-23 Jan 2024	23-24 Jan 2024	24-25 Jan 2024	25-26 Jan 2024
16:00 - 17:00	56.2	55.8	55.0	55.9	55.6	56.3	56.1
17:00 - 18:00	56.2	56.1	55.0	56.1	55.6	56.5	56.0
18:00 - 19:00	56.5	56.3	55.2	56.1	55.8	56.4	56.0
19:00 - 20:00	56.1	56.2	54.9	56.0	55.7	56.2	55.7
20:00 - 21:00	56.0	56.1	55.0	56.1	55.8	56.2	55.5
21:00 - 22:00	55.3	56.2	55.0	56.0	55.8	56.2	55.4
22:00 - 23:00	55.1	56.1	55.0	56.0	55.6	56.0	55.3
23:00 - 00:00	55.1	56.2	55.2	56.0	55.7	56.1	54.8
00:00 - 01:00	55.5	56.0	55.2	55.1	54.4	56.0	54.9
01:00 - 02:00	55.7	55.5	55.1	54.9	54.1	56.2	55.2
02:00 - 03:00	56.0	55.6	54.6	54.9	53.9	56.4	55.3
03:00 - 04:00	56.0	55.8	54.7	55.0	53.9	56.4	55.3
04:00 - 05:00	56.2	55.9	54.8	55.4	54.6	56.5	55.4
05:00 - 06:00	56.2	56.1	54.8	56.2	56.0	56.6	55.5
06:00 - 07:00	56.1	56.0	55.0	56.2	56.4	56.8	55.5
07:00 - 08:00	55.2	55.7	54.6	55.8	56.2	56.8	55.4
08:00 - 09:00	54.8	55.3	54.2	55.9	56.3	56.7	55.4
09:00 - 10:00	55.6	55.4	54.5	56.2	56.6	56.9	55.5
10:00 - 11:00	55.8	55.9	55.3	56.3	56.4	56.7	55.3
11:00 - 12:00	55.7	56.0	55.4	56.1	56.1	56.5	55.4
12:00 - 13:00	55.5	55.8	54.8	56.1	56.0	56.8	55.1
13:00 - 14:00	55.3	55.8	54.7	56.1	56.2	57.1	55.8
14:00 - 15:00	55.5	55.7	56.1	56.0	56.5	57.3	56.2
15:00 - 16:00	55.8	55.8	55.9	55.8	56.5	57.0	56.0
L90(avg)*	55.7	55.9	55.0	55.9	55.7	56.5	55.5

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



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## 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.	: 223030 Octave (Cert.)/Jan24
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Sound Level Meter (Octave Band)
MEASUREMENT LOCATION	: CPL Plant	CALIBRATOR	: Sound Calibrator
MEASUREMENT DATE	: 17/01/2024	CALIBRATOR TYPE	: CR:515 S/N: 97097
SITE OPERATOR	: Miss Salisa Aineer	CALIBRATION REF.	: 94 dB@1000 Hz

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)	87.9	34.6	51.7	63.7	68.8	77.8	80.7	83.7	82.0	77.1	61.8
SA & WLC (4140-1)	86.4	37.9	47.7	56.4	63.7	68.8	76.9	85.5	75.6	68.3	55.3
Hydroxylamine Unit (1210-PB1)	94.9	40.1	55.0	68.2	73.0	79.6	94.5	87.0	78.7	61.0	42.3
Refrigeration Unit (2510-K1)	84.6	33.3	51.2	58.0	72.2	79.2	77.5	80.9	70.6	58.9	40.8
Wastewater Treatment (4700-B1)	86.8	49.1	55.9	64.4	78.8	76.4	78.1	82.4	80.9	75.8	62.6

(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.



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. : 224030 Octave (Cert.)/May24  
MEASUREMENT BY : SECOT Co., Ltd. INSTRUMENT : Sound Level Meter (Octave Band)  
MEASUREMENT LOCATION : CPL Plant CALIBRATOR : Sound Calibrator  
MEASUREMENT DATE : 03/05/2024 CALIBRATOR TYPE : CR:515 S/N : 97097  
SITE OPERATOR : Miss Salisa Ainree CALIBRATION REF. : 94 dB@1000 Hz

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)	86.0	35.2	50.2	57.6	67.0	75.0	78.3	81.3	80.6	76.9	62.2
SA & WLC (4140-1)	83.8	37.1	53.1	57.1	62.3	67.5	72.3	82.8	75.4	66.8	50.0
Hydroxylamine Unit (1210-PB1)	89.1	37.5	53.3	62.5	68.7	75.7	88.4	81.3	74.7	58.9	42.8
Refrigeration Unit (2510-K1)	84.6	34.8	53.5	55.7	69.1	77.3	76.2	82.3	73.5	62.6	43.8
Wastewater Treatment (4700-B1)	82.6	47.1	53.8	62.5	66.0	74.8	75.1	79.0	78.5	73.9	59.2

(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.

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## ใบรับรองผลการตรวจวัดระดับเสียงเฉลี่ยตลอดเวลาการทำงาน



## Noise Monitoring Result : Working Noise MTR-CPL

Location : Wastwater Treatment (4700-B1)

Monitor Period : May 03, 2024

SLM Model : Cirrus CR162B

Serial No : G300709

Site Operator : Mr. Watcharakan Pramakhate

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

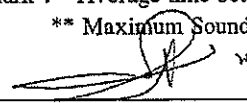
Expire Date : Sep 03, 2024


Cal Sheet No.: CR-515-2024-105

Time	Equivalent Sound Pressure Level (dB(A))	
	May 03, 2024	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00	84.5	
09:00 - 10:00	84.4	
10:00 - 11:00	84.5	
11:00 - 12:00	84.6	
12:00 - 13:00	84.6	
13:00 - 14:00	84.5	
14:00 - 15:00	84.6	
15:00 - 16:00	84.8	
16:00 - 17:00	85.0	
17:00 - 18:00	84.6	
18:00 - 19:00	84.6	
19:00 - 20:00	84.5	
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	84.6	
Lmax **	87.0	
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 : Wastwater Treatment (4700-B1)

Monitor Period : Feb 22, 2024

SLM Model : SCARLET ST-21D

Serial No : 820726

Site Operator : Mr. Watcharakan Pramakhate

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

Expire Date : Sep 03, 2024

Cal Sheet No.: CR-515-2024-047

Time	Equivalent Sound Pressure Level (dB(A))
	Feb 22, 2024
00:00 - 01:00	
01:00 - 02:00	
02:00 - 03:00	
03:00 - 04:00	
04:00 - 05:00	
05:00 - 06:00	
06:00 - 07:00	
07:00 - 08:00	83.9
08:00 - 09:00	83.8
09:00 - 10:00	83.6
10:00 - 11:00	83.6
11:00 - 12:00	83.7
12:00 - 13:00	83.7
13:00 - 14:00	83.6
14:00 - 15:00	83.6
15:00 - 16:00	83.6
16:00 - 17:00	83.8
17:00 - 18:00	83.9
18:00 - 19:00	83.9
19:00 - 20:00	
20:00 - 21:00	
21:00 - 22:00	
22:00 - 23:00	
23:00 - 24:00	
Leq(12)*	83.7
Lmax **	90.5
Standard-12Hr	87 dB(A)
Standard-Max	140 dB(A)

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

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Sununta Sirawuttinanon)  
Technical Management Team



## Noise Monitoring Result : Working Noise MTR-CPL

Location : Refrigeration Unit (2500-K1)  
SLM Model : SCARLET ST-21D  
Site Operator : Mr. Watcharakan Pramakhate

Monitor Period : May 03, 2024  
Serial No : 820727

Calibrator Model : Cirrus CR:515  
Calibration Ref dB(A) : 94.0  
SLM Reading / Adjust dB(A) : 93.7/0.1  
Cal Sheet No.: CR-515-2024-106

Serial No : 97097  
Certified Date : Sep 04, 2023  
Expire Date : Sep 03, 2024

Time	Equivalent Sound Pressure Level (dB(A))	
	May 03, 2024	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00	84.5	
09:00 - 10:00	84.4	
10:00 - 11:00	84.3	
11:00 - 12:00	84.1	
12:00 - 13:00	84.1	
13:00 - 14:00	84.0	
14:00 - 15:00	84.3	
15:00 - 16:00	84.5	
16:00 - 17:00	84.2	
17:00 - 18:00	84.5	
18:00 - 19:00	84.3	
19:00 - 20:00	84.4	
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	84.3	
Lmax **	93.4	
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 : Refrigeration Unit (2510-K1)

Monitor Period : Jan 17, 2024

SLM Model : SCARLET ST-21D

Serial No : 820727

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

SLM Reading / Adjust dB(A) : 93.8/0.0

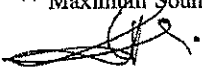
Expire Date : Sep 03, 2024

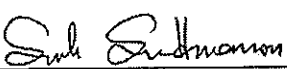
Cal Sheet No.: CR-515-2024-009

Time	Equivalent Sound Pressure Level (dB(A))	
	Jan 17, 2024	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00	85.0	
09:00 - 10:00	85.8	
10:00 - 11:00	85.9	
11:00 - 12:00	85.6	
12:00 - 13:00	61.2	
13:00 - 14:00	85.7	
14:00 - 15:00	61.5	
15:00 - 16:00	85.8	
16:00 - 17:00	85.8	
17:00 - 18:00	86.0	
18:00 - 19:00	61.9	
19:00 - 20:00	78.5	
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	84.1	
Lmax **	89.2	
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 : Hydroxylamine Unit (1210-PB1)

Monitor Period : Jun 18, 2024

SLM Model : SCARLET ST-21D

Serial No : 820731

Site Operator : Mr. Aniwat Pimwanna

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

SLM Reading / Adjust dB(A) : 93.8/0.0

Expire Date : Sep 03, 2024

Cal Sheet No.: CR-515-2024-174

Time	Equivalent Sound Pressure Level (dB(A))
	Jun 18, 2024
00:00 - 01:00	
01:00 - 02:00	
02:00 - 03:00	
03:00 - 04:00	
04:00 - 05:00	
05:00 - 06:00	
06:00 - 07:00	
07:00 - 08:00	
08:00 - 09:00	85.1
09:00 - 10:00	84.2
10:00 - 11:00	84.2
11:00 - 12:00	84.3
12:00 - 13:00	84.6
13:00 - 14:00	85.2
14:00 - 15:00	85.5
15:00 - 16:00	85.8
16:00 - 17:00	85.4
17:00 - 18:00	84.9
18:00 - 19:00	85.5
19:00 - 20:00	85.5
20:00 - 21:00	
21:00 - 22:00	
22:00 - 23:00	
23:00 - 24:00	
Leq(12)*	85.1
Lmax **	94.7
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

(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 : Mar 28, 2024

SLM Model : SCARLET ST-21D

Serial No : 820731

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

SLM Reading / Adjust dB(A) : 93.8/0.0


Expire Date : Sep 03, 2024

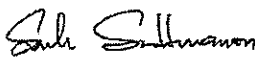
Cal Sheet No.: CR-515-2024-071

Time	Equivalent Sound Pressure Level (dB(A))
	Mar 28, 2024
00:00 - 01:00	
01:00 - 02:00	
02:00 - 03:00	
03:00 - 04:00	
04:00 - 05:00	
05:00 - 06:00	
06:00 - 07:00	
07:00 - 08:00	
08:00 - 09:00	86.1
09:00 - 10:00	86.0
10:00 - 11:00	85.8
11:00 - 12:00	86.3
12:00 - 13:00	86.4
13:00 - 14:00	86.2
14:00 - 15:00	85.7
15:00 - 16:00	86.2
16:00 - 17:00	85.7
17:00 - 18:00	85.9
18:00 - 19:00	85.5
19:00 - 20:00	85.8
20:00 - 21:00	
21:00 - 22:00	
22:00 - 23:00	
23:00 - 24:00	
Leq(12)*	86.0
Lmax **	100.9
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 : SA &amp; WLC (4140-1)

Monitor Period : May 03, 2024

SLM Model : Cirrus CR162B

Serial No : G802742

Site Operator : Mr. Watcharakan Pramakhate

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

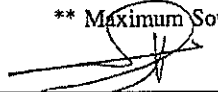
Expire Date : Sep 03, 2024


Cal Sheet No.: CR-515-2024-105

Time	Equivalent Sound Pressure Level (dB(A))	
	May 03, 2024	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00	85.1	
09:00 - 10:00	84.7	
10:00 - 11:00	84.4	
11:00 - 12:00	84.3	
12:00 - 13:00	83.6	
13:00 - 14:00	83.3	
14:00 - 15:00	83.6	
15:00 - 16:00	83.6	
16:00 - 17:00	83.7	
17:00 - 18:00	85.1	
18:00 - 19:00	84.8	
19:00 - 20:00	83.9	
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	84.2	
Lmax **	93.5	
Standard-12Hr	87 dB(A)	
Standard-Max	140 dB(A)	

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

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

  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

  
(Miss Sununta Sirawuttinanon)  
Technical Management Team



## Noise Monitoring Result : Working Noise MTR-CPL

Location : SA &amp; WLC (4140-1)

Monitor Period : Jan 17, 2024

SLM Model : SCARLET ST-21D

Serial No : 820726

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

SLM Reading / Adjust dB(A) : 93.8/0.0

Expire Date : Sep 03, 2024

Cal Sheet No.: CR-515-2024-009

Time	Equivalent Sound Pressure Level (dB(A))
	Jan 17, 2024
00:00 - 01:00	
01:00 - 02:00	
02:00 - 03:00	
03:00 - 04:00	
04:00 - 05:00	
05:00 - 06:00	
06:00 - 07:00	
07:00 - 08:00	
08:00 - 09:00	88.4
09:00 - 10:00	86.5
10:00 - 11:00	85.6
11:00 - 12:00	85.6
12:00 - 13:00	85.2
13:00 - 14:00	85.5
14:00 - 15:00	85.7
15:00 - 16:00	85.8
16:00 - 17:00	84.7
17:00 - 18:00	86.9
18:00 - 19:00	89.1
19:00 - 20:00	89.7
20:00 - 21:00	
21:00 - 22:00	
22:00 - 23:00	
23:00 - 24:00	
Leq(12)*	86.9
Lmax **	92.2
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 : May 03, 2024

SLM Model : Cirrus CR162B

Serial No : G302740

Site Operator : Mr. Watcharakan Pramakhate

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

Expire Date : Sep 03, 2024

Cal Sheet No.: CR-515-2024-105

Time	Equivalent Sound Pressure Level (dB(A))	
	May 03, 2024	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00	84.7	
09:00 - 10:00	84.5	
10:00 - 11:00	84.6	
11:00 - 12:00	84.7	
12:00 - 13:00	84.8	
13:00 - 14:00	84.9	
14:00 - 15:00	84.8	
15:00 - 16:00	84.8	
16:00 - 17:00	84.9	
17:00 - 18:00	84.7	
18:00 - 19:00	84.8	
19:00 - 20:00	84.9	
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	84.8	
Lmax **	87.6	
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)  
SLM Model : SCARLET ST-21D  
Site Operator : Mr. Watcharakan Pramakhate

Monitor Period : Feb 22, 2024  
Serial No : 820725

Calibrator Model : Cirrus CR:515  
Calibration Ref dB(A) : 94.0  
SLM Reading / Adjust dB(A) : 93.7/0.1  
Cal Sheet No.: CR-515-2024-047

Serial No : 97097  
Certified Date : Sep 04, 2023  
Expire Date : Sep 03, 2024

Time	Equivalent Sound Pressure Level (dB(A))	
	Feb 22, 2024	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00	86.2	
09:00 - 10:00	86.2	
10:00 - 11:00	86.1	
11:00 - 12:00	86.0	
12:00 - 13:00	85.9	
13:00 - 14:00	86.0	
14:00 - 15:00	86.0	
15:00 - 16:00	86.0	
16:00 - 17:00	86.1	
17:00 - 18:00	86.2	
18:00 - 19:00	86.2	
19:00 - 20:00	86.1	
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	86.1	
Lmax **	90.3	
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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Sununta Sirawuttinanon)  
Technical Management Team

---

ใบรับรองผลการตรวจวัดระดับเสียงเฉลี่ยที่ถูกรับ  
เฉลี่ยตลอดเวลาการทำงาน (TWA)

#### ภาคผนวก ง.4

### ใบรับรองผลการวิเคราะห์คุณภาพน้ำทิ้ง





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

### 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	: 17/01/2024	CALIBRATOR MODEL	: 22R
MEASUREMENT LOCATION	: CPL	SERIAL NO.	: 79781
SITE OPERATOR	: Miss Salisa Ainree	CALIBRATOR REF.	: 114 dB @1,000 Hz

USER ID	AREA/PLANT	TIME	%Dose	SOUND PRESSURE LEVEL (dBA)	
				TWA (12-hr)	STANDARD*
90666	1110-K1	07.13-19.19	43.7	79.7	83.0
90695	4140-B1	07.14-19.21	18.1	75.9	83.0
19040	4700-B1	07.13-19.12	12.9	74.4	83.0

(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.
  3. \* Notification of the Department of Labour Protection and Welfare, B.E.2561 (2018).
  4. TWA means Time Weighted Average.



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

### 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	: 22/02/2023	CALIBRATOR MODEL	: RC 110 A
MEASUREMENT LOCATION	: CPL	SERIAL NO.	: 95168
SITE OPERATOR	: Miss Salisa Ainree	CALIBRATOR REF.	: 114 dB @1,000 Hz

USER ID	AREA/PLANT	TIME	%Dose	SOUND PRESSURE LEVEL (dBA)	
				TWA (12-hr)	STANDARD*
90989	1210-PB1	07.43-19.20	57.3	80.8	83.0
90989	2510-K1	07.43-19.20	57.3	80.8	83.0

(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.
  3. \* Notification of the Department of Labour Protection and Welfare, B.E.2561 (2018).
  4. TWA means Time Weighted Average.

---

**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 : 4500153372  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant



TESTING  
No.0042

Lot ID: 23138795  
Date Received : Jan 10, 2024  
Date Reported : Jan 17, 2024  
Report Number : 2848860-1

Page 1 of 1

Sample Number 23138795-1  
Sampled Date Jan 10, 2024 11:30 AM  
Sample Description Wastewater  
Location Influent (S-32-002)  
Date Analysis Commenced Jan 10, 2024  
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	832	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	2391	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		-	-	4.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	30.1	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	1770	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	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	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Narunat thammassaro โทรเลข 323-9-9477

### 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

N. Banngkit

Narumon Banchongkit  
Supervisor  
โทรเลข 323-9-9445

Approved by

D. Changchon

Dej Changchon  
Senior Manager  
โทรเลข 323-9-9442

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report may be reproduced in any form without written consent from the laboratory. ALS Laboratory Group (Thailand) strongly recommends that the report is not reproduced except in full.

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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 : 4500153372  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 23138795  
Date Received : Jan 10, 2024  
Date Reported : Jan 17, 2024  
Report Number : 2848860-2

Page 1 of 1

Sample Number 23138795-1  
Sampled Date Jan 10, 2024 11:30 AM  
Sample Description Wastewater  
Location Influent (S-32-002)  
Date Analysis Commenced Jan 10, 2024  
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	-	-	155	Flow meter	Rayong
Sulfate	mg/L	0.6	2	656	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 :

- LOD : Limit of Detection
- "<" : 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 : 4500153372  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant



TESTING  
No.0042

Lot ID: 247770  
Date Received : Feb 07, 2024  
Date Reported : Feb 14, 2024  
Report Number : 2890957-1

Page 1 of 1

Sample Number 247770-1  
Sampled Date Feb 07, 2024 9:55 AM  
Sample Description Wastewater  
Location Influent (S-32-002)  
Date Analysis Commenced Feb 07, 2024  
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	818	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	1474	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		-	-	7.4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	36.5	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	1540	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	170	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	20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Tanasit Wongsachai โทร 09-323-9-9460

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. Banthit

Narumon Banchongkit  
Supervisor

โทร 09-323-9-9445

Approved by

D. Changchon

Dej Changchon  
Senior Manager

โทร 09-323-9-9442

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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 : 4500153372  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 247770  
Date Received : Feb 07, 2024  
Date Reported : Feb 14, 2024  
Report Number : 2890957-2

Page 1 of 1

Sample Number 247770-1  
Sampled Date Feb 07, 2024 9:55 AM  
Sample Description Wastewater  
Location Influent (S-32-002)  
Date Analysis Commenced Feb 07, 2024  
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	602	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 :  
- LOD : Limit of Detection  
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

N. Banthit

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 : 4500153372  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425738  
Date Received : Mar 06, 2024  
Date Reported : Mar 13, 2024  
Report Number : 2927296-1

Page 1 of 1

Sample Number 2425738-1  
Sampled Date Mar 06, 2024 11:30 AM  
Sample Description Wastewater  
Location Influent (S-32-002)  
Date Analysis Commenced Mar 06, 2024  
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
<b>Water Testing</b>						
BOD (5 days at 20 Degree C)	mg/L	-	2.0	878	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	1633	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		-	-	7.6	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	39.3	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	1740	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	113	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 : Surawit Narapong ทะเบียนเลขที่ 7-323-2-0011

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. Banongkit

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 : 4500153372  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425738  
Date Received : Mar 06, 2024  
Date Reported : Mar 13, 2024  
Report Number : 2927296-2

Page 1 of 1

Sample Number 2425738-1  
Sampled Date Mar 06, 2024 11:30 AM  
Sample Description Wastewater  
Location Influent (S-32-002)  
Date Analysis Commenced Mar 06, 2024  
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
<b>Water Testing</b>						
Flow rate	m3/hr	-	-	170	Flow meter, Analyzed by Client	Rayong
Sulfate	mg/L	0.6	2	908	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Sampling By : Surawit Narapong

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

Approved by

N. Banongkit

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 : 4500164414  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant



TESTING  
No.0042

Lot ID: 2433500  
Date Received : Apr 03, 2024  
Date Reported : Apr 10, 2024  
Report Number : 2945674-1

Page 1 of 1

Sample Number 2433500-1  
Sampled Date Apr 03, 2024 9:49 AM  
Sample Description Wastewater  
Location Influent (S-32-002)  
Date Analysis Commenced Apr 03, 2024  
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)  
Physical Property Yellow, a lot of odour, some solid and no turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
<b>Water Testing</b>						
BOD (5 days at 20 Degree C)	mg/L	-	2.0	837	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	1986	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		-	-	7.6	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	31.2	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	1880	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	158	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	16	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Nattawut Athomprommarat ทะเนมอนเตวิท ๖-323-๖-0006

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

ทะเบียนเลขที่ ๖-323-๖-๐445

Approved by

D. Changchon

Dej Changchon  
Senior Manager

ทะเบียนเลขที่ ๖-323-๖-๐442

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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 : 4500164414  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2433500  
Date Received : Apr 03, 2024  
Date Reported : Apr 10, 2024  
Report Number : 2945674-2

Page 1 of 1

Sample Number 2433500-1  
Sampled Date Apr 03, 2024 9:49 AM  
Sample Description Wastewater  
Location Influent (S-32-002)  
Date Analysis Commenced Apr 03, 2024  
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)  
Physical Property Yellow, a lot of odour, some solid and no turbid

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
<b>Water Testing</b>						
Flow rate	m3/hr	-	-	170	Flow meter, Analyzed by Client	Rayong
Sulfate	mg/L	0.6	2	939	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Sampling By : Nattawut Athomprommarat

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

Approved by

N. Banphit

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 : 4500164414  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2447292  
Date Received : May 09, 2024  
Date Reported : May 16, 2024  
Report Number : 2976526-1

Page 1 of 1

Sample Number 2447292-1  
Sampled Date May 09, 2024 9:25 AM  
Sample Description Wastewater  
Location Influent (S-32-002)  
Date Analysis Commenced May 09, 2024  
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	857	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	1812	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		-	-	4.3	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	37.2	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	980	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	228	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	14	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Tanasit Wongsachai โทร 09-323-99460

### Remark :

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- "<" : 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

Photchanna S.

Photchana Seeda  
Scientist (4)  
โทร 09-323-99446

Approved by

D. Chuan

Dej Changchon  
Senior Manager  
โทร 09-323-99442

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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 : 4500164414  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2447292  
Date Received : May 09, 2024  
Date Reported : May 16, 2024  
Report Number : 2976526-2

Page 1 of 1

Sample Number 2447292-1  
Sampled Date May 09, 2024 9:25 AM  
Sample Description Wastewater  
Location Influent (S-32-002)  
Date Analysis Commenced May 09, 2024  
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	-	-	170	Flow meter	Rayong
Sulfate	mg/L	0.6	2	1182	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 :

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

Approved by

Photchanna S.

Photchana Seeda  
Scientist (4)

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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 : 4500164414  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant



TESTING  
No.0042

Lot ID: 2462483  
Date Received : Jun 05, 2024  
Date Reported : Jun 11, 2024  
Report Number : 3009849-1

Page 1 of 1

Sample Number	2462483-1					
Sampled Date	Jun 05, 2024 10:45 AM					
Sample Description	Wastewater					
Location	Influent (S-32-002)					
Date Analysis Commenced	Jun 05, 2024					
Condition of Sample	Contained in one amber glass bottle, two glass vials and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)					
Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
<b>Water Testing</b>						
BOD (5 days at 20 Degree C)	mg/L	-	2.0	606	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	1377	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		-	-	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	-	-	38.1	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	1080	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	191	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	9	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Sansoen Khuiyoksul หมายเลข 7-323-4-0005

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

*Thanita K.*

Thanita Kulsuriwong  
Scientist (4)  
หมายเลข 7-323-4-9447

Approved by

*D. Khunon*

Dej Changchon  
Senior Manager  
หมายเลข 7-323-4-9442

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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 : 4500164414  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2462483  
Date Received : Jun 05, 2024  
Date Reported : Jun 11, 2024  
Report Number : 3009849-2

Page 1 of 1

Sample Number	2462483-1					
Sampled Date	Jun 05, 2024 10:45 AM					
Sample Description	Wastewater					
Location	Influent (S-32-002)					
Date Analysis Commenced	Jun 05, 2024					
Condition of Sample	Contained in one amber glass bottle, two glass vials and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)					
Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
<b>Water Testing</b>						
Flow rate	m3/hr	-	-	175	Flow meter	Rayong
Sulfate	mg/L	0.6	2	194	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Sampling By : Sansoen Khuiyoksul

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

Approved by

*Thanita K.*

Thanita Kulsuriwong  
Scientist (4)

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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 : 4500153372  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant



TESTING  
No.0042  
Lot ID: 23138799  
Date Received : Jan 10, 2024  
Date Reported : Jan 17, 2024  
Report Number : 2848874-1

Page 1 of 2

Sample Number 23138799-1  
Sample Description Wastewater  
Location Effluent (S-32-104)  
Date Analysis Commenced Jan 10, 2024  
Condition of Sample

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
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, part 4500 - O G	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		-	-	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	-	-	31.3	≤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	832	≤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	<1.0	≤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. Banchoangkit*

Narumon Banchoangkit  
Supervisor  
โทรเลขเบอร์ 3-323-9-9445

Approved by

*D. Changchon*

Dej Changchon  
Senior Manager  
โทรเลขเบอร์ 3-323-9-9442

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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 : 4500153372  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant



TESTING  
No.0042  
Lot ID: 23138799  
Date Received : Jan 10, 2024  
Date Reported : Jan 17, 2024  
Report Number : 2848874-1

Page 2 of 2

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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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  
โทรเลขเบอร์ 3-323-9-9445

Approved by

*D. Changchon*

Dej Changchon  
Senior Manager  
โทรเลขเบอร์ 3-323-9-9442

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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 : 4500153372  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 23138799  
Date Received : Jan 10, 2024  
Date Reported : Jan 17, 2024  
Report Number : 2848874-2

Page 1 of 1

Sample Number : 23138799-1  
Sample Description : Wastewater  
Location : Effluent (S-32-104)  
Date Analysis Commenced : Jan 10, 2024  
Condition of Sample :

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
Flow rate	m <sup>3</sup> /hr	-	-	119	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.6	2	294	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO <sub>4</sub> (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.

**Remark :**

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

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Approved by

*N. Banchongkit*

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 : 4500153372  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant



TESTING  
No.0042  
Lot ID: 247771  
Date Received : Feb 07, 2024  
Date Reported : Feb 14, 2024  
Report Number : 2890963-1

Page 1 of 2

Sample Number 247771-1  
Sampled Date Feb 07, 2024 9:45 AM  
Sample Description Wastewater  
Location Effluent (S-32-104)  
Date Analysis Commenced Feb 07, 2024  
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
<b>Water Testing</b>							
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, 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	-	-	-	8.2	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	-	-	35.2	≤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	3780	≤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	2.4	≤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.

Technical Management

N. Banphit

Narumon Banchongkit  
Supervisor  
โทรศัพท์ ๖-323-๙-9445

Approved by

D. Changchon

Dej Changchon  
Senior Manager  
โทรศัพท์ 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 : 4500153372  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant



TESTING  
No.0042  
Lot ID: 247771  
Date Received : Feb 07, 2024  
Date Reported : Feb 14, 2024  
Report Number : 2890963-1

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 : Tanasit Wongsachai โทรศัพท์ 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  
โทรศัพท์ ๖-323-๙-9445

Approved by

D. Changchon

Dej Changchon  
Senior Manager  
โทรศัพท์ 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 : 4500153372  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 247771  
Date Received : Feb 07, 2024  
Date Reported : Feb 14, 2024  
Report Number : 2890963-2

Page 1 of 1

Sample Number : 247771-1  
Sampled Date : Feb 07, 2024 9:45 AM  
Sample Description : Wastewater  
Location : Effluent (S-32-104)  
Date Analysis Commenced : Feb 07, 2024  
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
<b>Water Testing</b>							
Flow rate	m <sup>3</sup> /hr	-	-	114	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.6	2	1192	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO <sub>4</sub> (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)

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Approved by

*N. Banchoangkit*

Narumon Banchoangkit  
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 : 4500153372  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant



TESTING  
No.0042  
Lot ID: 2425740  
Date Received : Mar 06, 2024  
Date Reported : Mar 13, 2024  
Report Number : 2927317-1

Page 1 of 2

Sample Number	2425740-1
Sampled Date	Mar 06, 2024 9:36 AM
Sample Description	Wastewater
Location	Effluent (S-32-104)
Date Analysis Commenced	Mar 06, 2024
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
<b>Water Testing</b>							
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, part 4500 - O G	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	-	-	-	7.9	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	-	-	33.4	≤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	1080	≤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	<1.0	≤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.

Technical Management

N. Banchoh

Narumon Banchohkit  
Supervisor  
หมายเลข 7-323-9-9445

Approved by

D. Changchon

Dej Changchon  
Senior Manager  
หมายเลข 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 : 4500153372  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant



TESTING  
No.0042  
Lot ID: 2425740  
Date Received : Mar 06, 2024  
Date Reported : Mar 13, 2024  
Report Number : 2927317-1

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 : Surawit Narapong หมายเลข 7-323-9-0011

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. Banchoh

Narumon Banchohkit  
Supervisor  
หมายเลข 7-323-9-9445

Approved by

D. Changchon

Dej Changchon  
Senior Manager  
หมายเลข 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 : 4500153372  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425740  
Date Received : Mar 06, 2024  
Date Reported : Mar 13, 2024  
Report Number : 2927317-2

Page 1 of 1

Sample Number 2425740-1  
Sampled Date Mar 06, 2024 9:36 AM  
Sample Description Wastewater  
Location Effluent (S-32-104)  
Date Analysis Commenced Mar 06, 2024  
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
<b>Water Testing</b>							
Flow rate	m <sup>3</sup> /hr	-	-	126	No Standard	Flow meter, Analyzed by Client	Rayong
Sulfate	mg/L	0.6	2	436	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 :** Surawit Narapong

**Remark :**

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*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 : 4500164414  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant



TESTING  
No.0042  
Lot ID: 2433502  
Date Received : Apr 03, 2024  
Date Reported : Apr 10, 2024  
Report Number : 2945680-1

Page 1 of 2

Sample Number 2433502-1  
Sampled Date Apr 03, 2024 11:15 AM  
Sample Description Wastewater  
Location Effluent (S-32-104)  
Date Analysis Commenced Apr 03, 2024  
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
<b>Water Testing</b>							
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, part 4500 - O G	Rayong
COD	mg/L	1.5	25	34	≤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	-	-	-	7.9	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	-	-	29.2	≤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	2940	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	<1.0	≤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.

Technical Management

**Photchana S.**

Photchana Seeda  
Scientist (4)

หมายเลขโทรศัพท์ 7-323-9-9446

Approved by

**D. Chuan**

Dej Changchon  
Senior Manager

หมายเลขโทรศัพท์ 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 : 4500164414  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant



TESTING  
No.0042  
Lot ID: 2433502  
Date Received : Apr 03, 2024  
Date Reported : Apr 10, 2024  
Report Number : 2945680-1

Page 2 of 2

Sampling By : Nattawut Athomprommarat หมายเลขโทรศัพท์ 7-323-9-0006

Remark :

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- "<" : Lower than LOQ (Limit of Quantization) / LOR (Limit of Reporting)
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- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

**Photchana S.**

Photchana Seeda  
Scientist (4)

หมายเลขโทรศัพท์ 7-323-9-9446

Approved by

**D. Chuan**

Dej Changchon  
Senior Manager

หมายเลขโทรศัพท์ 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 : 4500164414  
Project Name : Environmental Monitoring  
Project Location: Caprolactam Plant

Lot ID: 2433502  
Date Received : Apr 03, 2024  
Date Reported : Apr 10, 2024  
Report Number : 2945680-2

Page 1 of 1

Sample Number	2433502-1						
Sampled Date	Apr 03, 2024 11:15 AM						
Sample Description	Wastewater						
Location	Effluent (S-32-104)						
Date Analysis Commenced	Apr 03, 2024						
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
<b>Water Testing</b>							
Flow rate	m <sup>3</sup> /hr	-	-	151	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.6	2	1094	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 :** Hattawut Athomprommarat

**Remark :**

- LOD : Limit of Detection
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Approved by

Photchana S.

Photchana Seeda  
Scientist (4)

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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 : 4500164414  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant



TESTING  
No.0042  
Lot ID: 2462486  
Date Received : Jun 05, 2024  
Date Reported : Jun 11, 2024  
Report Number : 3009857-1

Page 1 of 2

Sample Number	2462486-1
Sampled Date	Jun 05, 2024 9:50 AM
Sample Description	Wastewater
Location	Effluent (S-32-104)
Date Analysis Commenced	Jun 05, 2024
Condition of Sample	Contained in one amber glass bottle, two glass vials and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
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, part 4500 - O G	Rayong
COD	mg/L	1.5	25	26	≤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	-	-	35.1	≤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	816	≤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	1.5	≤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.

Technical Management

*Thanita K.*

Thanita Kulsurwong

Scientist (4)

โทรศัพท์ 7-323-9-9447

Approved by

*D. Chanchon*

Dej Chanchon

Senior Manager

โทรศัพท์ 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 : 4500164414  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant



TESTING  
No.0042  
Lot ID: 2462486  
Date Received : Jun 05, 2024  
Date Reported : Jun 11, 2024  
Report Number : 3009857-1

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 :** Sansoen Khuiyoksui โทรศัพท์ 7-323-9-0005

**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

*Thanita K.*

Thanita Kulsurwong

Scientist (4)

โทรศัพท์ 7-323-9-9447

Approved by

*D. Chanchon*

Dej Chanchon

Senior Manager

โทรศัพท์ 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 : 4500164414  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2462486  
Date Received : Jun 05, 2024  
Date Reported : Jun 11, 2024  
Report Number : 3009857-2

Page 1 of 1

Sample Number	2462486-1						
Sampled Date	Jun 05, 2024 9:50 AM						
Sample Description	Wastewater						
Location	Effluent (S-32-104)						
Date Analysis Commenced	Jun 05, 2024						
Condition of Sample	Contained in one amber glass bottle, two glass vials and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
Flow rate	m <sup>3</sup> /hr	-	-	116	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.6	2	307	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 :** Sansoen Khuiyoksui

**Remark :**

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

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Approved by

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Thanita Kulsuriwong  
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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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location: Caprolactam Plant

Lot ID: 2425754  
Date Received : Mar 27, 2024  
Date Reported : Apr 03, 2024  
Report Number : 2927325-1

Page 1 of 6

Sample Number	2425754-1						
Sampled Date	Mar 27, 2024 10:00 AM						
Sample Description	Sea Water						
Location	ท่าเรือ TPI						
Date Analysis Commenced	Mar 27, 2024						
Condition of Sample	Contained in one BOD bottle, one amber glass bottle, two glass vials and seven plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Metals Testing</b>							
Aluminium	mg/L	0.03	0.10	Not Detected	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
<b>Microbiological Testing</b>							
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
<b>Water Testing</b>							
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 (F)	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, part 4500 - O G	Rayong
COD	mg/L	-	40	<40	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 C	Rayong
Depth	m	-	-	12.1	No Standard	Water Level Meter	Bangkok
Dissolved Oxygen	mg/L	-	0.1	7.0	≥4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-O (C)	Rayong
Flow rate	m3/s	-	-	1.396	No Standard	Flow meter	Rayong

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Approved by

*Savitree N.*

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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location: Caprolactam Plant

Lot ID: 2425754  
Date Received : Mar 27, 2024  
Date Reported : Apr 03, 2024  
Report Number : 2927325-1

Page 2 of 6

Sample Number	2425754-1						
Sampled Date	Mar 27, 2024 10:00 AM						
Sample Description	Sea Water						
Location	ท่าเรือ TPI						
Date Analysis Commenced	Mar 27, 2024						
Condition of Sample	Contained in one BOD bottle, one amber glass bottle, two glass vials and seven plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
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		-	-	8.2	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	0.007	≤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	30.1	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	-	-	31.1	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	34550	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	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong
Transparency	m	-	-	2.1	Change from Natural condition not more than 10% of the lowest transparency	Visual Method	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 : 4500153371

Project Name : Environmental Monitoring

Project Location: Caprolactam Plant

Lot ID: 2425754

Date Received : Mar 27, 2024

Date Reported : Apr 03, 2024

Report Number : 2927325-1

Page 3 of 6

Sample Number	2425754-1						
Sampled Date	Mar 27, 2024 10:00 AM						
Sample Description	Sea Water						
Location	ท่าเรือ TPI						
Date Analysis Commenced	Mar 27, 2024						
Condition of Sample	Contained in one BOD bottle, one amber glass bottle, two glass vials and seven plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
Turbidity	NTU	-	0.1	1.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2130 B	Rayong
Velocity	m/s	-	-	0.56	No Standard	Flow meter	Rayong

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

Sampling By : Nattawut Athomprommarat , Pattarapol Sawangjaitam

Remark :

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

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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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425754  
Date Received : Mar 27, 2024  
Date Reported : Apr 03, 2024  
Report Number : 2927325-1

Page 4 of 6

Sample Number 2425754-2  
Sampled Date Mar 27, 2024 10:30 AM  
Sample Description Sea Water  
Location ทะเลสาบจุฬ 1  
Date Analysis Commenced Mar 27, 2024  
Condition of Sample Contained in one BOD bottle, one amber glass bottle, two glass vials and seven plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Metals Testing</b>							
Aluminium	mg/L	0.03	0.10	Not Detected	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
<b>Microbiological Testing</b>							
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
<b>Water Testing</b>							
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 (F)	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, part 4500 - O G	Rayong
COD	mg/L	-	40	<40	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 C	Rayong
Depth	m	-	-	12.1	No Standard	Water Level Meter	Bangkok
Dissolved Oxygen	mg/L	-	0.1	7.1	≥4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-O (C)	Rayong
Flow rate	m3/s	-	-	1.542	No Standard	Flow meter	Rayong

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*Savitree N.*

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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425754  
Date Received : Mar 27, 2024  
Date Reported : Apr 03, 2024  
Report Number : 2927325-1

Page 5 of 6

Sample Number 2425754-2  
Sampled Date Mar 27, 2024 10:30 AM  
Sample Description Sea Water  
Location ทะเลสาบจุฬ 1  
Date Analysis Commenced Mar 27, 2024  
Condition of Sample Contained in one BOD bottle, one amber glass bottle, two glass vials and seven plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
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		-	-	8.2	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	30.3	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	35550	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	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong
Transparency	m	-	-	2.3	Change from Natural condition not more than 10% of the lowest transparency	Visual Method	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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location: Caprolactam Plant

Lot ID: 2425754  
Date Received : Mar 27, 2024  
Date Reported : Apr 03, 2024  
Report Number : 2927325-1

Page 6 of 6

Sample Number	2425754-2						
Sampled Date	Mar 27, 2024 10:30 AM						
Sample Description	Sea Water						
Location	หน้าฝักน้ำ 1						
Date Analysis Commenced	Mar 27, 2024						
Condition of Sample	Contained in one BOD bottle, one amber glass bottle, two glass vials and seven plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
Turbidity	NTU	-	0.1	1.0	No Standard	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2130 B	Rayong
Velocity	m/s	-	-	0.61	No Standard	Flow meter	Rayong

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

Sampling By : Nattawut Athomprommarat , Pattarapol Sawangjaitam

Remark :

- LOD : Limit of Detection
- "<" : 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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425757  
Date Received : Mar 27, 2024  
Date Reported : Mar 30, 2024  
Report Number : 2927330-1

Page 1 of 12

Sample Number 2425757-1  
Sampled Date Mar 27, 2024 8:00 AM  
Sample Description Sea Water  
Location ท่าเรือ TPI  
Date Analysis Commenced Mar 28, 2024  
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	<2	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 National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Nattawut Athomprommarat

Remark :

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

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Scientist (4)

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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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425757  
Date Received : Mar 27, 2024  
Date Reported : Mar 30, 2024  
Report Number : 2927330-1

Page 2 of 12

Sample Number 2425757-2  
Sampled Date Mar 27, 2024 10:00 AM  
Sample Description Sea Water  
Location ท่าเรือ TPI  
Date Analysis Commenced Mar 28, 2024  
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	<2	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 National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Nattawut Athomprommarat

Remark :

- LOD : Limit of Detection
- "<" : 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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425757  
Date Received : Mar 27, 2024  
Date Reported : Mar 30, 2024  
Report Number : 2927330-1

Page 3 of 12

Sample Number	2425757-3
Sampled Date	Mar 27, 2024 12:00 PM
Sample Description	Sea Water
Location	ท่าเรือ TPI
Date Analysis Commenced	Mar 28, 2024
Condition of Sample	Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	<2	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 National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Nattawut Athomprommarat

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



## Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
P/O : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425757  
Date Received : Mar 27, 2024  
Date Reported : Mar 30, 2024  
Report Number : 2927330-1

Page 4 of 12

Sample Number	2425757-4
Sampled Date	Mar 27, 2024 2:00 PM
Sample Description	Sea Water
Location	ท่าเรือ TPI
Date Analysis Commenced	Mar 28, 2024
Condition of Sample	Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	5	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 National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Nattawut Athomprommarat

Remark :  
- LOD : Limit of Detection  
- "<" : 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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425757  
Date Received : Mar 27, 2024  
Date Reported : Mar 30, 2024  
Report Number : 2927330-1

Page 5 of 12

Sample Number	2425757-5						
Sampled Date	Mar 27, 2024 4:00 PM						
Sample Description	Sea Water						
Location	ท่าเรือ TPI						
Date Analysis Commenced	Mar 28, 2024						
Condition of Sample	Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	<2	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 National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Nattawut Athomprommarat

Remark :

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



## Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
P/O : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425757  
Date Received : Mar 27, 2024  
Date Reported : Mar 30, 2024  
Report Number : 2927330-1

Page 6 of 12

Sample Number	2425757-6						
Sampled Date	Mar 27, 2024 6:00 PM						
Sample Description	Sea Water						
Location	ท่าเรือ TPI						
Date Analysis Commenced	Mar 28, 2024						
Condition of Sample	Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	2	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 National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Nattawut Athomprommarat

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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425757  
Date Received : Mar 27, 2024  
Date Reported : Mar 30, 2024  
Report Number : 2927330-1

Page 7 of 12

Sample Number 2425757-7  
Sampled Date Mar 27, 2024 8:30 AM  
Sample Description Sea Water  
Location ทะเลสาบจุฬาลงกรณ์ 1  
Date Analysis Commenced Mar 28, 2024  
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	4	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 National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Nattawut Athomprommarat

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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425757  
Date Received : Mar 27, 2024  
Date Reported : Mar 30, 2024  
Report Number : 2927330-1

Page 8 of 12

Sample Number 2425757-8  
Sampled Date Mar 27, 2024 10:30 AM  
Sample Description Sea Water  
Location ทะเลสาบจุฬาลงกรณ์ 1  
Date Analysis Commenced Mar 28, 2024  
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	2	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 National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Nattawut Athomprommarat

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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425757  
Date Received : Mar 27, 2024  
Date Reported : Mar 30, 2024  
Report Number : 2927330-1

Page 9 of 12

Sample Number 2425757-9  
Sampled Date Mar 27, 2024 12:30 PM  
Sample Description Sea Water  
Location ทะเลสาบจุฬ 1  
Date Analysis Commenced Mar 28, 2024  
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	3	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 National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Nattawut Athomprommarat

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## Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited  
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P/O : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425757  
Date Received : Mar 27, 2024  
Date Reported : Mar 30, 2024  
Report Number : 2927330-1

Page 10 of 12

Sample Number 2425757-10  
Sampled Date Mar 27, 2024 2:30 PM  
Sample Description Sea Water  
Location ทะเลสาบจุฬ 1  
Date Analysis Commenced Mar 28, 2024  
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	3	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 National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Nattawut Athomprommarat

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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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425757  
Date Received : Mar 27, 2024  
Date Reported : Mar 30, 2024  
Report Number : 2927330-1

Page 11 of 12

Sample Number 2425757-11  
Sampled Date Mar 27, 2024 4:30 PM  
Sample Description Sea Water  
Location ทะเลสาบจุฬาลงกรณ์ 1  
Date Analysis Commenced Mar 28, 2024  
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	4	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 National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Nattawut Athomprommarat

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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

Lot ID: 2425757  
Date Received : Mar 27, 2024  
Date Reported : Mar 30, 2024  
Report Number : 2927330-1

Page 12 of 12

Sample Number 2425757-12  
Sampled Date Mar 27, 2024 6:30 PM  
Sample Description Sea Water  
Location ทะเลสาบจุฬาลงกรณ์ 1  
Date Analysis Commenced Mar 28, 2024  
Condition of Sample Contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
<b>Water Testing</b>							
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	2	<2	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 National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Nattawut Athomprommarat

Remark :  
- LOD : Limit of Detection  
- "<" : 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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

TESTING  
No.0009  
Lot ID: 2425758  
Date Received : Apr 10, 2024  
Date Reported : Apr 20, 2024  
Report Number : 2927335-1

Sample Number	2425758-1
Sampled Date	Apr 10, 2024 10:26 AM
Sample Description	Groundwater
Location	บ่อน้ำต้นฟ้าห้วยหลวง
Date Analysis Commenced	Apr 10, 2024
Condition of Sample	Contained in tw oglass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
<b>Metals Testing</b>								
Aluminium	mg/L	0.003	0.005	1.39	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	6.26	≤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
<b>Microbiological Testing</b>								
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
<b>Water Testing</b>								
Chloride as Cl *	mg/L	0.06	0.2	24.2	≤250	≤600	In - house method : STM 04-004 based on 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	In - house method : STM 04-004 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
pH at 25 degree C *		-	-	6.9	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	-	-	29.8	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 : 4500153371  
Project Name : Environmental Monitoring  
Project Location : Caprolactam Plant

TESTING  
No.0009  
Lot ID: 2425758  
Date Received : Apr 10, 2024  
Date Reported : Apr 20, 2024  
Report Number : 2927335-1

Sample Number	2425758-1
Sampled Date	Apr 10, 2024 10:26 AM
Sample Description	Groundwater
Location	บ่อน้ำต้นฟ้าห้วยหลวง
Date Analysis Commenced	Apr 10, 2024
Condition of Sample	Contained in tw oglass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
<b>Water Testing</b>								
Total Dissolved Solids Dried at 180 degree C *	mg/L	-	5	204	≤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	127	≤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	80	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 : Chainusorn Lertnanthakunchai โทร 08-9461, Samart Khumphlee โทร 08-9461

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.

Approved by

Sithichok T.

Sithichok Thongnguen  
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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** : 4500153371  
**Project Name** : Environmental Monitoring  
**Project Location** : Caprolactam Plant



**TESTING**  
**No.0009**  
**Lot ID: 2425758**  
Date Received : Apr 10, 2024  
Date Reported : Apr 20, 2024  
Report Number : 2927335-1

Page 3 of 4

<b>Sample Number</b>	2425758-2							
<b>Sampled Date</b>	Apr 10, 2024 10:50 AM							
<b>Sample Description</b>	Groundwater							
<b>Location</b>	บ่อน้ำใต้ดินบ้านนาพัน ร. 7							
<b>Date Analysis Commenced</b>	Apr 10, 2024							
<b>Condition of Sample</b>	Contained in tw oglass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)							

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
<b>Metals Testing</b>								
Aluminium	mg/L	0.003	0.005	0.02	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	0.03	≤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
<b>Microbiological Testing</b>								
Total Coliform	MPN/100mL	-	-	790.0	<2.2	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
<b>Water Testing</b>								
Chloride as Cl *	mg/L	0.06	0.2	44.0	≤250	≤600	In - house method : STM 04-004 based on 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	13.7	≤45	≤45	In - house method : STM 04-004 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
pH at 25 degree C *	-	-	-	8.3	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	-	-	31.6	No Standard	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report may be reproduced in any form without written consent from the laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Sithichok T.

Sithichok Thongnguen  
Scientist (3)

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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** : 4500153371  
**Project Name** : Environmental Monitoring  
**Project Location** : Caprolactam Plant



**TESTING**  
**No.0009**  
**Lot ID: 2425758**  
Date Received : Apr 10, 2024  
Date Reported : Apr 20, 2024  
Report Number : 2927335-1

Page 4 of 4

<b>Sample Number</b>	2425758-2							
<b>Sampled Date</b>	Apr 10, 2024 10:50 AM							
<b>Sample Description</b>	Groundwater							
<b>Location</b>	บ่อน้ำใต้ดินบ้านนาพัน ร. 7							
<b>Date Analysis Commenced</b>	Apr 10, 2024							
<b>Condition of Sample</b>	Contained in tw oglass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)							

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
<b>Water Testing</b>								
Total Dissolved Solids Dried at 180 degree C *	mg/L	-	5	436	≤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	234	≤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** : Chainosorn Lertnanthakunchai โทรศัพท์ ๖-323-๖-9461 , Samart Khumplee โทรศัพท์ ๖-204-๖-0084

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.

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Approved by

Sithichok T.

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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 27 มีนาคม 2567)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)	
	2425756-1	2425756-2
<b>Division Cyanophyta</b>		
<b>Class Cyanophyceae</b>		
<b>Order Nostocales</b>		
<b>Family Oscillatoriaceae</b>		
1. <i>Oscillatoria tenuis</i>	1,634,000	1,141,000
<b>Family Nostocaceae</b>		
2. <i>Pseudanabaena</i> sp.	30,000	-
<b>Division Chromophyta</b>		
<b>Class Bacillariophyceae</b>		
<b>Order Biddulphiales</b>		
<b>Suborder Coscinodiscineae</b>		
<b>Family Thalassiosiraceae</b>		
3. <i>Cyclotella striata</i>	59,000	55,000
4. <i>Lauderia annulata</i>	74,000	-

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 27 มีนาคม 2567)

(ต่อ)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)	
	2425756-1	2425756-2
5. <i>Skeletonema costatum</i>	163,000	74,000
6. <i>Thalassiosira eccentrica</i>	104,000	18,000
7. <i>Thalassiosira punctigera</i>	45,000	-
<b>Family Coscinodiscaceae</b>		
8. <i>Coscinodiscus granii</i>	-	92,000
<b>Family Asterolampraceae</b>		
9. <i>Asteromphalus flabellatus</i>	-	18,000
<b>Suborder Rhizosoleniineae</b>		
<b>Family Rhizosoleniaceae</b>		
10. <i>Guinardia flaccida</i>	-	55,000
11. <i>Guinardia striata</i>	-	147,000
12. <i>Proboscia alata</i>	104,000	-
13. <i>Pseudosolenia calcar-avis</i>	89,000	18,000
14. <i>Rhizosolenia acuminata</i>	-	18,000
15. <i>Rhizosolenia formosa</i>	-	18,000
16. <i>Rhizosolenia imbricata</i>	-	221,000
17. <i>Rhizosolenia setigera</i>	15,000	-
18. <i>Rhizosolenia</i> sp.	-	55,000
19. <i>Rhizosolenia striata</i>	-	92,000
<b>Suborder Biddulphiineae</b>		
<b>Family Hemiaulaceae</b>		
20. <i>Cerataulina pelagica</i>	149,000	18,000
21. <i>Cerataulina</i> sp.	-	55,000
23. <i>Climacodium frauenfeldianum</i>	223,000	268,000
24. <i>Hemiaulus indicus</i>	59,000	-

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 27 มีนาคม 2567)

(ต่อ)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)	
	2425756-1	2425756-2
<b>Family Chaetoceraceae</b>		
25. <i>Bacteriastrum delicatulum</i>	74,000	-
26. <i>Bacteriastrum furcatum</i>	89,000	166,000
27. <i>Bacteriastrum</i> sp.	149,000	37,000
28. <i>Chaetoceros affinis</i>	-	37,000
29. <i>Chaetoceros borealis</i>	45,000	-
30. <i>Chaetoceros coarctatus</i>	30,000	-
31. <i>Chaetoceros compressus</i>	104,000	37,000
32. <i>Chaetoceros costatus</i>	74,000	1,104,000
33. <i>Chaetoceros curvisetus</i>	371,000	221,000
34. <i>Chaetoceros densus</i>	2,228,000	2,944,000
35. <i>Chaetoceros diadema</i>	356,000	-
36. <i>Chaetoceros didymus</i>	2,525,000	2,668,000
37. <i>Chaetoceros furcellatus</i>	2,970,000	2,576,000
38. <i>Chaetoceros laciniosus</i>	104,000	92,000
39. <i>Chaetoceros lorenzianus</i>	15,000	92,000
40. <i>Chaetoceros mitra</i>	-	18,000
41. <i>Chaetoceros peruvianus</i>	-	37,000
42. <i>Chaetoceros pseudocurvisetus</i>	342,000	-
43. <i>Chaetoceros radicans</i>	549,000	662,000
44. <i>Chaetoceros</i> sp.	2,673,000	1,288,000
45. <i>Chaetoceros teres</i>	-	55,000
46. <i>Chaetoceros tortissimus</i>	3,119,000	1,656,000
<b>Family Eupodiscaceae</b>		
47. <i>Odontella sinensis</i>	30,000	-

**ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 27 มีนาคม 2567)**

(ต่อ)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)	
	2425756-1	2425756-2
<b>Order Bacillariales</b>		
<b>Suborder Fragilariineae</b>		
<b>Family Thalassionemataceae</b>		
48. <i>Thalassionema bacillare</i>	15,000	-
49. <i>Thalassionema frauenfeldii</i>	178,000	166,000
50. <i>Thalassionema nitzschioides</i>	1,663,000	736,000
<b>Suborder Bacillariineae</b>		
<b>Family Naviculaceae</b>		
51. <i>Haslea tromphii</i>	15,000	74,000
52. <i>Meunier membranacea</i>	45,000	55,000
53. <i>Navicula cuspidata</i>	15,000	37,000
54. <i>Navicula</i> sp.	-	18,000
55. <i>Pinnularia viridis</i>	30,000	-
56. <i>Pleurosigma angulatum</i>	163,000	147,000
57. <i>Pleurosigma elongatum</i>	-	18,000
58. <i>Pleurosigma narmanii</i>	-	18,000
<b>Family Bacillariaceae</b>		
59. <i>Cylindrotheca closterium</i>	178,000	129,000
60. <i>Nitzschia lorenziana</i>	124,000	74,000
61. <i>Pseudo-nitzschia</i> sp.	119,000	202,000
<b>Class Dinophyceae</b>		
<b>Order Prorocentrales</b>		
<b>Family Prorocentraceae</b>		
62. <i>Prorocentrum micans</i>	59,000	-
<b>Order Dinophysiales</b>		
<b>Family Dinophysiaceae</b>		
63. <i>Dinophysis caudata</i>	89,000	-


**ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 27 มีนาคม 2567)**

(ต่อ)

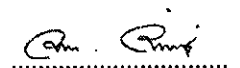
ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)	
	2425756-1	2425756-2
<b>Order Gonyaulacales</b>		
<b>Family Ceratiaceae</b>		
64. <i>Ceratium deflexum</i>	15,000	-
65. <i>Ceratium furca</i>	15,000	18,000
66. <i>Ceratium fusus</i>	30,000	-
67. <i>Ceratium porrectum</i>	30,000	37,000
<b>Family Goniodomaceae</b>		
68. <i>Gonyaulax</i> sp.	-	37,000
<b>Order Peridiniales</b>		
<b>Family Calciodinellaceae</b>		
69. <i>Scrippsiella trocoidea</i>	460,000	110,000
<b>Family Protoperidiniaceae</b>		
70. <i>Protoperidinium latispinum</i>	15,000	18,000
71. <i>Protoperidinium</i> sp.	30,000	37,000
<b>ชนิดแพลงก์ตอนพืช</b>	<b>52</b>	<b>52</b>
<b>ปริมาณแพลงก์ตอนพืช</b>	<b>21,883,000</b>	<b>17,984,000</b>
<b>ดัชนีความหลากหลายแพลงก์ตอนพืช</b>	<b>2.7911</b>	<b>2.7844</b>
<b>ดัชนีความสม่ำเสมอแพลงก์ตอนพืช</b>	<b>0.7064</b>	<b>0.7047</b>

**Sample Location :** 1. สถานี 2425756-1 : ท่าเรือ TPI  
2. สถานี 2425756-2 : ทะเลเปิดจุดที่ 1

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



(นางสาวกนกวรรณ ขาวค้อน)  
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 27 มีนาคม 2567)

ชนิดแพลงก์ตอนสัตว์	ปริมาณแพลงก์ตอนสัตว์ (หน่วยต่อลูกบาศก์เมตร)	
	2425756-1	2425756-2
<b>Phylum Protozoa</b>		
<b>Subphylum Ciliophora</b>		
<b>Class Ciliata</b>		
<b>Subclass Spirotricha</b>		
<b>Order Tintinnida</b>		
<b>Family Tintinnidae</b>		
1. <i>Eutintinnus perminuta</i>	30,000	18,000
<b>Subclass Peritricha</b>		
<b>Order Peritrichida</b>		
2. <i>Vorticella</i> sp.	59,000	-
<b>Phylum Arthropoda</b>		
<b>Class Crustacea</b>		
<b>Subclass Copepoda</b>		
3. Copepod nauplii	89,000	110,000

ตาราง ผลการวิเคราะห์แพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 27 มีนาคม 2567)


(ต่อ)

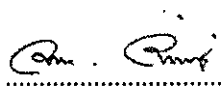
ชนิดแพลงก์ตอนสัตว์	ปริมาณแพลงก์ตอนสัตว์ (หน่วยต่อลูกบาศก์เมตร)	
	2425756-1	2425756-2
<b>Order Cyclopoida</b>		
4. Cyclopoid copepod	30,000	18,000
<b>Phylum Mollusca</b>		
<b>Class Bivalvia</b>		
5. Pelecypod larvae	30,000	18,000
ชนิดแพลงก์ตอนสัตว์	5	4
ปริมาณแพลงก์ตอนสัตว์	238,000	164,000
ดัชนีความหลากหลายแพลงก์ตอนสัตว์	1.4968	0.9954
ดัชนีความสม่ำเสมอแพลงก์ตอนสัตว์	0.5300	0.7180

**Sample Location :**

1. สถานี 2425756-1 : ท่าเรือ TPI
2. สถานี 2425756-2 : ทะเลเปิดจุดที่ 1

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

  
 .....  
 (นางสาวกนกวรรณ ขาวค่อน)  
 ผู้วิเคราะห์

  
 .....  
 (นายอลงกต อินทราชติ)  
 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 27 มีนาคม 2567)

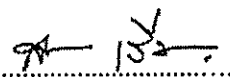
สกุลสัตว์หน้าดิน	ปริมาณสัตว์หน้าดิน (ตัว/ตารางเมตร)	
	2425756-1	2425756-2
<b>Phylum Annelida</b>		
<b>Class Polychaeta</b>		
<b>Order Capitellida</b>		
<b>Family Capitellidae</b>		
<i>Heteromastus</i> sp. (ไส้เดือนทะเล)	15	75
<b>Order Orbiniida</b>		
<b>Family Orbiniidae</b>		
<i>Scoloplos</i> sp. (ไส้เดือนทะเล)	15	-
<b>Order Phyllodocida</b>		
<b>Family Nephtyidae</b>		
<i>Nephtys</i> sp. (ไส้เดือนทะเล)	15	75
<b>Order Spionida</b>		
<b>Family Spionidae</b>		
<i>Prionospio</i> sp. (ไส้เดือนทะเล)	45	-

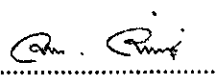
ตาราง ผลการวิเคราะห์สัตว์หน้าดิน (เก็บตัวอย่างวันที่ 27 มีนาคม 2567) (ต่อ)

สกุลสัตว์หน้าดิน	ปริมาณสัตว์หน้าดิน (ตัว/ตารางเมตร)	
	2425756-1	2425756-2
Phylum Arthropoda		
Class Malacostraca		
Order Amphipoda		
Family Ampeliscidae		
<i>Ampelisca</i> sp. (แอมพิฟอค)	-	15
Order Decapoda		
Family Alpheidae		
<i>Alpheus</i> sp. (กุ้งดีดขัน)	15	-
Phylum Chordata		
Class Leptocardii		
Order Amphioxformes		
Family Branchiostomidae		
<i>Branchiostoma</i> sp. (แอมฟิออกซัส)	-	15
สกุลสัตว์หน้าดิน	5	4
ปริมาณสัตว์หน้าดิน	105	180
ค่าดัชนีความหลากหลายสัตว์หน้าดิน	1.4751	1.1437

Sample Location : 1. สถานี 2425756-1 : ท่าเรือ TPI  
2. สถานี 2425756-2 : ทะเลเปิดจุดที่ 1

Condition of Sample : contained in one plastic zip bag

  
(นายสาโรจน์ เร่มดำริห์)  
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.	: 0100/67
For	: UBE Chemicals (Asia) Public Company Limited	Sampling Date	: 17/01/2024
Address	: 140/6 Moo 4, Ta-Phong Sub-District, Muang District, Rayong Province 21000	Received Date	: 19/01/2024
		Test Date	: 19/01/2024
Tel/Fax	: 0-3892-8700 / 0-3892-8965	Report Date	: 30/01/2024

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	17/01/2024 08:20-19:00	Benzene	NIOSH 1501/GC FID	< 0.02	0.04	1
1320-P17	17/01/2024 08:22-19:00	Benzene	NIOSH 1501/GC FID	< 0.02	0.04	1

Analyst By:

Sudaporn S.

(Miss Sudaporn Soonthorn)

Approved By:

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

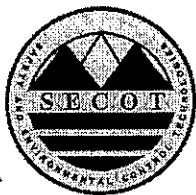
Technical Management Team

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.



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SECOT CO., LTD.

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 0871/67
For	: UBE Chemicals (Asia) Public Company Limited	Sampling Date	: 03/05/2024
Address	: 140/6 Moo 4, Ta-Phong Sub-District, Muang District, Rayong Province 21000	Received Date	: 04/05/2024
		Test Date	: 06/05/2024
Tel/Fax	: 0-3892-8700 / 0-3892-8965	Report Date	: 16/05/2024

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	03/05/2024	Benzene	NIOSH 1501/GC FID	< 0.02	0.02	1
	09:21-13:21					
1320-P17	03/05/2024	Benzene	NIOSH 1501/GC FID	< 0.02	ND	1
	09:25-13:25					

Analyst By :

Sudaporn S.

(Miss Sudaporn Soonthorn)

Approved By :

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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ภาคผนวก จ

ใบแสดงการสอบเทียบเครื่องมือ





## SOUND LEVEL METER CALIBRATION

Calibration Location:

SECOT

Calibration Date:

Jan 19, 24

### ACOUSTIC CALIBRATOR

Brand	Model	Serial No.	Frequency (Hz)	Ref. Calibrated (dB)	Eff. Calibrated (dB)
Cirrus	CR:515	97097	1000.00	94.0	93.7

No.	Brand	Model	Serial No.	Reading (dB)	dB Adjust
15	Cirrus	CR162B	G300769	94.5	-0.8
16	Cirrus	CR162B	G300833	92.9	0.8
18	Cirrus	CR162B	G300892	91.8	1.9

Calibrated by :

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



Certificate No.: CP20230345EA  
Operation No.: CP2023080023

## Certificate of Calibration

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

Approved by: \_\_\_\_\_

( Mr. Sittichai Swaksuriyawong )  
Group Manager

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

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

# CERTIFICATE OF CALIBRATION

ISSUED BY Noisemeters

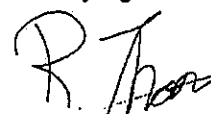
DATE OF ISSUE 28 April 2023 CERTIFICATE NUMBER 191319

**Noisemeters**

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

Page 1 of 1

Test engineer:  
Rebecca Thomas  
Electronically signed:



## doseBadge Reader

### Instrument

Manufacturer: Pulsar Instruments Plc  
Model Number: Model 22R

Serial Number: 79781  
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	
Battery Power	
Display	
Communication	
2 way IR link	
Clock	

### Calibration Results

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

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%.



# ELECTRICAL AND ELECTRONICS INSTITUTE FOUNDATION FOR INDUSTRIAL DEVELOPMENT

Certificate No.: CP20230345EA

## Calibration Report

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

### Condition of this result of calibration

1. Reference standards instrument :-

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

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

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

- Reference standards instrument for Acoustic function
  - National Institute of Metrology (Thailand)
- Reference standards instrument for Electrical function
  - Electrical and Electronics Institute; NSC Accredited Calibration No.0119

### Result of Calibration:-

1. Function : Sound pressure level

Norminal Frequency (Hz)	Specified Sound Pressure level (dB)	Measured value (dB)	Deviated value <sup>[1]</sup> (dB)	Acceptance limit <sup>[3]</sup> (dB)
1000	94	94.13	0.13	$\pm 0.25$

2. Function : Frequency

Norminal Sound Pressure level (dB)	Specified Frequency (Hz)	Measured value (Hz)	Deviated value <sup>[2]</sup> (%)	Acceptance limit <sup>[3]</sup> (%)
94	1000	1000.3	0.0	$\pm 0.7$



# ELECTRICAL AND ELECTRONICS INSTITUTE FOUNDATION FOR INDUSTRIAL DEVELOPMENT

Certificate No.: CP20230345EA

## Calibration Report

### 3. Function : Total distortion + noise

Normal	Normal	Measured value <sup>[4]</sup>	Acceptance limit <sup>[5]</sup>
Sound Pressure level (dB)	Frequency (Hz)	(%)	(%)
94	1000	1.0	2.5

### Uncertainty of measurement

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

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

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

-- End of Report --

ภาคผนวก จ

## วิธีการตรวจวัดและวิเคราะห์คุณภาพสิ่งแวดล้อม

## ตารางที่ จ-1 วิธีการตรวจวัดและวิเคราะห์คุณภาพสิ่งแวดล้อม

## โครงการโรงงานผลิตคาปรีแลคตัม บริษัท อุเบะ เคมิคอลส์ (เอเชีย) จำกัด (มหาชน)

พารามิเตอร์	วิธีการตรวจวัด	วิธีการวิเคราะห์
<b>1. คุณภาพอากาศในบรรยากาศ</b>		
- ความเร็วและทิศทางลม (Wind Speed/ Wind Direction)	Wind Vane and Cup Anemometer	ASTM : D5741-96
- ฝุ่นละอองรวม (TSP)	High Volume Air Sampler	Pre-Post Weight Difference
- ฝุ่นละอองขนาดไม่เกิน 10 ไมครอน (PM-10)	Size Selective Inlet High Volume Air Sampler	Pre-Post Weight Difference
- ก๊าซไนโตรเจนไดออกไซด์ (NO <sub>2</sub> )	Instrumental Reference Method	Chemiluminescence
- ก๊าซซัลเฟอร์ไดออกไซด์ (SO <sub>2</sub> )	Instrumental Reference Method	UV Fluorescence
- ก๊าซคาร์บอนมอนอกไซด์ (CO)	Instrumental Reference Method	Non-Dispersive Infrared Detection
<b>2. คุณภาพอากาศจากปล่องระบายอากาศ</b>		
- ฝุ่นละออง (PM)	Isokinetic Stack Sampling Technique	Pre-Post Weight Difference (U.S. EPA Method 5)
- ก๊าซซัลเฟอร์ไดออกไซด์ (SO <sub>2</sub> )	Impingment Absorption	Barium-thorin Titration Method (U.S. EPA Method 6)
- ก๊าซออกไซด์ของไนโตรเจน (NO <sub>x</sub> )	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 <sub>3</sub> Slip)	Impingment Absorption	CTM-027/Ion Chromatography
<b>3. ระดับเสียง</b>		
- ระดับเสียงเฉลี่ย 24 ชั่วโมง (Leq(24))	Sound Pressure Level Meter	-
- ระดับเสียงเปอร์เซ็นต์ไทล์ที่ 90 (L <sub>90</sub> )	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

## โครงการโรงงานผลิตคาปรีแลคตัม บริษัท อุเบะ เคมิคอลส์ (เอเชีย) จำกัด (มหาชน) (ต่อ)

พารามิเตอร์	วิธีการตรวจวัด	วิธีการวิเคราะห์
<b>4. คุณภาพน้ำทิ้ง</b>		
- อัตราการไหล (Flow Rate)	Flow Meter	-
- อุณหภูมิ (Temperature)	Grab Sampling	Thermometer
- ความเป็นกรด-ด่าง (pH)	Grab Sampling	Electrometric Method
- ของแข็งแขวนลอย (SS)	Grab Sampling	Dried at 103-105 °C
- ปริมาณของแข็งละลายน้ำทั้งหมด (TDS)	Grab Sampling	Dried at 103-105 °C
- บีโอดี (BOD <sub>5</sub> )	Grab Sampling	5-Day BOD Test, Membrane Electrode
- น้ำมันและไขมัน (Oil & Grease)	Grab Sampling	Partition-Gravimetric
- ซีโอดี (COD)	Grab Sampling	Close Reflux, Titrimetic
<b>5. คุณภาพน้ำทะเล</b>		
- ความเร็วกระแสน้ำ (Velocity)	Flow Meter	-
- อุณหภูมิ (Temperature)	Grab Sampling	Thermometer
- ความเป็นกรด-ด่าง (pH)	Grab Sampling	Electrometric 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 <sub>5</sub> )	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 <sub>3</sub> -N)	Grab Sampling	Distillation and Titrimetic
- แบคทีเรียในกลุ่มโคลิฟอร์มทั้งหมด (Total Coliform Bacteria)	Grab Sampling	Multiple Tube Fermentation Technique
- ฟอสเฟต (PO <sub>4</sub> -P)	Grab Sampling	Ascorbic Acid



## ตารางที่ จ-1 วิธีการตรวจวัดและวิเคราะห์คุณภาพสิ่งแวดล้อม

## โครงการโรงงานผลิตคาโปรแลคตัม บริษัท อุเบะ เคมิคอลส์ (เอเชีย) จำกัด (มหาชน) (ต่อ)

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

ภาคผนวก ข

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ใบอนุญาตขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน  
จากกรมโรงงานอุตสาหกรรม



ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐๑ ๖

กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒๐ กรกฎาคม ๒๕๖๖

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท ซีคอต จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๗ เมษายน ๒๕๖๖

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

ตามหนังสือที่อ้างถึง บริษัท ซีคอต จำกัด ขอต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๒๓๙ สถานที่ตั้งเลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท ซีคอต จำกัด ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

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

หนังสือฉบับนี้จะหมดอายุในวันที่ ๒ พฤษภาคม ๒๕๖๙ หากประสงค์จะต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อกรมโรงงานอุตสาหกรรมภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ซึ่งคำขอต่ออายุดังกล่าวขอรับได้ที่กรมโรงงานอุตสาหกรรม ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ที่หน้าเว็บไซต์กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายประสม คำพงษ์)

กองวิจัยและเตือนภัยมลพิษโรงงาน ผู้อำนวยการกองวิจัยและเตือนภัยมลพิษโรงงาน  
กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๕๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



ส่งมาด้วย ๑

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ซีคอต จำกัด

เลขทะเบียน ว-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐๑ ๖

ลงวันที่ ๒๐ กรกฎาคม ๒๕๖๖

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑๐ ราย

๑) นายขรรชัย เกรียงไกรอุดม	ทะเบียนเลขที่ ว-๒๓๙-ก-๐๐๐๒
๒) นางสมฤดี เกรียงไกรอุดม	ทะเบียนเลขที่ ว-๒๓๙-ก-๐๐๐๓
๓) นางสาวธิดา ทิพย์	ทะเบียนเลขที่ ว-๒๓๙-ก-๐๐๐๔
๔) นางสาวเพชรสุดา อินทร์	ทะเบียนเลขที่ ว-๒๓๙-ก-๐๐๐๕
๕) นางสาวปรีดา สมใจ	ทะเบียนเลขที่ ว-๒๓๙-ก-๐๐๐๖
๖) นางสาวอริยา มาตา	ทะเบียนเลขที่ ว-๒๓๙-ก-๐๐๐๗
๗) นางสาวธิดาวัลย์ วงศ์เจริญ	ทะเบียนเลขที่ ว-๒๓๙-ก-๐๐๐๘
๘) นางสาวณัฏฐพร เกตุวันดี	ทะเบียนเลขที่ ว-๒๓๙-ก-๐๐๐๙
๙) นางสาววิสา ภูวธรรมเพ็ญ	ทะเบียนเลขที่ ว-๒๓๙-ก-๐๐๑๐
๑๐) นางสาวศิริวรรณ ฉิมสง่า	ทะเบียนเลขที่ ว-๒๓๙-ก-๐๐๑๑

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ซีคोट จำกัด

เลขทะเบียน ๖-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐ ๑ ๖

ลงวันที่ ๒๐ กรกฎาคม ๒๕๖๖

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓๕ ราย

- ๑) นางสาวสุดาพร สุนทร
- ๒) นางสาวสุชาทิพย์ เทียนเตี้ย
- ๓) นางสาวสุนันทา ศิริภูพานนท์
- ๔) นายบวร ดีชัยยะ
- ๕) นางสาวเกศรินทร์ วรเดชวิทยา
- ๖) นายอนิวัฒน์ พินันนา
- ๗) นายชิตพล สมประสงค์
- ๘) นางสาวศศิธร พรหมประเสริฐ
- ๙) นายศิวนนท์ กุลวงษ์
- ๑๐) นางสาวอลิษา คนีวรรณ
- ๑๑) นางสาวสิริวรรณ แก้วชิงดวง
- ๑๒) นางสาวปัทมวรรณ สุวรรณวิโรจน์
- ๑๓) นางสาวกนิษฐา เจริญเชื้อ
- ๑๔) นายวัชรกานต์ ประมาคะเด
- ๑๕) นายชอง เสงฆ์วัลกุล
- ๑๖) นางสาวกฤษณา จันทุม
- ๑๗) นางสาวพรรณภา บุตรธรรม
- ๑๘) นางสาวธาริณี อาจปลิว
- ๑๙) นายธนโชติ ช่างลื้อ
- ๒๐) นางสาวพัชรา สมานฉันท
- ๒๑) นางสาวจุฑารัตน์ แจ่มเรือน
- ๒๒) นางสาวจณิสตา กุ้ยอ่อน
- ๒๓) นายกิตติพงศ์ ณะเกิงสุข
- ๒๔) นายจิรวัดน์ โคตรคำหาญ
- ๒๕) นายชนะพล อัครผล
- ๒๖) นางสาวทิพย์สุดา วรรณการ
- ๒๗) นายสิทธิชัย สว่างวงศ์ไชย
- ๒๘) นายพิษณุ สีนามเพ็ง
- ๒๙) นายวัชรชัย ขอบท่ากิจ
- ๓๐) นายธนาชาติ ต่วนแสง
- ๓๑) นายณัฐชัย ไชยโคตร
- ๓๒) นายณัฐดนัย กฤษณะโสม
- ๓๓) นายศุภชัย สุขใหม่
- ๓๔) นายรอมฎอน เหลี่ยมมาต
- ๓๕) นางสาวสุภาวดี บัวแก้ว
- ๓๖) นางสาวมาเรียณี อาแว
- ๓๗) นางสาววิระยา ปิจฉิมบุรณ์
- ๓๘) นางสาวศลิษา อินทรีย์

- ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๑  
 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๓  
 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๔  
 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๕  
 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๖  
 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๗  
 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๘  
 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๙  
 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๑๐  
 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๑๑  
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 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๑๙  
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 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๒๓  
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 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๒๖  
 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๒๗  
 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๒๘  
 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๒๙  
 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๓๐  
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 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๓๘  
 ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๓๙

3/กน

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ซีคोट จำกัด

เลขทะเบียน ๖-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐ ๑ ๖

ลงวันที่ ๒๐ กรกฎาคม ๒๕๖๖

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๕๕ รายการ

น้ำเสีย จำนวน 45 รายการ

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

3/กน

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

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

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

3) Digestion...

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

น้ำได้น...

น้ำใต้ดิน จำนวน 125 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
2	Acetone	Purge and Trap Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
3	Aldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
5	Antimony	Digestion, Inductively Coupled Plasma Spectrometric Method <sup>[4]</sup>
6	Arsenic	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
7	Atrazine	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup>
8	Barium	1) Digestion, Direct Nitrous Oxide-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Spectrometric Method <sup>[4]</sup>
9	Benz(a)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
10	Benzene	Purge and Trap Gas Chromatographic/Mass spectrometric Method <sup>[4]</sup>
11	Benzo(b)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
12	Benzo(k)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup> 317)

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
13	Benzoic acid	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
14	Benzo(a)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
15	Benzo(g,h,i)perylene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
16	Beryllium	Digestion, Inductively Coupled Plasma Spectrometric Method <sup>[4]</sup>
17	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
18	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
19	Bromodichloromethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
20	Bromoform	Purge and Trap Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
21	Butanol	Purge and Trap Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
22	Butyl benzyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
23	Cadmium	1) Digestion, Direct Air-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>[4]</sup> 3) Digestion, Inductively Coupled Plasma Spectrometric Method <sup>[4]</sup>
24	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
25	Carbon disulfide	Purge and Trap Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
26	Carbon tetrachloride	Purge and Trap Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup> 317)

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

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



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

2) Liquid-Liquid...

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

2) Liquid-Liquid...

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

87 Methylene chloride...

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

99 Phenanthrene...

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

2) Separatory...

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

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

อากาศเสีย (ปล่อยระบาย) จำนวน 27 รายการ

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

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

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

สิ่งปฏิกูล...

สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน 34 รายการ

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

2) Waste Extraction...

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

3) Digestion...

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

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

17 Dieldrin...

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

3) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
21	Lindane	3) Digestion, Flame Atomic Absorption Spectrometric Method <sup>[7,15]</sup> 4) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
22	Mercury	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1,9,22]</sup> 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[1,9,27]</sup> 3) Soxhlet Extraction, Gas Chromatographic Method <sup>[10,22]</sup> 4) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[10,27]</sup>
23	Methoxychlor	1) Waste Extraction, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>[1,18]</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 3) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>[19]</sup> 4) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>

24 Molybdenum...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
24	Molybdenum	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup>
25	Nickel	2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup> 1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method <sup>[1,6,15]</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 3) Digestion, Flame Atomic Absorption Spectrometric Method <sup>[7,15]</sup> 4) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
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 <sup>[1,9,23]</sup> 2) Soxhlet Extraction, Gas Chromatographic Method <sup>[10,23]</sup>
27	Pentachlorophenol	1) Waste Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[1,25]</sup> 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[25]</sup>
28	pH	Electrometric Method <sup>[31,32]</sup>
29	Selenium	1) Waste Extraction, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[1,6,20]</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 3) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[7,20]</sup>

4) Digestion...



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

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[10,27]</sup> 31mg/L

2 Acetone...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[13,26]</sup>
3	Aldrin	1) Ultrasonic Extraction, Gas Chromatographic Method <sup>[11,22]</sup> 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[11,27]</sup>
4	Anthracene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[10,27]</sup>
5	Antimony	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[7,16]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
6	Arsenic	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[7,16]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
7	Atrazine	Ultrasonic Extraction, Gas Chromatographic Method <sup>[11,24]</sup>
8	Barium	1) Digestion, Flame Atomic Absorption Spectrometric Method <sup>[7,15]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
9	Benz(a)anthracene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[10,27]</sup>
10	Benzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[13,26]</sup>
11	Benzo(b)fluoranthene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[10,27]</sup>
12	Benzo(k)fluoranthene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[10,27]</sup>
13	Benzoic acid	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[11,27]</sup> 31mg/L

14 Benzo(a)pyrene...

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

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

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

54 1,2-Dichloropropane...

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

67 Fluoranthene...

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

78 Hexachloroethane...

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

90 Methyl tert-butyl ether...

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

2) Digestion...

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

114 2,4,5-Trichlorophenol...

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

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
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ที่ อก ๐๓๑๐(๑)/ ๕๐ ๕๔

กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๒๗ พฤษภาคม ๒๕๖๗

เรื่อง เปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท ซีคอฟ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๒๑ พฤษภาคม ๒๕๖๗

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

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์  
จำนวน ๒ ราย ได้แก่

๑) นายวัชรกานต์ ประมาคะเต

ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๑๕

๒) นายรัตนชัย ชอบทำกิจ

ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๓๐

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายพรยศ กลั่นกรอง)

รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๙๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th





ภาคผนวก ข

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



แบบ กนช./สมอ.๒  
Form NSC/TISI 2

ใบรับรองเลขที่ 24-LB0026  
(Certificate No.)

## ใบรับรองระบบงาน (Certificate of Accreditation)

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

เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม  
(Secretary-General, Thai Industrial Standards Institute)

ออกใบรับรองฉบับนี้ให้  
(Issues this certificate to)

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

ตั้งอยู่เลขที่  
(Address)

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

ได้รับการรับรองความสามารถ  
(Certificate of competence)

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

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

หมายเลขการรับรองที่ ทดสอบ ๐๓๙๔  
(Accreditation No. Testing 0394)

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

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

  
(นายวีระศักดิ์ เพ็งหลัง)  
ผู้อำนวยการสำนักงานคณะกรรมการการมาตรฐานแห่งชาติ  
ปฏิบัติราชการแทน  
เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม



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



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



ชื่อห้องปฏิบัติการ  
(Laboratory Name)

หมายเลขการรับรองที่  
(Accreditation No.)

ฉบับที่ 02  
(Issue No.02)

สถานภาพห้องปฏิบัติการ  
(Laboratory status)

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

ทดสอบ 0394  
(Testing 0394)

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

☒ถาวร (Permanent) ☐นอกสถานที่ (Site) ☐ชั่วคราว (Temporary)

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

☐เคลื่อนที่ (Mobile) ☐หลายสถานที่ (Multisite)

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

กระทรวงอุตสาหกรรมสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม  
(Ministry of Industry, Thai Industrial Standards Institute)

หน้า 1/9

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 24-LB0026

(Certification No. 24-LB0026)



ฉบับที่ 02

(Issue No.02)

ออกให้ตั้งแต่วันที่ 30 ตุลาคม พ.ศ. 2566

(Valid from) (30 October B.E.2566 (2023))

ถึงวันที่ 8 กันยายน พ.ศ. 2571

(Until) (8 September B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ  
(Laboratory status)

☒ ถาวร

(Permanent)

☐ นอกสถานที่

(Site)

☐ชั่วคราว

(Temporary)

☐เคลื่อนที่

(Mobile)

☐หลายสถานที่

(Multisite)

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

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 24-LB0026

(Certification No. 24-LB0026)



ฉบับที่ 02

(Issue No.02)

ออกให้ตั้งแต่วันที่ 30 ตุลาคม พ.ศ. 2566

(Valid from) (30 October B.E.2566 (2023))

ถึงวันที่ 8 กันยายน พ.ศ. 2571

(Until) (8 September B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ  
(Laboratory status)

☒ ถาวร

(Permanent)

☐นอกสถานที่

(Site)

☐ชั่วคราว

(Temporary)

☐เคลื่อนที่

(Mobile)

☐หลายสถานที่

(Multisite)

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

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



ฉบับที่ 02 (Issue No.02) ออกให้ตั้งแต่วันที่ 30 ตุลาคม พ.ศ. 2566 (Valid from (30 October B.E.2566 (2023))) ถึงวันที่ 8 กันยายน พ.ศ. 2571 (Until) (8 September B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ (Laboratory status) ☒ถาวร (Permanent) ☐นอกสถานที่ (Site) ☐ชั่วคราว (Temporary) ☐เคลื่อนที่ (Mobile) ☐หลายสถานที่ (Multisite)

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

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ  
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ใบรับรองเลขที่ 24-LB0026  
(Certification No. 24-LB0026)



ฉบับที่ 02 (Issue No.02) ออกให้ตั้งแต่วันที่ 30 ตุลาคม พ.ศ. 2566 (Valid from (30 October B.E.2566 (2023))) ถึงวันที่ 8 กันยายน พ.ศ. 2571 (Until) (8 September B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ (Laboratory status) ☒ถาวร (Permanent) ☐นอกสถานที่ (Site) ☐ชั่วคราว (Temporary) ☐เคลื่อนที่ (Mobile) ☐หลายสถานที่ (Multisite)

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

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ  
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ฉบับที่ 02  
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ออกให้ตั้งแต่วันที่ 30 ตุลาคม พ.ศ. 2566  
(Valid from) (30 October B.E.2566 (2023))

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(Until) (8 September B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ  
(Laboratory status)

☒ถาวร  
(Permanent)

☒นอกสถานที่  
(Site)

☐ชั่วคราว  
(Temporary)

☐เคลื่อนที่  
(Mobile)

☐หลายสถานที่  
(Multisite)

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

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สถานภาพห้องปฏิบัติการ  
(Laboratory status)

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(Multisite)

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

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สถานภาพห้องปฏิบัติการ  
(Laboratory status)

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(Mobile)

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(Multisite)

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

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

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