

ภาคผนวก ค

ใบรับรองผลการตรวจวัดและวิเคราะห์

## คุณภาพอากาศในบรรยากาศ

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## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 1

Monitor period : 05-06 Jan 2022

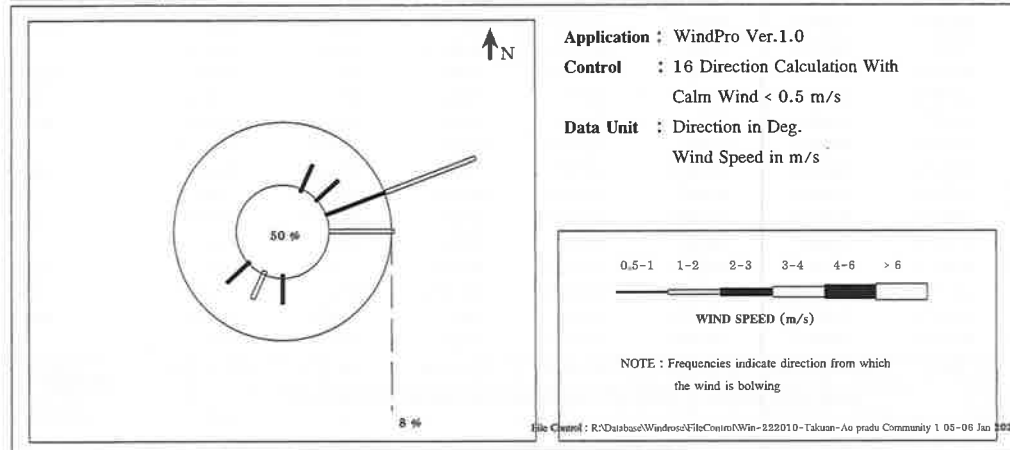
Wind Speed Model : NRG Symphonie

Serial No : J13-MT1

Wind Direction Model : NRG Symphonie

Serial No : 1028

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
ENE	0.0833	0.1250	0.0000	0.0000	0.0000	0.0000	0.2083
E	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SSW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.5000						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 1

Monitor period : 05-06 Jan 2022

Wind Speed Model : NRG Symphonie

Serial No : J13-MT1

Wind Direction Model : NRG Symphonie

Serial No : 1028

Time	05-06 Jan 2022	
	WS(m/s)	WD
14:00 - 15:00	0.5	S
15:00 - 16:00	0.4	SSW
16:00 - 17:00	1.4	SSW
17:00 - 18:00	0.9	SW
18:00 - 19:00	0.4	S
19:00 - 20:00	0.2	N
20:00 - 21:00	0.6	NNE
21:00 - 22:00	0.3	NNE
22:00 - 23:00	0.3	NNE
23:00 - 24:00	0.2	NNE
00:00 - 01:00	0.2	NNE
01:00 - 02:00	0.0	NNE
02:00 - 03:00	0.0	NNE
03:00 - 04:00	0.3	ENE
04:00 - 05:00	0.6	NE
05:00 - 06:00	0.4	ENE
06:00 - 07:00	0.3	ENE
07:00 - 08:00	0.6	ENE
08:00 - 09:00	0.8	ENE
09:00 - 10:00	1.3	ENE
10:00 - 11:00	1.5	ENE
11:00 - 12:00	1.4	E
12:00 - 13:00	1.1	ENE
13:00 - 14:00	1.7	E

Wind Rose



File Control : R:\Database\Windrose\FileControl\Win-222010-Takuan-Ao pradu Community 1 05-06 Jan 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team

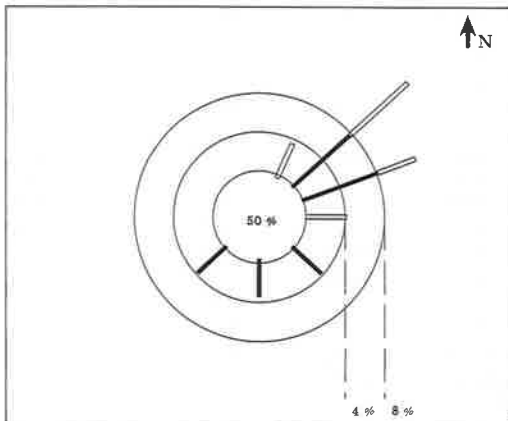


## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

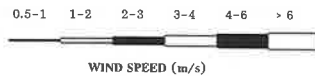
Location : Takuan-Ao pradu Community 2  
Wind Speed Model : NRG Symphonie  
Wind Direction Model : NRG Symphonie

Monitor period : 05-06 Jan 2022  
Serial No : 309013914  
Serial No : 309013914

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	Total
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
NE	0.0833	0.0833	0.0000	0.0000	0.0000	0.0000	0.1667
ENE	0.0833	0.0417	0.0000	0.0000	0.0000	0.0000	0.1250
E	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.5000						



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



NOTE : Frequencies indicate direction from which the wind is blowing

File Control : R:\Database\Windrose\FileControl\Win-222010-Takuan-Ao pradu Community 2 05-06 Jan 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



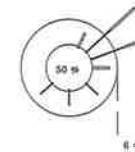
## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 2  
Wind Speed Model : NRG Symphonie  
Wind Direction Model : NRG Symphonie

Monitor period : 05-06 Jan 2022  
Serial No : 309013914  
Serial No : 309013914

Time	05-06 Jan 2022	
	WS(m/s)	WD
15:00 - 16:00	0.4	SE
16:00 - 17:00	0.9	SW
17:00 - 18:00	0.6	S
18:00 - 19:00	0.4	SSW
19:00 - 20:00	0.3	NE
20:00 - 21:00	0.5	NE
21:00 - 22:00	0.4	NE
22:00 - 23:00	0.3	NE
23:00 - 24:00	0.3	NE
00:00 - 01:00	0.3	NE
01:00 - 02:00	0.2	NE
02:00 - 03:00	0.2	NE
03:00 - 04:00	0.4	ENE
04:00 - 05:00	0.5	ENE
05:00 - 06:00	0.4	ENE
06:00 - 07:00	0.4	ENE
07:00 - 08:00	0.5	ENE
08:00 - 09:00	0.7	NE
09:00 - 10:00	1.1	NE
10:00 - 11:00	1.2	NNE
11:00 - 12:00	1.1	NE
12:00 - 13:00	0.9	SE
13:00 - 14:00	1.1	E
14:00 - 15:00	1.4	ENE

Wind Rose



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

File Control : R:\Database\Windrose\FileControl\Win-222010-Takuan-Ao pradu Community 2 05-06 Jan 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team





บริษัท ซีคอต จำกัด  
SECOT CO., LTD.

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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6 (Re REQUEST SERVICE No.	: 0029/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD : Subatmospheric Pressure Sampling
SAMPLING DATE	: 05-06/01/2022	ANALYTICAL DATE : 11/01/2022
SAMPLING TIME	: 16:27-15:25	SAMPLE CONDITION : Normal
RECEIVED DATE	: 07/01/2022	FILE CODE : 222010_TO-15_January
REPORT DATE	: 14/01/2022	

Compound	SAMPLING LOCATION				STANDARD* ( $\mu\text{g}/\text{m}^3$ )
	Non Detection		Takuan-Ao Pradu Community 1		
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
Benzene	0,004	0,013	0.87	2,78	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15, 1999

*Siriwan Chimsa-nga*  
(Miss Siriwan Chimsa-nga)

Analyst

*Araya Tipparuk*  
(Mrs. Araya Tipparuk)

Technical Management Team

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

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

3. \* Notification of the Pollution Control Department, dated December 18,B.E.2551(2008).



บริษัท ซีคอต จำกัด  
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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6 (Re REQUEST SERVICE No.	: 0029/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD : Subatmospheric Pressure Sampling
SAMPLING DATE	: 05-06/01/2022	ANALYTICAL DATE : 11/01/2022
SAMPLING TIME	: 16:04-15:15	SAMPLE CONDITION : Normal
RECEIVED DATE	: 07/01/2022	FILE CODE : 222010_TO-15_January
REPORT DATE	: 14/01/2022	

Compound	SAMPLING LOCATION				STANDARD* ( $\mu\text{g}/\text{m}^3$ )
	Non Detection		Takuan-Ao Pradu Community 2		
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
Benzene	0.00	0.01	0.78	2.49	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15, 1999

*Siriwan Chimsa-nga*  
(Miss Siriwan Chimsa-nga)

Analyst

*Araya Tipparuk*  
(Mrs. Araya Tipparuk)

Technical Management Team

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## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 1

Monitor period : 04-05 Feb 2022

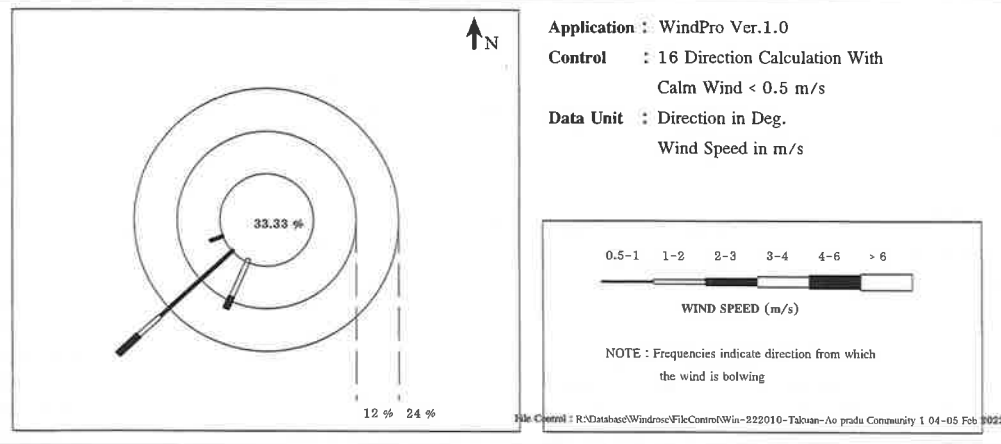
Wind Speed Model : NRG Symphonie

Serial No : 309012348

Wind Direction Model : NRG Symphonie

Serial No : 309012348

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	Total
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.1250	0.0417	0.0000	0.0000	0.0000	0.1667
SW	0.2917	0.0833	0.0833	0.0000	0.0000	0.0000	0.4583
WSW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.3333						



*(Miss Katesarin Vorradetwittaya)*  
Environmental Scientist

*Preeda S.*  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 1

Monitor period : 04-05 Feb 2022

Wind Speed Model : NRG Symphonie

Serial No : 309012348

Wind Direction Model : NRG Symphonie

Serial No : 309012348

Time	04-05 Feb 2022	
	WS(m/s)	WD
13:00 - 14:00	2.0	SW
14:00 - 15:00	1.7	SW
15:00 - 16:00	0.4	SW
16:00 - 17:00	0.6	SW
17:00 - 18:00	0.5	SW
18:00 - 19:00	0.4	SW
19:00 - 20:00	0.6	SW
20:00 - 21:00	1.3	SSW
21:00 - 22:00	0.4	SW
22:00 - 23:00	0.5	SW
23:00 - 24:00	0.4	SW
00:00 - 01:00	0.4	SW
01:00 - 02:00	0.4	SW
02:00 - 03:00	0.4	SW
03:00 - 04:00	0.4	SW
04:00 - 05:00	0.5	SW
05:00 - 06:00	0.5	WSW
06:00 - 07:00	0.7	SW
07:00 - 08:00	1.3	SSW
08:00 - 09:00	1.6	SW
09:00 - 10:00	2.9	SW
10:00 - 11:00	2.6	SSW
11:00 - 12:00	1.9	SSW
12:00 - 13:00	0.8	SW

Wind Rose



File Control : R:\Database\Windrose\FileControl\Win-222010-Takuan-Ao pradu Community 1 04-05 Feb 2022

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Environmental Scientist

*Preeda S.*  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 2

Monitor period : 04-05 Feb 2022

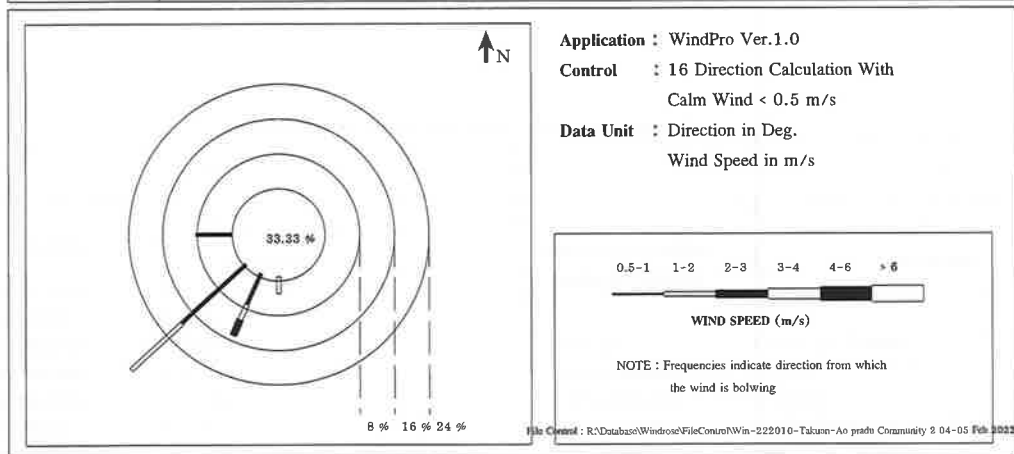
Wind Speed Model : NRG Symphonie

Serial No : 30909686

Wind Direction Model : NRG Symphonie

Serial No : 30909686

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SSW	0.0833	0.0417	0.0417	0.0000	0.0000	0.0000	0.1667
SW	0.2083	0.1667	0.0000	0.0000	0.0000	0.0000	0.3750
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.3333						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 2

Monitor period : 04-05 Feb 2022

Wind Speed Model : NRG Symphonie

Serial No : 30909686

Wind Direction Model : NRG Symphonie

Serial No : 30909686

Time	04-05 Feb 2022	
	WS(m/s)	WD
13:00 - 14:00	1.3	SW
14:00 - 15:00	1.1	SW
15:00 - 16:00	0.4	SW
16:00 - 17:00	0.5	SSW
17:00 - 18:00	0.5	SW
18:00 - 19:00	0.4	SSW
19:00 - 20:00	0.5	SW
20:00 - 21:00	2.0	SSW
21:00 - 22:00	0.4	SW
22:00 - 23:00	0.5	SW
23:00 - 24:00	0.4	SW
00:00 - 01:00	0.4	SW
01:00 - 02:00	0.4	SW
02:00 - 03:00	0.4	SW
03:00 - 04:00	0.4	SW
04:00 - 05:00	0.5	SW
05:00 - 06:00	0.5	W
06:00 - 07:00	0.6	W
07:00 - 08:00	0.9	SSW
08:00 - 09:00	1.0	SW
09:00 - 10:00	1.7	SW
10:00 - 11:00	1.5	S
11:00 - 12:00	1.2	SSW
12:00 - 13:00	0.6	SW

Wind Rose



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	REQUEST SERVICE No.	: 0217/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 04-05/02/2022	ANALYTICAL DATE	: 10/02/2022
SAMPLING TIME	: 14:18-14:02	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 06/02/2022	FILE CODE	: 222010_TO-15_February
REPORT DATE	: 19/02/2022		

Compound	Non Detection		SAMPLING LOCATION		STANDARD <sup>a</sup>
	Takuan-Ao Pradu Community 1				
	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	
Benzene	0.004	0.013	1.48	4.73	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15,1999

*Siriwan Chimsa-nga*  
(Miss Siriwan Chimsa-nga)  
Analyst

*Araya Tipparuk*  
(Mrs. Araya Tipparuk)  
Technical Management Team

- Remark : 1. Reported analysis refers to submitted sample only.  
2. This report shall not be reproduce, except in full, without official approval.  
3. \* Notification of the Pollution Control Department, dated December 18,B.E.2551(2008).



บริษัท ซีคอต จำกัด  
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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	REQUEST SERVICE No.	: 0217/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 04-05/02/2022	ANALYTICAL DATE	: 10/02/2022
SAMPLING TIME	: 14:03-13:50	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 06/02/2022	FILE CODE	: 222010_TO-15_February
REPORT DATE	: 19/02/2022		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m <sup>3</sup> )
	Takuan-Ao Pradu Community 2				
	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	
Benzene	0.004	0.013	1,10	3,51	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15,1999

*Siriwan Chimsa-nga*  
(Miss Siriwan Chimsa-nga)  
Analyst

*Araya Tipparuk*  
(Mrs. Araya Tipparuk)  
Technical Management Team

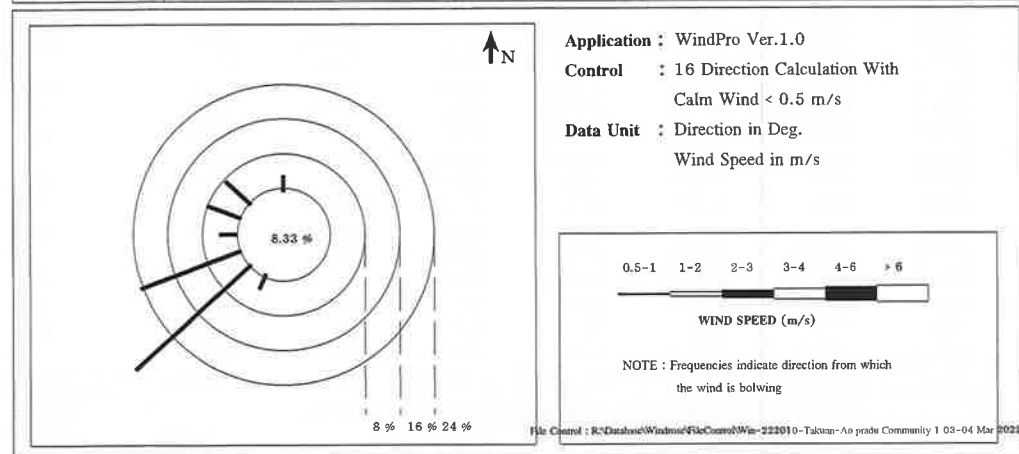
- Remark : 1. Reported analysis refers to submitted sample only.  
2. This report shall not be reproduce, except in full, without official approval.  
3. \* Notification of the Pollution Control Department, dated December 18,B.E.2551(2008).



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 1      Monitor period : 03-04 Mar 2022  
Wind Speed Model : NRG Symphonie      Serial No : 309014711  
Wind Direction Model : NRG Symphonie      Serial No : 309014711

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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SW	0.3750	0.0000	0.0000	0.0000	0.0000	0.0000	0.3750
WSW	0.2500	0.0000	0.0000	0.0000	0.0000	0.0000	0.2500
W	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
WNW	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
NW	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0833						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 1      Monitor period : 03-04 Mar 2022  
Wind Speed Model : NRG Symphonie      Serial No : 309014711  
Wind Direction Model : NRG Symphonie      Serial No : 309014711

Time	03-04 Mar 2022	
	WS(m/s)	WD
09:00 - 10:00	0.4	W
10:00 - 11:00	0.5	SW
11:00 - 12:00	0.7	SW
12:00 - 13:00	0.7	SW
13:00 - 14:00	0.6	SW
14:00 - 15:00	0.6	SSW
15:00 - 16:00	0.6	SW
16:00 - 17:00	0.6	WSW
17:00 - 18:00	0.5	SW
18:00 - 19:00	0.5	WNW
19:00 - 20:00	0.5	WSW
20:00 - 21:00	0.5	WSW
21:00 - 22:00	0.4	SW
22:00 - 23:00	0.5	SW
23:00 - 24:00	0.5	WSW
00:00 - 01:00	0.5	WSW
01:00 - 02:00	0.6	SW
02:00 - 03:00	0.6	NW
03:00 - 04:00	0.6	SW
04:00 - 05:00	0.6	WSW
05:00 - 06:00	0.5	WNW
06:00 - 07:00	0.5	N
07:00 - 08:00	0.5	NW
08:00 - 09:00	0.5	W

Wind Rose



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 2

Monitor period : 03-04 Mar 2022

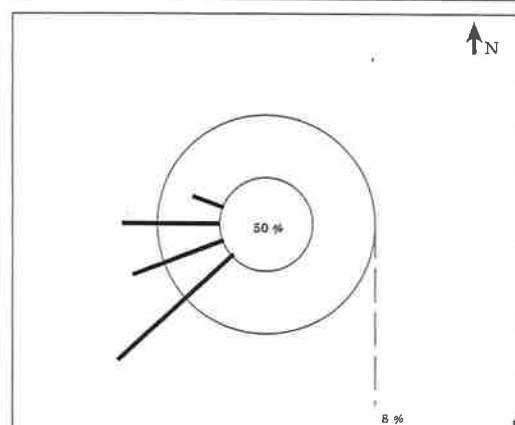
Wind Speed Model : NRG Symphonie

Serial No : 309012643

Wind Direction Model : NRG Symphonie

Serial No : 309012643

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	Total
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.2083	0.0000	0.0000	0.0000	0.0000	0.0000	0.2083
WSW	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250
W	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250
WNW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.5000						



Application : WindPro Ver.1.0

Control : 16 Direction Calculation With  
Calm Wind < 0.5 m/sData 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-222010-Takuan-Ao pradu Community 2 03-04 Mar 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 2

Monitor period : 03-04 Mar 2022

Wind Speed Model : NRG Symphonie

Serial No : 309012643

Wind Direction Model : NRG Symphonie

Serial No : 309012643

Time	03-04 Mar 2022	
	WS(m/s)	WD
10:00 - 11:00	0.5	WSW
11:00 - 12:00	0.8	SW
12:00 - 13:00	0.8	SW
13:00 - 14:00	0.8	SW
14:00 - 15:00	0.8	SW
15:00 - 16:00	0.7	WSW
16:00 - 17:00	0.5	W
17:00 - 18:00	0.4	SW
18:00 - 19:00	0.4	W
19:00 - 20:00	0.4	WSW
20:00 - 21:00	0.4	WSW
21:00 - 22:00	0.4	W
22:00 - 23:00	0.4	WSW
23:00 - 24:00	0.4	WSW
00:00 - 01:00	0.4	WSW
01:00 - 02:00	0.4	WNW
02:00 - 03:00	0.5	WNW
03:00 - 04:00	0.5	W
04:00 - 05:00	0.5	W
05:00 - 06:00	0.4	NW
06:00 - 07:00	0.4	NW
07:00 - 08:00	0.4	WNW
08:00 - 09:00	0.5	WSW
09:00 - 10:00	0.5	SW

Wind Rose



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

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

File Control : R:\Database\Windrose\FileControl\Win-222010-Takuan-Ao pradu Community 2 03-04 Mar 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	REQUEST SERVICE No.	: 0460/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 03-04/03/2022	ANALYTICAL DATE	: 11/03/2022
SAMPLING TIME	: 11:58-11:00	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 05/03/2022	FILE CODE	: 222010_TO-15_March
REPORT DATE	: 14/03/2022		

Compound	Non Detection		SAMPLING LOCATION		STANDARD*
	ppbv	µg/m <sup>3</sup>	Takuan-Ao Pradu Community 1	µg/m <sup>3</sup>	
Benzene	0.004	0.013	0.72	2.30	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15, 1999

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

MT

(Mrs. Araya Tipparuk)

Technical Management Team

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

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

3. \* Notification of the Pollution Control Department, dated December 18,B.E.2551(2008).



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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	REQUEST SERVICE No.	: 0460/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 03-04/03/2022	ANALYTICAL DATE	: 11/03/2022
SAMPLING TIME	: 11:40-10:45	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 05/03/2022	FILE CODE	: 222010_TO-15_March
REPORT DATE	: 14/03/2022		

Compound	Non Detection		SAMPLING LOCATION		STANDARD*
	ppbv	µg/m <sup>3</sup>	Takuan-Ao Pradu Community 2	µg/m <sup>3</sup>	
Benzene	0.004	0.013	0.25	0.80	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15, 1999

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

MT

(Mrs. Araya Tipparuk)

Technical Management Team

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

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3. \* Notification of the Pollution Control Department, dated December 18,B.E.2551(2008).



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 1

Monitor period : 04-05 Apr 2022

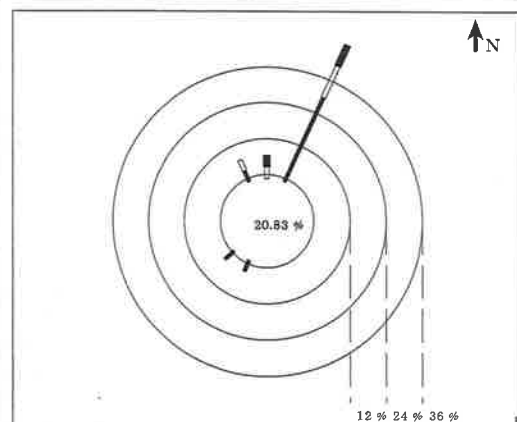
Wind Speed Model : NRG Symphonie

Serial No : 309016789

Wind Direction Model : NRG Symphonie

Serial No : 309016789

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	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
NNE	0.3333	0.1250	0.0833	0.0000	0.0000	0.0000	0.5417
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
CALM	0.2083						



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-222010-Takuan-Ao pradu Community 1 04-05 Apr 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 1

Monitor period : 04-05 Apr 2022

Wind Speed Model : NRG Symphonie

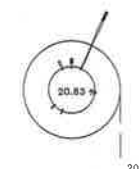
Serial No : 309016789

Wind Direction Model : NRG Symphonie

Serial No : 309016789

Time	04-05 Apr 2022	
	WS(m/s)	WD
09:00 - 10:00	0.7	SSW
10:00 - 11:00	0.9	SW
11:00 - 12:00	1.6	NNW
12:00 - 13:00	2.0	N
13:00 - 14:00	2.3	NNE
14:00 - 15:00	2.0	NNE
15:00 - 16:00	1.4	N
16:00 - 17:00	0.6	NNW
17:00 - 18:00	0.2	NNW
18:00 - 19:00	0.2	S
19:00 - 20:00	0.2	S
20:00 - 21:00	0.2	S
21:00 - 22:00	0.4	NE
22:00 - 23:00	0.7	NNE
23:00 - 24:00	0.6	NNE
00:00 - 01:00	0.7	NNE
01:00 - 02:00	0.8	NNE
02:00 - 03:00	0.8	NNE
03:00 - 04:00	0.6	NNE
04:00 - 05:00	0.6	NNE
05:00 - 06:00	0.7	NNE
06:00 - 07:00	1.1	NNE
07:00 - 08:00	1.7	NNE
08:00 - 09:00	1.8	NNE

Wind Rose



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

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

File Control : R:\Database\Windrose\FileControl\Win-222010-Takuan-Ao pradu Community 1 04-05 Apr 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team

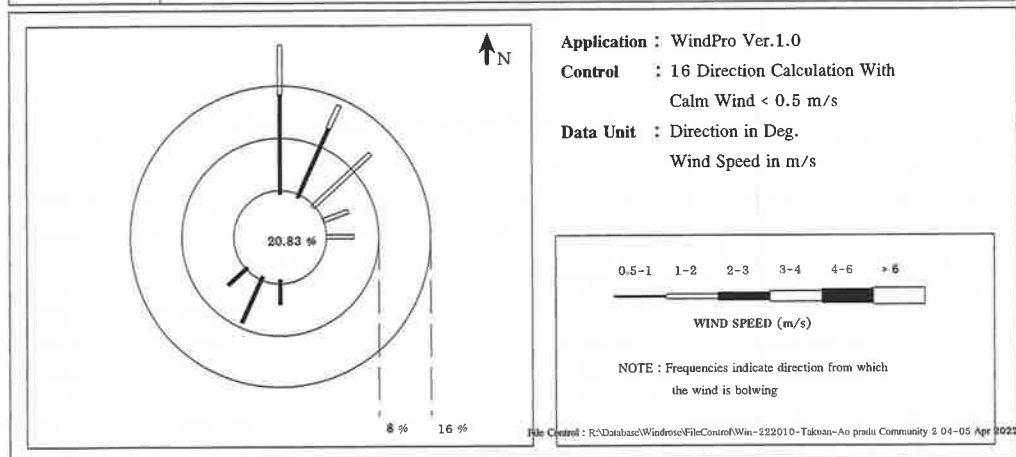




## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 2      Monitor period : 04-05 Apr 2022  
Wind Speed Model : NRG Symphonie      Serial No : 309013230  
Wind Direction Model : NRG Symphonie      Serial No : 309013230

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	0.1667	0.0833	0.0000	0.0000	0.0000	0.0000	0.2500
NNE	0.1250	0.0417	0.0000	0.0000	0.0000	0.0000	0.1667
NE	0.0000	0.1250	0.0000	0.0000	0.0000	0.0000	0.1250
ENE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
E	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SSW	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
SW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.2083						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 2      Monitor period : 04-05 Apr 2022  
Wind Speed Model : NRG Symphonie      Serial No : 309013230  
Wind Direction Model : NRG Symphonie      Serial No : 309013230

Time	04-05 Apr 2022	
	WS(m/s)	WD
09:00 - 10:00	0.5	SSW
10:00 - 11:00	0.6	SW
11:00 - 12:00	1.0	NE
12:00 - 13:00	1.2	ENE
13:00 - 14:00	1.0	NNE
14:00 - 15:00	1.3	E
15:00 - 16:00	0.9	S
16:00 - 17:00	0.5	SSW
17:00 - 18:00	0.3	SSW
18:00 - 19:00	0.3	SSW
19:00 - 20:00	0.3	SSW
20:00 - 21:00	0.3	SSW
21:00 - 22:00	0.4	E
22:00 - 23:00	0.7	NNE
23:00 - 24:00	0.7	N
00:00 - 01:00	0.7	NNE
01:00 - 02:00	0.8	NNE
02:00 - 03:00	0.7	N
03:00 - 04:00	0.6	N
04:00 - 05:00	0.7	N
05:00 - 06:00	1.7	N
06:00 - 07:00	1.9	N
07:00 - 08:00	1.3	NE
08:00 - 09:00	1.3	NE

Wind Rose



File Control : R:\Database\Windrose\FileControl\Win-222010-Takuan-Ao pradu Community 2 04-05 Apr 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd. Branch 6 (Refinery GC6)	REQUEST SERVICE No.	: 0734/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 04-05/04/2022	ANALYTICAL DATE	: 08/04/2022
SAMPLING TIME	: 10:22-10:07	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 06/04/2022	FILE CODE	: 222010_TO-15_April
REPORT DATE	: 12/04/2022		

Compound	Non Detection		SAMPLING LOCATION		STANDARD*
	ppbv	µg/m <sup>3</sup>	Takuan-Ao Pradu Community 1	µg/m <sup>3</sup>	
Benzene	0.004	0.013	1.04	3.32	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15, 1999

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

M R

(Mrs. Araya Tipparuk)

Technical Management Team

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3. \* Notification of the Pollution Control Department, dated December 18,B.E.2551(2008).



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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd. Branch 6 (Refinery GC6)	REQUEST SERVICE No.	: 0734/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 04-05/04/2022	ANALYTICAL DATE	: 08/04/2022
SAMPLING TIME	: 10:14-09:59	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 06/04/2022	FILE CODE	: 222010_TO-15_April
REPORT DATE	: 12/04/2022		

Compound	Non Detection		SAMPLING LOCATION		STANDARD*
	ppbv	µg/m <sup>3</sup>	Takuan-Ao Pradu Community 2	µg/m <sup>3</sup>	
Benzene	0.004	0.013	0.55	1.76	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15, 1999

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

M R

(Mrs. Araya Tipparuk)

Technical Management Team

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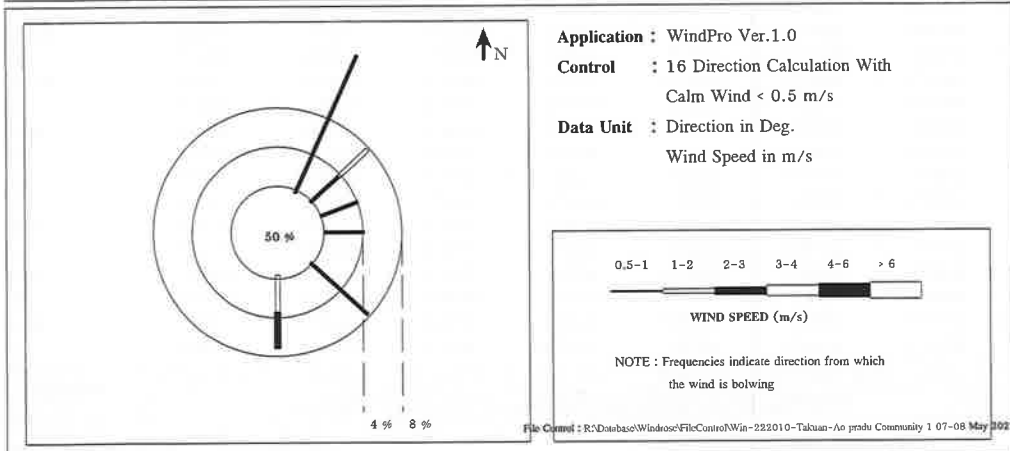
3. \* Notification of the Pollution Control Department, dated December 18,B.E.2551(2008).



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 1      Monitor period : 07-08 May 2022  
 Wind Speed Model : NRG Symphonie      Serial No : 30909686  
 Wind Direction Model : NRG Symphonie      Serial No : 30909686

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.1667	0.0000	0.0000	0.0000	0.0000	0.0000	0.1667
NE	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
ENE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
E	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.5000						



(Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

Preeda S.  
 (Miss Preeda Somjai)  
 Technical Management Team

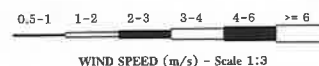


## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 1      Monitor period : 07-08 May 2022  
 Wind Speed Model : NRG Symphonie      Serial No : 30909686  
 Wind Direction Model : NRG Symphonie      Serial No : 30909686

Time	07-08 May 2022	
	WS(m/s)	WD
09:00 - 10:00	0.4	N
10:00 - 11:00	0.5	NNE
11:00 - 12:00	2.0	S
12:00 - 13:00	1.3	S
13:00 - 14:00	0.5	SE
14:00 - 15:00	0.5	SE
15:00 - 16:00	0.7	ENE
16:00 - 17:00	0.5	NNE
17:00 - 18:00	0.4	NNE
18:00 - 19:00	0.4	NNE
19:00 - 20:00	0.4	NNE
20:00 - 21:00	0.4	NE
21:00 - 22:00	0.9	E
22:00 - 23:00	0.5	NE
23:00 - 24:00	0.4	NNE
00:00 - 01:00	0.4	NNE
01:00 - 02:00	0.4	NNE
02:00 - 03:00	0.4	NNE
03:00 - 04:00	0.4	NNE
04:00 - 05:00	0.4	NE
05:00 - 06:00	0.4	NNE
06:00 - 07:00	0.6	NNE
07:00 - 08:00	0.7	NNE
08:00 - 09:00	1.0	NE

Wind Rose



(Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

Preeda S.  
 (Miss Preeda Somjai)  
 Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 2

Monitor period : 07-08 May 2022

Wind Speed Model : NRG Symphonie

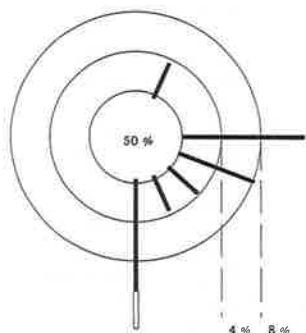
Serial No : 309015720

Wind Direction Model : NRG Symphonie

Serial No : 309015720

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	Total
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250
ESE	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
SE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SSE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
S	0.1250	0.0417	0.0000	0.0000	0.0000	0.0000	0.1667
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.5000						

Application : WindPro Ver.1.0

Control : 16 Direction Calculation With  
Calm Wind < 0.5 m/sData 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-222010-Takuan-Ao pradu Community 2 07-08 May 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 2

Monitor period : 07-08 May 2022

Wind Speed Model : NRG Symphonie

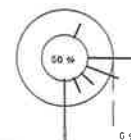
Serial No : 309015720

Wind Direction Model : NRG Symphonie

Serial No : 309015720

Time	07-08 May 2022	
	WS(m/s)	WD
09:00 - 10:00	0.4	N
10:00 - 11:00	0.5	NNE
11:00 - 12:00	1.3	S
12:00 - 13:00	0.9	S
13:00 - 14:00	0.5	S
14:00 - 15:00	0.5	S
15:00 - 16:00	0.6	SSE
16:00 - 17:00	0.5	SE
17:00 - 18:00	0.4	SE
18:00 - 19:00	0.4	SE
19:00 - 20:00	0.4	SE
20:00 - 21:00	0.4	SE
21:00 - 22:00	0.9	ESE
22:00 - 23:00	0.5	E
23:00 - 24:00	0.4	E
00:00 - 01:00	0.4	E
01:00 - 02:00	0.4	E
02:00 - 03:00	0.4	E
03:00 - 04:00	0.4	E
04:00 - 05:00	0.4	E
05:00 - 06:00	0.4	E
06:00 - 07:00	0.5	E
07:00 - 08:00	0.6	ESE
08:00 - 09:00	0.8	E

Wind Rose



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

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

File Control : R:\Database\Windrose\FileControl\Win-222010-Takuan-Ao pradu Community 2 07-08 May 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	REQUEST SERVICE No.	: 0977/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 07-08/05/2022	ANALYTICAL DATE	: 17/05/2022
SAMPLING TIME	: 11:40-10:55	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 09/05/2022	FILE CODE	: 222010_TO-15_May
REPORT DATE	: 18/05/2022		

Compound	SAMPLING LOCATION				STANDARD* ( $\mu\text{g}/\text{m}^3$ )
	Non Detection		Takuan-Ao Pradu Community 1		
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
Benzene	0.004	0.013	0.51	1.63	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> - EPA Methods TO-15, 1999

Siriwan Chimsa-nga

(Miss Siriwan Chimsa-nga)

Analyst

^ R

(Mrs. Araya Tipparuk)

Technical Management Team

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

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3. \* Notification of the Pollution Control Department, dated December 18,B.E.2551(2008).



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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	REQUEST SERVICE No.	: 0977/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 07-08/05/2022	ANALYTICAL DATE	: 17/05/2022
SAMPLING TIME	: 11:30-10:45	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 09/05/2022	FILE CODE	: 222010_TO-15_May
REPORT DATE	: 18/05/2022		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* ( $\mu\text{g}/\text{m}^3$ )
	Takuan-Ae Pradu Community 2				
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
Benzene	0.004	0.013	0.34	1.09	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> - EPA Methods TO-15, 1999

Siriwan Chimsa-nga

(Miss Siriwan Chimsa-nga)

Analyst

^ R

(Mrs. Araya Tipparuk)

Technical Management Team

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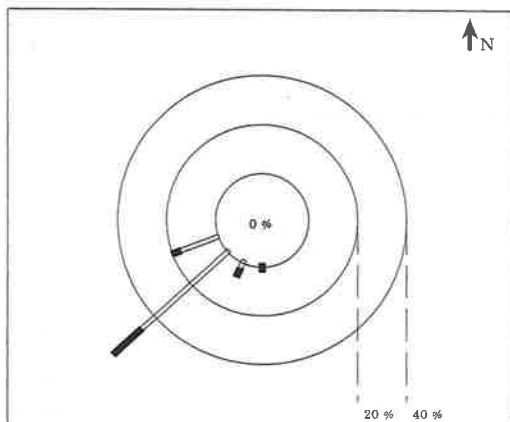


## Meteorological Monitoring Results : Wind Rose

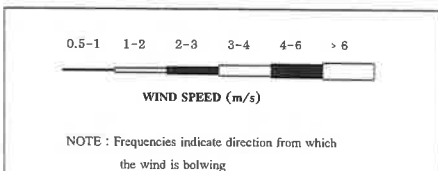
### MTR-PTTGC 6

Location : Takuan-Ao pradu Community 1      Monitor period : 04-05 Jun 2022  
 Wind Speed Model : NRG Symphonie      Serial No : 309012348  
 Wind Direction Model : NRG Symphonie      Serial No : 309012348

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5 - 1 m/s	1 - 2 m/s	2 - 3 m/s	3 - 4 m/s	4 - 6 m/s	More than 6	
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0000	0.0417	0.0000	0.0000	0.0000	0.0417
SSW	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
SW	0.0000	0.5000	0.1667	0.0000	0.0000	0.0000	0.6667
WSW	0.0000	0.1667	0.0417	0.0000	0.0000	0.0000	0.2083
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0000						



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



File Control : R:\Database\Windrose\FileControl\Win-222010-Takuan-Ao pradu Community 1 04-05 Jun 2022

(Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

Preeda S.  
 (Miss Preeda Somjai)  
 Technical Management Team



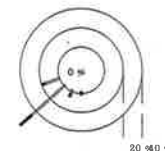
## Meteorological Monitoring Results : Wind Rose

### MTR-PTTGC 6

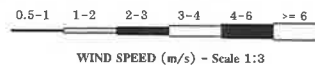
Location : Takuan-Ao pradu Community 1      Monitor period : 04-05 Jun 2022  
 Wind Speed Model : NRG Symphonie      Serial No : 309012348  
 Wind Direction Model : NRG Symphonie      Serial No : 309012348

Time	04-05 Jun 2022	
	WS(m/s)	WD
11:00 - 12:00	1.4	SSW
12:00 - 13:00	2.2	SW
13:00 - 14:00	2.3	SSW
14:00 - 15:00	2.2	SW
15:00 - 16:00	2.2	S
16:00 - 17:00	2.1	SW
17:00 - 18:00	1.8	SW
18:00 - 19:00	1.8	WSW
19:00 - 20:00	1.7	SW
20:00 - 21:00	1.5	SW
21:00 - 22:00	1.9	SW
22:00 - 23:00	2.1	WSW
23:00 - 24:00	1.3	WSW
00:00 - 01:00	1.1	SW
01:00 - 02:00	1.8	SW
02:00 - 03:00	1.9	SW
03:00 - 04:00	1.9	SW
04:00 - 05:00	1.9	WSW
05:00 - 06:00	1.5	SW
06:00 - 07:00	1.1	SW
07:00 - 08:00	1.3	WSW
08:00 - 09:00	1.4	SW
09:00 - 10:00	1.5	SW
10:00 - 11:00	2.0	SW

Wind Rose



20 40 %



File Control : R:\Database\Windrose\FileControl\Win-222010-Takuan-Ao pradu Community 1 04-05 Jun 2022

(Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

Preeda S.  
 (Miss Preeda Somjai)  
 Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 2

Monitor period : 04-05 Jun 2022

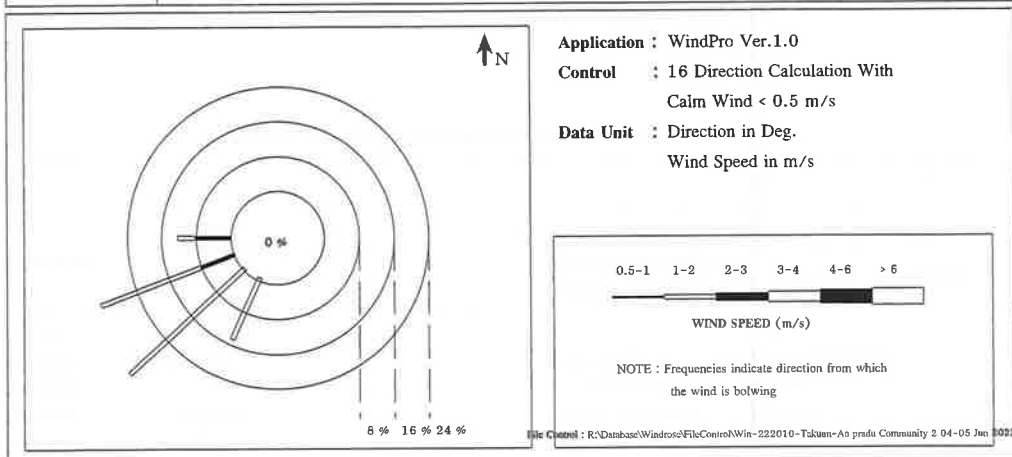
Wind Speed Model : NRG Symphonie

Serial No : 309016055

Wind Direction Model : NRG Symphonie

Serial No : 309016055

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.1667	0.0000	0.0000	0.0000	0.0000	0.1667
SW	0.0000	0.3750	0.0000	0.0000	0.0000	0.0000	0.3750
WSW	0.0833	0.2500	0.0000	0.0000	0.0000	0.0000	0.3333
W	0.0833	0.0417	0.0000	0.0000	0.0000	0.0000	0.1250
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0000						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC 6

Location : Takuan-Ao pradu Community 2

Monitor period : 04-05 Jun 2022

Wind Speed Model : NRG Symphonie

Serial No : 309016055

Wind Direction Model : NRG Symphonie

Serial No : 309016055

Time	04-05 Jun 2022	
	WS(m/s)	WD
12:00 - 13:00	1.5	SW
13:00 - 14:00	1.5	SW
14:00 - 15:00	1.4	SSW
15:00 - 16:00	1.4	SSW
16:00 - 17:00	1.3	WSW
17:00 - 18:00	1.2	WSW
18:00 - 19:00	1.2	WSW
19:00 - 20:00	1.1	SW
20:00 - 21:00	1.0	WSW
21:00 - 22:00	1.2	SW
22:00 - 23:00	1.3	W
23:00 - 24:00	0.9	W
00:00 - 01:00	0.8	WSW
01:00 - 02:00	1.1	SW
02:00 - 03:00	1.2	SW
03:00 - 04:00	1.3	SSW
04:00 - 05:00	1.2	SW
05:00 - 06:00	1.0	WSW
06:00 - 07:00	0.8	WSW
07:00 - 08:00	0.9	W
08:00 - 09:00	1.0	WSW
09:00 - 10:00	1.1	SW
10:00 - 11:00	1.4	SSW
11:00 - 12:00	1.0	SW

Wind Rose



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	REQUEST SERVICE No.	: 1212/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 04-05/06/2022	ANALYTICAL DATE	: 13/06/2022
SAMPLING TIME	: 13:03-12:30	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 06/06/2022	FILE CODE	: 222010_TO-15_June
REPORT DATE	: 15/06/2022		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m <sup>3</sup> )
	Takuan-Ao Pradu Community 1				
	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	
Benzene	0.004	0.013	0.47	1.50	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15,1999

Siriwan Chimsa-nga  
(Miss Siriwan Chimsa-nga)

Analyst

~ R ~  
(Mrs. Araya Tipparuk)

Technical Management Team

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

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3.\* Notification of the Pollution Control Department, dated December 18,B.E.2551(2008).



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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	REQUEST SERVICE No.	: 1212/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 04-05/06/2022	ANALYTICAL DATE	: 13/06/2022
SAMPLING TIME	: 12:52-12:18	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 06/06/2022	FILE CODE	: 222010_TO-15_June
REPORT DATE	: 15/06/2022		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m <sup>3</sup> )
			Takuan-Ao Pradu Community 2		
	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	
Benzene	0.004	0.013	0.21	0.67	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15,1999

Siriwan Chimsa-nga  
(Miss Siriwan Chimsa-nga)

Analyst

~ R ~  
(Mrs. Araya Tipparuk)

Technical Management Team

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

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

3. \* Notification of the Pollution Control Department, dated December 18,B.E.2551(2008).



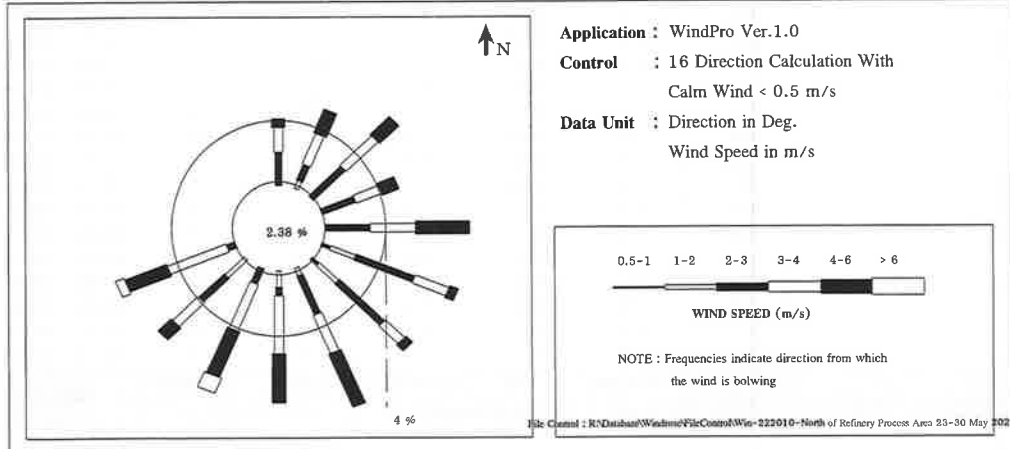


## Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

**Location :** North of Refinery Process Area  
**Wind Speed Model :** NRG Symphonie  
**Wind Direction Model :** NRG Symphonie

**Monitor period :** 23-30 May 2022  
**Serial No :** A5090  
**Serial No :** A5090

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0238	0.0179	0.0060	0.0000	0.0476
NNE	0.0000	0.0060	0.0119	0.0238	0.0179	0.0000	0.0595
NE	0.0000	0.0000	0.0298	0.0298	0.0179	0.0000	0.0774
ENE	0.0000	0.0000	0.0238	0.0179	0.0119	0.0000	0.0536
E	0.0000	0.0000	0.0298	0.0298	0.0357	0.0000	0.0952
ESE	0.0060	0.0179	0.0417	0.0238	0.0060	0.0000	0.0952
SE	0.0060	0.0179	0.0417	0.0179	0.0060	0.0000	0.0893
SSE	0.0000	0.0060	0.0298	0.0298	0.0417	0.0000	0.1071
S	0.0000	0.0119	0.0060	0.0417	0.0357	0.0000	0.0952
SSW	0.0000	0.0000	0.0119	0.0357	0.0357	0.0119	0.0952
SW	0.0000	0.0179	0.0238	0.0238	0.0119	0.0000	0.0774
WSW	0.0000	0.0000	0.0060	0.0417	0.0298	0.0060	0.0833
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0238						



*(Miss Katesarin Vorradetwittaya)*  
Environmental Scientist

*Preeda S.*  
(Miss Preeda Somjai)  
Technical Management Team

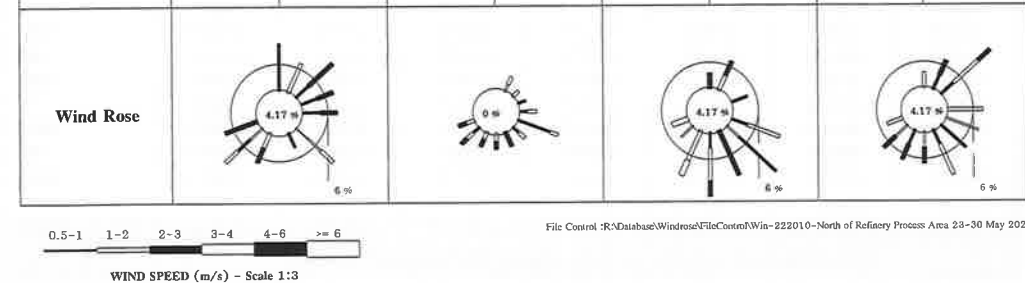


## Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

**Location :** North of Refinery Process Area  
**Wind Speed Model :** NRG Symphonie  
**Wind Direction Model :** NRG Symphonie

**Monitor period :** 23-30 May 2022  
**Serial No :** A5090  
**Serial No :** A5090

Time	23-24 May 2022		24-25 May 2022		25-26 May 2022		26-27 May 2022	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
16:00 - 17:00	3.5	NNE	3.5	SSW	5.5	SSE	2.9	NNE
17:00 - 18:00	2.8	SSE	2.7	ESE	2.3	SE	3.4	NE
18:00 - 19:00	2.0	N	4.1	SSE	4.1	S	1.6	S
19:00 - 20:00	2.0	E	4.7	SSE	3.6	S	3.3	N
20:00 - 21:00	3.0	SSW	3.4	ESE	5.2	SSE	2.7	SSE
21:00 - 22:00	4.8	SSW	3.5	S	4.0	N	1.7	ESE
22:00 - 23:00	2.5	NE	2.9	SW	2.6	ESE	0.0	ENE
23:00 - 24:00	5.2	WSW	5.1	SSW	2.1	S	4.3	S
00:00 - 01:00	2.2	SW	2.9	SE	4.5	SSE	3.6	E
01:00 - 02:00	3.2	NNE	4.0	SW	3.8	ESE	2.9	NE
02:00 - 03:00	0.0	NE	3.8	WSW	3.5	SSW	3.2	WSW
03:00 - 04:00	4.6	NE	3.5	NE	3.2	S	2.7	SSW
04:00 - 05:00	3.1	SE	2.9	ENE	2.9	SE	1.7	ESE
05:00 - 06:00	1.6	SE	1.8	NNE	3.1	SSW	4.2	NNE
06:00 - 07:00	3.2	SW	2.7	ESE	0.0	SSW	4.0	SW
07:00 - 08:00	2.2	N	2.9	ESE	1.7	SW	3.7	NE
08:00 - 09:00	4.8	ENE	2.6	ESE	3.2	ESE	2.2	SE
09:00 - 10:00	2.7	N	3.3	SE	1.6	SE	4.0	SSW
10:00 - 11:00	0.9	SE	3.8	SW	2.1	ENE	3.4	SSE
11:00 - 12:00	1.9	SW	5.0	S	3.2	NNE	3.0	SSE
12:00 - 13:00	4.4	E	3.9	NNE	7.0	WSW	4.5	NE
13:00 - 14:00	2.9	ENE	4.7	WSW	6.3	SSW	1.9	SW
14:00 - 15:00	4.8	WSW	3.8	E	2.0	SE	3.9	E
15:00 - 16:00	5.0	NE	2.5	E	4.2	NNE	2.1	SE



*(Miss Katesarin Vorradetwittaya)*  
Environmental Scientist

*Preeda S.*  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : North of Refinery Process Area

Monitor period : 23-30 May 2022

Wind Speed Model : NRG Symphonie

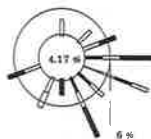
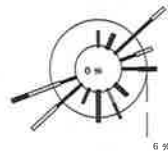
Serial No : A5090

Wind Direction Model : NRG Symphonie

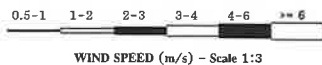
Serial No : A5090

Time	27-28 May 2022		28-29 May 2022		29-30 May 2022	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
16:00 - 17:00	3.4	SSE	2.1	N	3.5	SE
17:00 - 18:00	3.3	SSE	2.8	NE	4.2	S
18:00 - 19:00	1.9	SE	2.9	ENE	2.4	ESE
19:00 - 20:00	3.5	S	3.4	ENE	1.8	ESE
20:00 - 21:00	4.2	SSW	2.6	SW	0.0	SW
21:00 - 22:00	3.3	WSW	4.1	E	0.7	ESE
22:00 - 23:00	3.7	N	4.7	S	2.4	SSE
23:00 - 24:00	3.8	S	3.8	WSW	3.5	NE
00:00 - 01:00	2.5	E	4.8	NNE	3.0	WSW
01:00 - 02:00	3.8	E	3.4	WSW	4.6	SSE
02:00 - 03:00	2.4	SSE	2.6	SW	3.2	E
03:00 - 04:00	3.6	WSW	2.2	SSW	3.2	N
04:00 - 05:00	2.7	NNE	3.6	SW	5.4	E
05:00 - 06:00	3.5	ENE	2.4	WSW	5.3	ENE
06:00 - 07:00	1.8	S	4.0	SE	3.7	SSE
07:00 - 08:00	4.6	ESE	1.9	SSE	4.6	E
08:00 - 09:00	3.4	S	4.7	WSW	4.9	WSW
09:00 - 10:00	5.0	E	2.9	NE	8.1	SSW
10:00 - 11:00	3.7	SSW	2.3	SSE	3.0	SSW
11:00 - 12:00	2.2	ESE	4.4	S	2.3	SE
12:00 - 13:00	4.1	SSW	3.5	SW	3.1	ENE
13:00 - 14:00	4.0	SSW	2.2	E	4.8	SSE
14:00 - 15:00	3.1	S	2.5	NE	3.7	ESE
15:00 - 16:00	4.5	E	3.8	NE	2.9	E

Wind Rose



File Control : R:\Database\Windrose\FileControl\Win-222010-North of Refinery Process Area 23-30 May 2022



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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : North of VCU Area

Monitor period : 23-30 May 2022

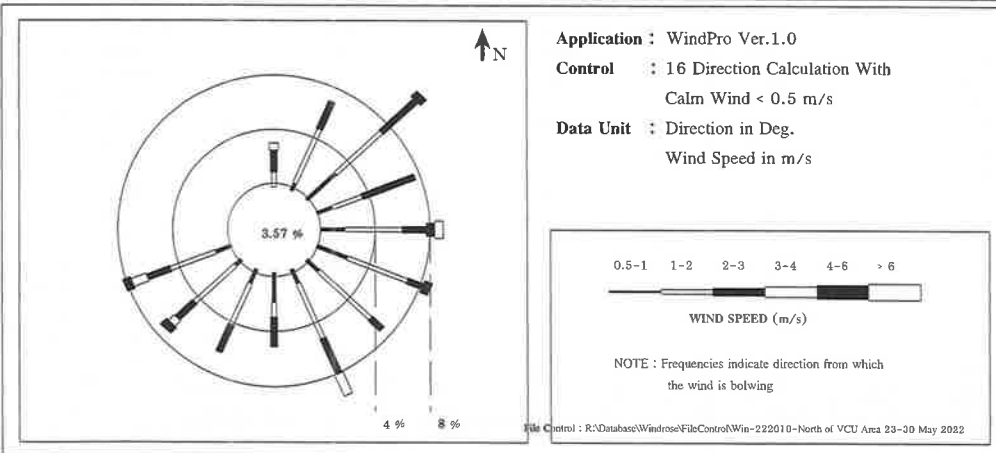
Wind Speed Model : NRG Symphonie

Serial No : A4905

Wind Direction Model : NRG Symphonie

Serial No : A4905

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	Total
N	0.0000	0.0119	0.0179	0.0060	0.0000	0.0000	0.0357
NNE	0.0060	0.0476	0.0238	0.0000	0.0000	0.0000	0.0774
NE	0.0298	0.0476	0.0357	0.0000	0.0060	0.0000	0.1190
ENE	0.0119	0.0238	0.0417	0.0000	0.0000	0.0000	0.0774
E	0.0179	0.0417	0.0179	0.0000	0.0060	0.0060	0.0893
ESE	0.0238	0.0476	0.0119	0.0000	0.0060	0.0000	0.0893
SE	0.0119	0.0536	0.0119	0.0000	0.0000	0.0000	0.0774
SSE	0.0119	0.0476	0.0298	0.0179	0.0000	0.0000	0.1071
S	0.0238	0.0119	0.0238	0.0000	0.0000	0.0000	0.0595
SSW	0.0119	0.0357	0.0238	0.0000	0.0000	0.0000	0.0714
SW	0.0060	0.0417	0.0179	0.0060	0.0060	0.0000	0.0774
WSW	0.0119	0.0357	0.0179	0.0119	0.0060	0.0000	0.0833
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0357						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : North of VCU Area

Monitor period : 23-30 May 2022

Wind Speed Model : NRG Symphonie

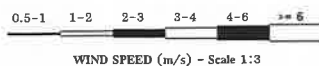
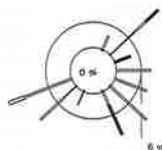
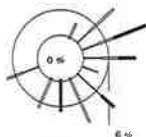
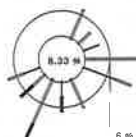
Serial No : A4905

Wind Direction Model : NRG Symphonie

Serial No : A4905

Time	23-24 May 2022		24-25 May 2022		25-26 May 2022		26-27 May 2022	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
17:00 - 18:00	2.0	NE	0.8	WSW	0.9	E	1.1	ESE
18:00 - 19:00	1.1	SSE	1.3	SSE	1.1	NNE	0.8	NE
19:00 - 20:00	2.7	NE	2.3	SW	0.5	NE	1.5	SE
20:00 - 21:00	0.4	ESE	0.8	ENE	1.6	WSW	1.1	SSE
21:00 - 22:00	1.4	NE	0.0	SSW	2.6	ENE	1.4	SW
22:00 - 23:00	1.2	ESE	0.2	SSE	1.6	SSE	1.2	NNE
23:00 - 24:00	1.6	SW	1.7	E	0.9	SE	1.4	SE
00:00 - 01:00	0.1	E	0.8	ESE	1.9	SSE	1.1	E
01:00 - 02:00	0.5	S	1.3	ESE	1.5	SSE	1.7	E
02:00 - 03:00	1.1	SE	1.3	SW	1.7	ENE	0.5	SSW
03:00 - 04:00	0.9	SSE	1.6	E	0.9	SE	1.0	SW
04:00 - 05:00	1.4	SSE	1.9	NE	1.7	NE	1.5	SE
05:00 - 06:00	1.3	NE	1.1	SSW	2.9	SE	2.0	SSE
06:00 - 07:00	2.3	SSE	1.1	SSW	1.0	SSW	1.8	WSW
07:00 - 08:00	0.0	NE	1.5	WSW	1.6	NE	1.1	WSW
08:00 - 09:00	1.0	ESE	1.1	E	2.1	E	1.4	WSW
09:00 - 10:00	0.9	NNE	1.4	SSE	0.8	ESE	3.8	WSW
10:00 - 11:00	2.3	SW	0.7	S	1.6	E	0.9	SW
11:00 - 12:00	1.4	ESE	0.8	ESE	0.7	ENE	0.9	NE
12:00 - 13:00	1.9	SE	2.2	S	2.2	S	2.0	ENE
13:00 - 14:00	3.7	SW	1.4	NNE	2.0	ENE	1.8	ESE
14:00 - 15:00	1.6	ESE	1.9	NNE	2.6	S	2.5	SSE
15:00 - 16:00	2.3	SSE	1.4	SSW	1.9	SSW	1.5	NE
16:00 - 17:00	1.0	S	2.2	SSW	0.7	WSW	2.1	NE

Wind Rose



File Control :R:\Database\Windrose\FileControl\Win-222010-North of VCU Area 23-30 May 2022

*(Signature)*  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

*(Signature)*  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : North of VCU Area

Monitor period : 23-30 May 2022

Wind Speed Model : NRG Symphonie

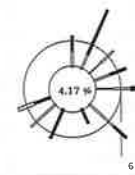
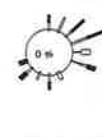
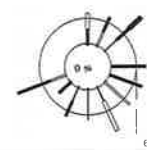
Serial No : A4905

Wind Direction Model : NRG Symphonie

Serial No : A4905

Time	27-28 May 2022		28-29 May 2022		29-30 May 2022	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
17:00 - 18:00	0.8	S	6.5	E	2.9	WSW
18:00 - 19:00	0.7	SSW	4.1	WSW	2.5	NNE
19:00 - 20:00	0.6	S	2.3	NE	2.3	SSE
20:00 - 21:00	0.9	SSE	1.3	NE	2.4	N
21:00 - 22:00	0.5	NE	1.0	ESE	4.0	E
22:00 - 23:00	2.0	NNE	4.8	ESE	1.3	NNE
23:00 - 24:00	1.0	WSW	1.8	NNE	2.4	ENE
00:00 - 01:00	2.5	N	1.7	SSW	1.7	SE
01:00 - 02:00	1.4	NNE	1.3	N	1.7	ENE
02:00 - 03:00	2.8	SW	1.7	ENE	2.0	SSW
03:00 - 04:00	3.1	N	2.0	ENE	1.8	NE
04:00 - 05:00	2.2	WSW	2.4	S	3.6	WSW
05:00 - 06:00	3.1	SSE	0.5	ESE	1.9	SW
06:00 - 07:00	2.2	NE	2.1	ENE	2.1	NNE
07:00 - 08:00	2.3	E	0.9	E	1.8	N
08:00 - 09:00	2.2	E	1.6	NNE	1.4	SE
09:00 - 10:00	1.3	SE	1.5	SW	0.7	NE
10:00 - 11:00	2.7	ESE	1.7	S	1.9	E
11:00 - 12:00	2.6	WSW	2.2	N	2.1	SSW
12:00 - 13:00	2.1	SSW	3.9	SSE	1.3	SW
13:00 - 14:00	2.7	ESE	1.7	ENE	2.1	NNE
14:00 - 15:00	1.4	SE	2.1	NE	2.1	SE
15:00 - 16:00	3.8	SSE	4.5	SW	0.7	E
16:00 - 17:00	5.7	NE	2.3	ENE	0.4	SSW

Wind Rose



File Control :R:\Database\Windrose\FileControl\Win-222010-North of VCU Area 23-30 May 2022

*(Signature)*  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

*(Signature)*  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 1

Monitor period : 23-30 May 2022

Wind Speed Model : NRG Symphonie

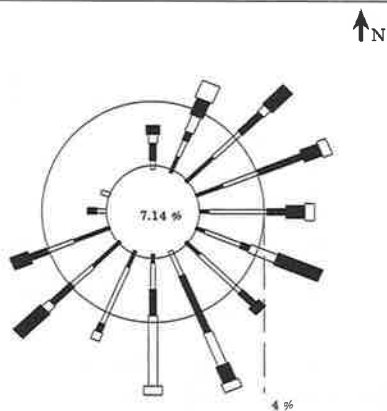
Serial No : A5088

Wind Direction Model : NRG Symphonie

Serial No : A5088

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	0.0119	0.0060	0.0060	0.0000	0.0298
NNE	0.0119	0.0119	0.0060	0.0119	0.0119	0.0119	0.0655
NE	0.0238	0.0238	0.0179	0.0060	0.0179	0.0000	0.0893
ENE	0.0179	0.0238	0.0298	0.0000	0.0119	0.0060	0.0893
E	0.0060	0.0357	0.0119	0.0000	0.0119	0.0060	0.0714
ESE	0.0060	0.0238	0.0060	0.0179	0.0298	0.0000	0.0833
SE	0.0119	0.0357	0.0119	0.0000	0.0060	0.0000	0.0655
SSE	0.0000	0.0179	0.0417	0.0238	0.0119	0.0060	0.1012
S	0.0060	0.0179	0.0179	0.0476	0.0000	0.0060	0.0952
SSW	0.0119	0.0417	0.0060	0.0060	0.0000	0.0000	0.0655
SW	0.0238	0.0179	0.0179	0.0060	0.0238	0.0000	0.0893
WSW	0.0238	0.0179	0.0119	0.0000	0.0119	0.0000	0.0655
W	0.0000	0.0060	0.0060	0.0000	0.0000	0.0000	0.0119
WNW	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0714						

Application : WindPro Ver.1.0

Control : 16 Direction Calculation With  
Calm Wind < 0.5 m/sData 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-222010-Takuan-Ao Pradu Community 1 23-30 May 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 1

Monitor period : 23-30 May 2022

Wind Speed Model : NRG Symphonie

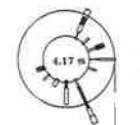
Serial No : A5088

Wind Direction Model : NRG Symphonie

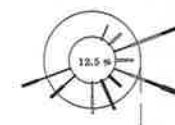
Serial No : A5088

Time	23-24 May 2022		24-25 May 2022		25-26 May 2022		26-27 May 2022	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
18:00 - 19:00	2.6	SSE	0.5	NNE	0.7	SW	1.9	SE
19:00 - 20:00	1.4	ESE	0.7	S	1.7	WSW	3.5	ESE
20:00 - 21:00	1.0	E	0.6	ESE	0.8	ENE	1.0	SSW
21:00 - 22:00	1.2	ENE	0.8	WSW	0.7	SE	0.5	WSW
22:00 - 23:00	1.3	SSE	2.0	ENE	4.0	E	1.6	NE
23:00 - 24:00	2.2	S	0.2	E	1.0	ESE	4.3	SSE
00:00 - 01:00	0.9	NNE	1.5	ENE	0.8	NE	2.4	SSE
01:00 - 02:00	0.1	SSW	0.5	WSW	3.0	S	0.9	WSW
02:00 - 03:00	3.5	NNE	2.4	SSE	0.3	SW	1.8	SE
03:00 - 04:00	1.5	E	0.5	SW	1.2	ESE	1.4	SSW
04:00 - 05:00	1.9	NE	2.0	SSE	2.4	ENE	1.0	E
05:00 - 06:00	4.7	ENE	1.7	NE	3.7	S	3.2	S
06:00 - 07:00	2.2	SSE	0.4	ENE	3.8	SSE	2.1	SSE
07:00 - 08:00	4.8	NNE	1.3	S	0.8	SE	4.7	SW
08:00 - 09:00	3.5	S	2.1	ESE	1.7	NE	5.6	ESE
09:00 - 10:00	4.0	WSW	5.4	ESE	5.9	SW	4.2	ESE
10:00 - 11:00	3.8	S	2.2	WSW	1.7	ENE	3.6	NE
11:00 - 12:00	3.8	SSE	2.0	SW	4.3	ENE	4.5	NE
12:00 - 13:00	8.0	SSE	1.6	ESE	1.8	SSW	1.9	NNE
13:00 - 14:00	6.7	NNE	0.9	ENE	2.1	ENE	6.5	NNE
14:00 - 15:00	1.8	SW	2.9	SE	1.2	SSE	1.4	SE
15:00 - 16:00	2.1	SSE	1.8	E	3.3	SSE	0.3	E
16:00 - 17:00	0.8	E	1.1	ENE	0.7	SSW	0.6	SW
17:00 - 18:00	3.2	SSW	0.3	SSW	2.0	NNE	1.5	E

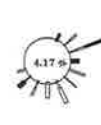
Wind Rose



12 %



6 %



4.17 %



6 %

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

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

File Control : R:\Database\Windrose\FileControl\Win-222010-Takuan-Ao Pradu Community 1 23-30 May 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 1  
Wind Speed Model : NRG Symphonie  
Wind Direction Model : NRG Symphonie

Monitor period : 23-30 May 2022  
Serial No : A5088  
Serial No : A5088

Time	27-28 May 2022		28-29 May 2022		29-30 May 2022		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
18:00 - 19:00	0.0	ESE	4.6	NNE	1.5	WSW	
19:00 - 20:00	3.3	S	2.0	N	0.9	NE	
20:00 - 21:00	2.1	NE	6.8	ENE	2.4	E	
21:00 - 22:00	2.5	S	5.2	ESE	1.1	WSW	
22:00 - 23:00	2.0	SE	4.1	NE	3.7	NNE	
23:00 - 24:00	0.3	NNE	1.9	SE	0.9	NE	
00:00 - 01:00	0.8	ENE	2.1	SW	2.2	WSW	
01:00 - 02:00	2.6	SW	4.0	ESE	3.1	SSE	
02:00 - 03:00	1.3	SE	3.6	S	1.0	NNE	
03:00 - 04:00	4.2	SW	4.2	SE	1.9	WNW	
04:00 - 05:00	2.0	N	2.0	E	0.7	SW	
05:00 - 06:00	3.7	SW	0.4	SE	0.4	WNW	
06:00 - 07:00	3.3	ESE	6.0	S	1.1	W	
07:00 - 08:00	1.8	E	3.3	ESE	0.6	SSW	
08:00 - 09:00	2.7	ENE	2.3	NE	1.3	S	
09:00 - 10:00	6.2	E	1.4	SSW	1.8	SE	
10:00 - 11:00	3.0	N	3.6	S	1.7	SSW	
11:00 - 12:00	4.1	NE	4.2	N	2.4	S	
12:00 - 13:00	4.3	SSE	1.5	SSW	0.0	W	
13:00 - 14:00	4.8	WSW	1.4	SW	0.3	SW	
14:00 - 15:00	2.3	NE	1.0	SSE	0.5	NE	
15:00 - 16:00	2.4	ENE	1.8	N	2.1	SSW	
16:00 - 17:00	5.5	E	1.1	S	1.7	SW	
17:00 - 18:00	4.6	SW	1.8	SSW	2.2	W	
Wind Rose							



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 2  
Wind Speed Model : NRG Symphonie  
Wind Direction Model : NRG Symphonie

Monitor period : 23-30 May 2022  
Serial No : 4901  
Serial No : 4901

Time	23-24 May 2022		24-25 May 2022		25-26 May 2022		26-27 May 2022	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
18:00 - 19:00	0.4	SE	1.8	NNE	0.9	SSE	0.0	NE
19:00 - 20:00	2.3	NNE	1.0	NE	0.0	SE	0.9	ESE
20:00 - 21:00	1.0	SW	0.8	S	0.3	ESE	0.0	ENE
21:00 - 22:00	1.7	NE	0.3	NNE	0.0	N	0.0	NE
22:00 - 23:00	0.3	WSW	0.5	WSW	0.6	N	0.3	S
23:00 - 24:00	0.7	E	0.0	NE	1.9	NNE	0.2	ENE
00:00 - 01:00	0.0	E	0.0	SE	1.0	ESE	0.9	SW
01:00 - 02:00	0.0	NNE	0.0	SSE	1.0	ENE	1.1	E
02:00 - 03:00	0.9	SSE	0.5	ESE	1.5	SE	0.0	SW
03:00 - 04:00	0.8	ESE	0.9	NNE	0.5	NE	0.0	SE
04:00 - 05:00	0.5	SSW	0.7	S	0.4	NNE	0.3	WSW
05:00 - 06:00	0.0	ESE	0.0	WSW	1.0	NE	0.3	SW
06:00 - 07:00	0.4	S	0.2	WSW	0.3	SW	0.5	S
07:00 - 08:00	0.8	WSW	0.9	SW	0.5	ENE	0.8	ESE
08:00 - 09:00	1.0	SSW	0.8	NNE	0.7	NNE	1.4	NE
09:00 - 10:00	1.0	SSE	0.0	E	1.4	E	1.3	N
10:00 - 11:00	1.1	E	0.8	ENE	1.2	S	2.0	NNE
11:00 - 12:00	2.0	NNE	2.4	SW	2.0	NNE	0.4	E
12:00 - 13:00	0.7	SW	1.0	NNE	0.5	N	1.2	S
13:00 - 14:00	1.4	SSW	2.0	SE	1.0	E	1.9	SW
14:00 - 15:00	1.2	ESE	1.0	SSE	1.1	SSE	0.9	NE
15:00 - 16:00	1.5	S	0.6	SSW	0.5	NE	3.0	E
16:00 - 17:00	0.0	WSW	0.7	SSW	0.1	SSW	0.3	ENE
17:00 - 18:00	0.6	N	0.0	SSW	2.6	WSW	0.1	ENE
Wind Rose								



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 2

Monitor period : 23-30 May 2022

Wind Speed Model : NRG Symphonie

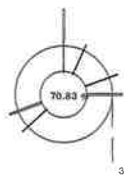
Serial No : 4901

Wind Direction Model : NRG Symphonie

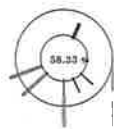
Serial No : 4901

Time	27-28 May 2022		28-29 May 2022		29-30 May 2022		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
18:00 - 19:00	0.0	S	0.4	ESE	0.0	E	
19:00 - 20:00	0.6	SW	1.8	S	0.5	SSE	
20:00 - 21:00	0.2	N	0.1	SSE	0.0	NNE	
21:00 - 22:00	0.3	NE	0.0	E	1.7	SE	
22:00 - 23:00	0.0	WSW	0.8	SSE	2.0	SE	
23:00 - 24:00	0.0	E	0.7	SE	1.4	E	
00:00 - 01:00	1.2	N	0.0	SSE	1.1	SE	
01:00 - 02:00	1.5	WSW	0.6	S	3.1	ENE	
02:00 - 03:00	0.7	ENE	0.0	E	1.9	ESE	
03:00 - 04:00	1.2	E	0.0	SSE	2.8	E	
04:00 - 05:00	0.1	ENE	0.0	NNE	0.2	E	
05:00 - 06:00	0.0	WSW	0.0	NNE	1.9	N	
06:00 - 07:00	0.6	N	0.0	NE	1.4	SE	
07:00 - 08:00	0.7	NNE	0.0	SW	0.9	SE	
08:00 - 09:00	0.0	SW	0.0	NNE	1.9	ENE	
09:00 - 10:00	0.2	ENE	0.0	SW	1.1	SW	
10:00 - 11:00	0.0	ENE	0.1	E	1.6	SE	
11:00 - 12:00	0.0	WSW	1.8	SW	1.1	NNE	
12:00 - 13:00	0.0	S	1.4	S	0.4	NE	
13:00 - 14:00	0.2	E	1.0	SW	0.7	S	
14:00 - 15:00	0.0	NE	2.8	NNE	0.9	SSW	
15:00 - 16:00	0.0	S	1.4	WSW	0.3	ESE	
16:00 - 17:00	0.0	SE	1.0	WSW	0.0	S	
17:00 - 18:00	0.3	S	0.0	S	0.6	N	

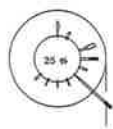
Wind Rose



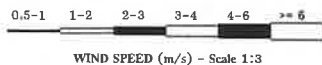
3 %



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File Control : R:\Database\Windrose\FileControl\Win-222010-Takuan-Ao Pradu Community 2 23-30 May 2022

*(Signature)*  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

*(Signature)*  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 2

Monitor period : 23-30 May 2022

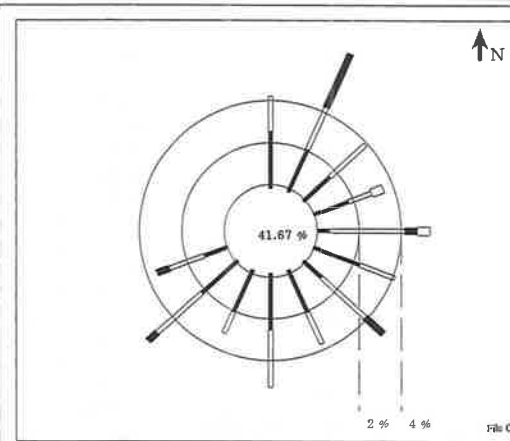
Wind Speed Model : NRG Symphonie

Serial No : 4901

Wind Direction Model : NRG Symphonie

Serial No : 4901

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	0.0298	0.0179	0.0000	0.0000	0.0000	0.0000	0.0476
NNE	0.0238	0.0238	0.0298	0.0000	0.0000	0.0000	0.0774
NE	0.0179	0.0238	0.0000	0.0000	0.0000	0.0000	0.0417
ENE	0.0179	0.0119	0.0000	0.0060	0.0000	0.0000	0.0357
E	0.0060	0.0357	0.0060	0.0060	0.0000	0.0000	0.0536
ESE	0.0238	0.0179	0.0000	0.0000	0.0000	0.0000	0.0417
SE	0.0119	0.0298	0.0119	0.0000	0.0000	0.0000	0.0536
SSE	0.0238	0.0179	0.0000	0.0000	0.0000	0.0000	0.0417
S	0.0298	0.0298	0.0000	0.0000	0.0000	0.0000	0.0595
SSW	0.0238	0.0119	0.0000	0.0000	0.0000	0.0000	0.0357
SW	0.0238	0.0298	0.0060	0.0000	0.0000	0.0000	0.0595
WSW	0.0119	0.0179	0.0060	0.0000	0.0000	0.0000	0.0357
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.4167						



Application : WindPro Ver.1.0

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

File Control : R:\Database\Windrose\FileControl\Win-222010-Takuan-Ao Pradu Community 2 23-30 May 2022

*(Signature)*  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

*(Signature)*  
(Miss Preeda Somjai)  
Technical Management Team



บริษัท ซีคอต จำกัด  
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#### AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)\_222010\_Cert-Amb/TSP (May)  
Branch 6 (Refinery) SAMPLING DATE : 23-30/05/2022  
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 31/05/2022-02/06/2022  
RECEIVED DATE : 31/05/2022 SAMPLE CONDITION : Normal  
REPORT DATE : 07/06/2022 SITE OPERATOR : Mr. Supakit Tamoka  
LOCATION DESCRIPTION : 1. North of Refinery Area 3. Takuan-Ao Pradu Community 1  
2. North of VCU Area 4. Takuan-Ao Pradu Community 2

PARAMETER	SAMPLING DATE	UNITS	RESULTS				STANDARD*	REFERENCE METHOD
			1	2	3	4		
TSP (24 hr)	23-24/05/2022	mg/m <sup>3</sup>	0.064	0.034	0.046	0.031	0.330	High Volume Air
	24-25/05/2022	mg/m <sup>3</sup>	0.078	0.025	0.034	0.031		Sampler / Gravimetric
	25-26/05/2022	mg/m <sup>3</sup>	0.103	0.027	0.040	0.081		Method
	26-27/05/2022	mg/m <sup>3</sup>	0.027	0.042	0.076	0.064		
	27-28/05/2022	mg/m <sup>3</sup>	0.147	0.029	0.068	0.041		
	28-29/05/2022	mg/m <sup>3</sup>	0.132	0.055	0.072	0.052		
	29-30/05/2022	mg/m <sup>3</sup>	0.094	0.045	0.042	0.064		

Phatchara Samanchan  
(Miss Phatchara Samanchan)  
Analyst

Naris Poowasanetch  
(Miss Narisa Poowasanetch)  
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 National Environment Board, No.24, B.E.2547 (2004).



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

#### AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)\_222010\_Cert-Amb/PM-10 (May)  
Branch 6 (Refinery) SAMPLING DATE : 23-30/05/2022  
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 31/05/2022-02/06/2022  
RECEIVED DATE : 31/05/2022 SAMPLE CONDITION : Normal  
REPORT DATE : 07/06/2022 SITE OPERATOR : Mr. Supakit Tamoka  
LOCATION DESCRIPTION : 1. North of Refinery Area 3. Takuan-Ao Pradu Community 1  
2. North of VCU Area 4. Takuan-Ao Pradu Community 2

PARAMETER	SAMPLING DATE	UNITS	RESULTS				STANDARD*	REFERENCE METHOD
			1	2	3	4		
PM-10 (24 hr)	23-24/05/2022	mg/m <sup>3</sup>	0.043	0.015	0.032	0.010	0.12	High Volume
	24-25/05/2022	mg/m <sup>3</sup>	0.054	0.011	0.024	0.011		Air Sampler
	25-26/05/2022	mg/m <sup>3</sup>	0.070	0.012	0.026	0.045		(Hi-Vol. PM-10 Size
	26-27/05/2022	mg/m <sup>3</sup>	0.015	0.021	0.048	0.034		Selective Inlet) /
	27-28/05/2022	mg/m <sup>3</sup>	0.093	0.014	0.037	0.023		Gravimetric Method
	28-29/05/2022	mg/m <sup>3</sup>	0.094	0.025	0.045	0.032		
	29-30/05/2022	mg/m <sup>3</sup>	0.063	0.027	0.019	0.039		

Phatchara Samanchan  
(Miss Phatchara Samanchan)  
Analyst

Naris Poowasanetch  
(Miss Narisa Poowasanetch)  
Technical Management Team

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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTC6 (Refinery)\_222010\_Cert-Amb/H<sub>2</sub>S (May)  
Branch 6 (Refinery) SAMPLING DATE : 24-30/05/2022  
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 01/06/2022  
RECEIVED DATE : 31/05/2022 SAMPLE CONDITION : Normal  
REPORT DATE : 09/06/2022 SITE OPERATOR : Mr. Supakit Tamoka  
INSTRUMENT : Impingement Absorption  
LOCATION DESCRIPTION : 1. North of Refinery Area 3. Takuan-Ao Pradu Community 1  
2. North of VCU Area 4. Takuan-Ao Pradu Community 2

PARAMETER	SAMPLING DATE	UNITS	ND Non-detectable	RESULTS				REFERENCE METHOD
				1	2	3	4	
Hydrogen Sulfide (H <sub>2</sub> S)	24/05/2022	ppm	<0.001	ND	ND	ND	ND	Intersociety Committee Method 701
	25/05/2022	ppm	<0.001	ND	ND	ND	ND	
	26/05/2022	ppm	<0.001	ND	ND	ND	ND	
	27/05/2022	ppm	<0.001	ND	ND	ND	ND	
	28/05/2022	ppm	<0.001	ND	ND	ND	ND	
	29/05/2022	ppm	<0.001	ND	ND	ND	ND	
	30/05/2022	ppm	<0.001	ND	ND	ND	ND	

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTC6 (Refinery)\_222010\_Cert-Amb/THC (May)  
Branch 6 (Refinery) SAMPLING DATE : 24-30/05/2022  
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 01/06/2022  
RECEIVED DATE : 31/05/2022 SAMPLE CONDITION : Normal  
REPORT DATE : 13/06/2022 SITE OPERATOR : Mr. Supakit Tamoka  
LOCATION DESCRIPTION : 1. North of Refinery Area 3. Takuan-Ao Pradu Community 1  
2. North of VCU Area 4. Takuan-Ao Pradu Community 2

PARAMETER	SAMPLING DATE	UNITS	ND Non-detectable	RESULTS				REFERENCE METHOD
				1	2	3	4	
Total Hydrocarbon (THC)	24/05/2022	ppm	<0.10	2.64	2.53	2.60	2.43	Flame Ionization Detection Method
	25/05/2022	ppm	<0.10	2.60	2.78	3.36	2.89	
	26/05/2022	ppm	<0.10	2.34	3.28	2.71	2.96	
	27/05/2022	ppm	<0.10	2.35	3.09	2.22	2.65	
	28/05/2022	ppm	<0.10	2.51	2.70	2.65	2.78	
	29/05/2022	ppm	<0.10	2.59	2.35	2.53	2.90	
	30/05/2022	ppm	<0.10	2.76	2.83	2.98	2.40	

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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

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บริษัท ซีคอต จำกัด

SECOT CO., LTD.

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# AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)\_222010\_Cert-Amb/NMHC (May)

Branch 6 (Refinery) SAMPLING DATE : 24-30/05/2022

SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 01/06/2022

RECEIVED DATE : 31/05/2022 SAMPLE CONDITION : Normal

REPORT DATE : 13/06/2022 SITE OPERATOR : Mr. Supakit Tamoka

LOCATION DESCRIPTION : 1. North of Refinery Area 3. Takuan-Ao Pradu Community 1

2. North of VCU Area 4. Takuan-Ao Pradu Community 2

PARAMETER	SAMPLING DATE	UNITS	ND	RESULTS				REFERENCE METHOD
				Non-detectable	1	2	3	
Non-methane	24/05/2022	ppm	<0.05	0.72	0.72	0.82	0.68	Flame Ionization
Hydrocarbon	25/05/2022	ppm	<0.05	0.71	0.69	0.17	0.76	Detection Method
(NMHC)	26/05/2022	ppm	<0.05	0.69	0.65	0.76	0.69	
	27/05/2022	ppm	<0.05	0.72	0.69	0.76	0.81	
	28/05/2022	ppm	<0.05	0.68	0.71	0.73	0.71	
	29/05/2022	ppm	<0.05	0.66	0.74	0.74	0.69	
	30/05/2022	ppm	<0.05	0.76	0.69	0.69	0.72	

*Sudaporn Soonthorn*

(Miss Sudaporn Soonthorn)

Analyst

*Narisa Poowasanpetch*

(Miss Narisa Poowasanpetch)

Technical Management Team

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

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

R:\Database\Ambient\FileControl\Amb-222010-North of Refinery Process Area-SO2 23-30 May 2022



## Ambient Air Monitoring Results : Sulfur dioxide MTR-PTTGC6-Refinery

Location : North of Refinery Process Area Monitor Period : 23-30 May 2022

Analyzer Model : Teledyne T100 Station No : Mobile 10

Serial No : 2010 Site Operator : Mr. Supakit Tamooka

Calibrator Model : Teledyne 700E Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 13 Jan 2022 Cal Concentration (ppb) : 0,100,200,400

Expire Date : 12 Jan 2023

Time	SO2 Concentration (ppb)						
	23-24 May 2022	24-25 May 2022	25-26 May 2022	26-27 May 2022	27-28 May 2022	28-29 May 2022	29-30 May 2022
16:00 - 17:00	4.6	2.0	1.9	1.3	1.2	4.6	2.8
17:00 - 18:00	4.5	4.2	1.6	1.9	1.6	6.4	1.9
18:00 - 19:00	3.1	1.3	1.8	1.5	1.5	5.9	1.6
19:00 - 20:00	2.7	2.6	1.5	1.6	1.9	6.3	1.8
20:00 - 21:00	4.6	2.0	2.8	2.5	3.2	3.0	1.5
21:00 - 22:00	5.8	1.3	3.5	4.0	2.9	2.1	2.8
22:00 - 23:00	5.7	1.6	1.8	4.5	2.4	1.8	3.9
23:00 - 00:00	2.5	2.9	3.6	3.6	1.3	1.3	2.4
00:00 - 01:00	3.9	1.5	4.6	3.7	1.1	2.9	1.3
01:00 - 02:00	2.6	1.8	4.5	3.7	3.0	3.2	3.6
02:00 - 03:00	2.7	1.3	5.8	4.5	1.6	2.3	4.0
03:00 - 04:00	4.6	1.9	4.3	4.0	1.2	2.7	1.9
04:00 - 05:00	2.6	1.5	3.8	4.7	1.8	3.9	1.2
05:00 - 06:00	4.6	1.6	2.5	4.7	1.8	3.9	1.6
06:00 - 07:00	6.4	2.5	2.7	3.3	1.6	0.8	2.6
07:00 - 08:00	5.9	4.0	4.2	4.0	1.3	7.0	2.9
08:00 - 09:00	6.3	2.6	1.3	4.1	1.9	2.5	3.6
09:00 - 10:00	3.0	3.0	2.6	4.3	0.5	1.6	4.1
10:00 - 11:00	1.4	3.7	2.0	2.5	0.1	0.3	4.6
11:00 - 12:00	3.5	2.5	1.3	1.4	0.9	3.7	3.0
12:00 - 13:00	2.4	2.5	1.6	1.3	1.6	2.5	2.6
13:00 - 14:00	2.8	2.1	2.9	1.9	2.4	2.5	3.5
14:00 - 15:00	2.2	1.3	1.5	1.2	3.9	2.1	2.1
15:00 - 16:00	1.7	2.8	1.8	1.6	2.6	1.3	2.5
Average-24Hr*	3.8	2.3	2.7	3.0	1.8	3.1	2.7
Max-1Hr	6.4	4.2	5.8	4.7	3.9	7.0	4.6
Min-1Hr	1.4	1.3	1.3	1.2	0.1	0.3	1.2
Standard-1Hr	300 ppb(780 ug/cu.m)						
Standard-24Hr	120 ppb(300 ug/cu.m)						

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

*Katesarin Vorradetwittaya*  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

*Preeda S.*  
(Miss Preeda Somjai)  
Technical Management Team



## Ambient Air Monitoring Results : Sulfur dioxide MTR-PTTGC6-Refinery

Location : North of VCU Area Monitor Period : 23-30 May 2022  
Analyzer Model : API 100A Station No : Shelter 19  
Serial No : 238 Site Operator : Mr.Supakit Tamooka

Calibrator Model : Teledyne 700E Serial No : 587  
Calibration Gas Cylinder I.D.: EB0108319  
Certified Date : 13 Jan 2022 Cal Concentration (ppb) : 0,100,200,400  
Expire Date : 12 Jan 2023

Time	SO2 Concentration (ppb)						
	23-24 May 2022	24-25 May 2022	25-26 May 2022	26-27 May 2022	27-28 May 2022	28-29 May 2022	29-30 May 2022
17:00 - 18:00	5.6	3.0	1.3	3.6	1.8	4.6	6.6
18:00 - 19:00	4.9	1.6	2.6	4.1	7.4	3.0	4.5
19:00 - 20:00	2.5	1.2	2.0	4.6	3.4	2.4	3.2
20:00 - 21:00	1.4	1.8	1.3	3.0	2.0	2.9	3.7
21:00 - 22:00	1.3	1.8	1.6	2.6	2.4	4.8	2.5
22:00 - 23:00	1.9	1.6	2.9	3.5	3.5	4.1	2.5
23:00 - 00:00	1.2	1.3	1.5	2.1	2.6	3.4	2.1
00:00 - 01:00	1.6	1.9	3.7	2.5	3.0	2.8	1.3
01:00 - 02:00	2.6	0.5	4.5	3.6	3.7	2.3	2.8
02:00 - 03:00	2.9	0.1	4.0	4.6	2.5	6.6	1.9
03:00 - 04:00	3.6	0.9	4.7	4.5	2.5	7.3	1.6
04:00 - 05:00	4.1	1.6	4.7	3.1	2.1	8.1	1.8
05:00 - 06:00	2.0	2.0	3.3	2.7	1.3	7.8	1.5
06:00 - 07:00	2.5	1.6	4.0	4.6	2.8	7.4	2.8
07:00 - 08:00	1.4	2.5	4.1	5.8	1.9	6.9	3.9
08:00 - 09:00	1.2	3.6	4.3	5.7	1.6	6.4	2.4
09:00 - 10:00	1.8	4.6	2.5	2.5	1.8	7.1	1.3
10:00 - 11:00	1.5	4.5	1.4	3.9	1.5	2.4	3.6
11:00 - 12:00	1.9	5.8	1.3	2.6	2.8	3.5	4.0
12:00 - 13:00	3.2	4.3	1.9	3.5	3.9	3.6	2.4
13:00 - 14:00	2.9	3.8	1.2	2.0	3.6	3.9	4.0
14:00 - 15:00	2.4	2.5	1.6	2.5	4.0	4.0	4.1
15:00 - 16:00	1.3	2.7	2.6	1.4	2.4	4.7	4.3
16:00 - 17:00	1.1	4.2	2.9	1.2	3.2	5.2	4.2
Average-24Hr*	2.4	2.5	2.7	3.3	2.8	4.8	3.0
Max-1Hr	5.6	5.8	4.7	5.8	7.4	8.1	6.6
Min-1Hr	1.1	0.1	1.2	1.2	1.3	2.3	1.3
Standard-1Hr	300 ppb(780 ug/cu.m)						
Standard-24Hr	120 ppb(300 ug/cu.m)						

Remark : \* Average time between 17:00-17:00

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Ambient Air Monitoring Results : Sulfur dioxide MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 1 Monitor Period : 23-30 May 2022  
Analyzer Model : Teledyne T100 Station No : Shelter 15  
Serial No : 120 Site Operator : Mr.Supakit Tamooka

Calibrator Model : Teledyne 700E Serial No : 587  
Calibration Gas Cylinder I.D.: EB0108319  
Certified Date : 13 Jan 2022 Cal Concentration (ppb) : 0,100,200,400  
Expire Date : 12 Jan 2023

Time	SO2 Concentration (ppb)						
	23-24 May 2022	24-25 May 2022	25-26 May 2022	26-27 May 2022	27-28 May 2022	28-29 May 2022	29-30 May 2022
18:00 - 19:00	6.1	1.9	1.2	2.6	5.4	3.0	1.8
19:00 - 20:00	5.1	1.7	2.6	3.4	4.0	3.5	1.4
20:00 - 21:00	5.9	1.8	3.7	2.5	4.5	3.4	2.5
21:00 - 22:00	2.7	3.0	4.3	2.0	4.5	2.6	2.5
22:00 - 23:00	2.3	2.9	2.5	1.2	4.2	3.4	2.5
23:00 - 00:00	2.2	2.5	1.4	0.7	5.0	6.1	2.5
00:00 - 01:00	2.5	2.0	2.5	0.3	3.4	5.1	3.0
01:00 - 02:00	2.0	1.2	1.8	0.6	5.3	5.9	2.5
02:00 - 03:00	1.2	0.7	1.9	1.3	2.6	2.7	2.2
03:00 - 04:00	0.7	0.3	1.8	1.4	2.5	2.3	2.4
04:00 - 05:00	0.3	0.6	1.7	1.9	2.7	2.2	2.1
05:00 - 06:00	0.6	1.3	1.8	2.9	2.5	9.8	2.0
06:00 - 07:00	1.3	1.4	1.9	2.6	2.5	7.4	2.0
07:00 - 08:00	1.4	1.9	1.7	3.5	2.5	4.3	1.7
08:00 - 09:00	1.9	2.9	1.8	1.2	3.0	2.5	5.3
09:00 - 10:00	2.9	2.6	3.0	1.4	4.9	1.4	5.3
10:00 - 11:00	5.6	3.5	2.9	2.5	3.5	2.5	4.8
11:00 - 12:00	3.4	1.2	2.7	2.9	2.2	1.8	5.5
12:00 - 13:00	4.0	2.6	2.5	5.0	3.0	1.9	3.9
13:00 - 14:00	3.8	3.7	2.5	4.7	2.9	1.8	6.8
14:00 - 15:00	1.9	4.3	2.5	5.4	2.7	1.7	7.7
15:00 - 16:00	1.8	2.5	3.0	3.5	2.5	1.8	8.0
16:00 - 17:00	1.7	2.6	3.5	5.0	2.5	1.9	7.3
17:00 - 18:00	1.8	3.5	3.4	3.6	2.5	1.7	7.6
Average-24Hr*	2.6	2.2	2.4	2.6	3.4	3.4	3.9
Max-1Hr	6.1	4.3	4.3	5.4	5.4	9.8	8.0
Min-1Hr	0.3	0.3	1.2	0.3	2.2	1.4	1.4
Standard-1Hr	300 ppb(780 ug/cu.m)						
Standard-24Hr	120 ppb(300 ug/cu.m)						

Remark : \* Average time between 18:00-18:00

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Ambient Air Monitoring Results : Sulfur dioxide MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 2  
Analyzer Model : Teledyne T100  
Serial No : 2009

Monitor Period : 23-30 May 2022  
Station No : Shelter 16  
Site Operator : Mr.Supakit Tamooka

Calibrator Model : Teledyne 700E  
Calibration Gas Cylinder I.D.: EB0108319  
Certified Date : 13 Jan 2022  
Expire Date : 12 Jan 2023

Serial No : 587  
Cal Concentration (ppb) : 0,100,200,400

Time	SO2 Concentration (ppb)						
	23-24 May 2022	24-25 May 2022	25-26 May 2022	26-27 May 2022	27-28 May 2022	28-29 May 2022	29-30 May 2022
18:00 - 19:00	3.8	1.6	2.0	1.6	0.4	1.6	5.8
19:00 - 20:00	1.2	2.8	1.5	2.1	0.6	1.4	1.6
20:00 - 21:00	0.3	2.3	1.8	1.5	2.7	1.5	2.8
21:00 - 22:00	3.7	2.2	1.2	1.2	2.7	1.6	2.3
22:00 - 23:00	1.2	1.9	1.6	1.7	1.6	1.1	2.2
23:00 - 00:00	0.9	1.3	2.9	2.6	1.3	1.9	1.9
00:00 - 01:00	2.5	1.6	2.1	0.3	1.8	2.7	1.3
01:00 - 02:00	1.2	2.1	1.9	0.7	1.4	2.4	1.5
02:00 - 03:00	3.0	1.5	1.3	1.4	2.7	2.7	1.5
03:00 - 04:00	1.5	1.2	1.5	1.0	1.1	2.7	1.7
04:00 - 05:00	2.9	1.7	0.7	0.2	1.2	1.6	2.4
05:00 - 06:00	2.3	2.6	0.9	0.8	1.6	1.3	1.4
06:00 - 07:00	1.6	0.3	0.5	0.4	1.1	1.8	1.5
07:00 - 08:00	1.3	0.7	0.1	1.4	0.8	1.4	1.1
08:00 - 09:00	1.1	1.4	0.5	1.9	1.2	2.7	2.4
09:00 - 10:00	2.1	1.0	1.4	1.1	1.7	1.1	3.0
10:00 - 11:00	4.2	0.2	1.8	2.4	1.8	1.2	1.7
11:00 - 12:00	3.8	0.8	2.7	3.0	2.0	1.6	1.2
12:00 - 13:00	4.9	0.4	2.3	1.7	1.1	1.1	1.2
13:00 - 14:00	4.6	1.4	2.6	1.2	0.1	0.8	0.7
14:00 - 15:00	5.2	2.6	3.7	1.2	0.8	0.7	0.6
15:00 - 16:00	0.7	2.1	3.1	0.7	1.3	0.2	3.7
16:00 - 17:00	2.6	3.5	1.3	0.6	1.7	0.7	3.1
17:00 - 18:00	5.8	2.2	1.7	0.4	2.9	2.6	1.3
Average-24Hr*	2.6	1.6	1.7	1.3	1.5	1.6	2.0
Max-1Hr	5.8	3.5	3.7	3.0	2.9	2.7	5.8
Min-1Hr	0.3	0.2	0.1	0.2	0.1	0.2	0.6
Standard-1Hr	300 ppb(780 ug/cu.m)						
Standard-24Hr	120 ppb(300 ug/cu.m)						

Remark : \* Average time between 18:00-18:00

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Ambient Air Monitoring Results : Nitrogen dioxide MTR-PTTGC6-Refinery

Location : North of Refinery Process Area  
Analyzer Model : API 200A  
Serial No : 1651

Monitor Period : 23-30 May 2022  
Station No : Mobile 10  
Site Operator : Mr.Supakit Tamooka

Calibrator Model : Teledyne 700E  
Calibration Gas Cylinder I.D.: EB0108319  
Certified Date : 13 Jan 2022  
Expire Date : 12 Jan 2023

Serial No : 587  
Cal Concentration (ppb) : 0,100,200,400

Time	NO2 Concentration (ppb)						
	23-24 May 2022	24-25 May 2022	25-26 May 2022	26-27 May 2022	27-28 May 2022	28-29 May 2022	29-30 May 2022
16:00 - 17:00	16.4	9.2	19.6	11.2	18.6	3.7	11.3
17:00 - 18:00	17.4	9.3	11.6	12.6	17.9	6.8	10.4
18:00 - 19:00	10.7	5.7	8.8	18.8	20.5	8.7	5.2
19:00 - 20:00	7.6	4.2	2.7	17.4	19.8	9.5	5.3
20:00 - 21:00	15.6	7.9	4.0	9.4	17.3	10.8	4.2
21:00 - 22:00	13.5	10.3	4.5	11.7	12.6	9.5	4.2
22:00 - 23:00	5.7	9.6	7.3	14.2	8.6	5.6	3.5
23:00 - 00:00	7.4	11.3	11.0	14.8	7.4	6.3	6.3
00:00 - 01:00	11.2	5.2	8.8	12.4	9.7	10.7	8.7
01:00 - 02:00	9.4	3.2	8.6	9.8	7.3	6.3	6.4
02:00 - 03:00	7.9	1.2	7.3	6.3	10.6	5.3	6.7
03:00 - 04:00	8.9	4.9	9.4	9.7	12.5	5.9	7.3
04:00 - 05:00	6.3	7.3	5.8	7.4	10.7	6.4	11.2
05:00 - 06:00	18.0	11.9	4.2	8.3	6.3	8.1	10.8
06:00 - 07:00	9.5	10.8	5.7	17.4	6.8	10.7	12.4
07:00 - 08:00	6.2	7.3	10.6	9.8	10.4	9.6	8.6
08:00 - 09:00	7.9	15.7	8.6	11.5	11.4	11.5	5.3
09:00 - 10:00	10.4	14.9	12.4	14.5	12.7	11.7	7.9
10:00 - 11:00	11.5	11.2	8.2	13.6	10.8	10.3	10.4
11:00 - 12:00	10.2	11.2	9.0	12.8	8.5	10.5	6.3
12:00 - 13:00	11.7	18.4	9.1	8.8	7.4	9.7	8.5
13:00 - 14:00	12.4	18.8	7.0	11.3	6.9	9.4	12.4
14:00 - 15:00	11.7	9.6	10.5	16.9	9.7	8.2	9.5
15:00 - 16:00	9.4	11.2	9.6	17.5	4.6	9.8	7.4
Average-24Hr*	10.7	9.6	8.5	12.4	11.2	8.5	7.9
Max-1Hr	18.0	18.8	19.6	18.8	20.5	11.7	12.4
Min-1Hr	5.7	1.2	2.7	6.3	4.6	3.7	3.5
Standard-1Hr	170 ppb(320 ug/cu.m)						
Standard-24Hr							

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Ambient Air Monitoring Results : Nitrogen dioxide MTR-PTTGC6-Refinery

Location : North of VCU Area Monitor Period : 23-30 May 2022  
Analyzer Model : API 200A Station No : Shelter 19  
Serial No : 1645 Site Operator : Mr.Supakit Tamooka

Calibrator Model : Teledyne 700E Serial No : 587  
Calibration Gas Cylinder I.D.: EB0108319  
Certified Date : 13 Jan 2022 Cal Concentration (ppb) : 0,100,200,400  
Expire Date : 12 Jan 2023

Time	NO2 Concentration (ppb)						
	23-24 May 2022	24-25 May 2022	25-26 May 2022	26-27 May 2022	27-28 May 2022	28-29 May 2022	29-30 May 2022
17:00 - 18:00	15.3	14.7	9.6	12.6	5.4	7.3	9.2
18:00 - 19:00	17.6	16.6	10.6	9.7	5.1	8.9	9.7
19:00 - 20:00	19.4	13.5	5.2	10.6	9.0	7.7	7.4
20:00 - 21:00	15.3	10.0	2.6	8.5	6.9	6.8	6.4
21:00 - 22:00	11.3	7.3	1.9	9.5	6.3	7.9	3.4
22:00 - 23:00	10.7	4.2	2.0	7.3	4.4	5.3	3.8
23:00 - 00:00	4.2	4.6	6.3	5.2	7.8	4.2	3.5
00:00 - 01:00	4.7	4.8	5.2	2.3	9.0	4.8	3.7
01:00 - 02:00	3.4	4.2	4.8	2.2	7.9	5.8	4.2
02:00 - 03:00	3.5	6.0	3.5	2.2	8.6	6.3	4.9
03:00 - 04:00	2.9	2.3	2.8	3.8	5.3	6.9	7.3
04:00 - 05:00	3.4	5.9	1.9	4.8	7.4	6.1	4.2
05:00 - 06:00	2.8	4.5	2.3	3.0	5.0	11.2	4.8
06:00 - 07:00	3.1	3.6	2.1	3.6	17.4	8.7	17.6
07:00 - 08:00	6.4	2.9	8.5	2.0	12.3	9.4	19.4
08:00 - 09:00	6.4	11.2	10.4	15.7	11.2	11.3	15.3
09:00 - 10:00	9.6	11.4	12.4	14.2	11.6	9.8	11.3
10:00 - 11:00	10.4	11.8	13.2	16.2	7.7	8.5	10.7
11:00 - 12:00	16.1	8.3	12.9	18.4	7.0	7.4	6.1
12:00 - 13:00	12.0	9.3	16.8	8.2	6.1	5.3	5.7
13:00 - 14:00	12.5	13.2	11.2	4.8	5.7	4.3	5.7
14:00 - 15:00	12.7	14.2	13.6	5.0	5.7	11.7	5.2
15:00 - 16:00	9.6	10.7	16.3	8.9	5.2	12.8	16.8
16:00 - 17:00	12.3	15.3	12.4	7.2	8.9	7.4	11.2
Average-24Hr*	9.4	8.8	7.9	7.7	7.8	7.7	8.2
Max-1Hr	19.4	16.6	16.8	18.4	17.4	12.8	19.4
Min-1Hr	2.8	2.3	1.9	2.0	4.4	4.2	3.4
Standard-1Hr	170 ppb(320 ug/cu.m)						
Standard-24Hr							

Remark : \* Average time between 17:00-17:00

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Ambient Air Monitoring Results : Nitrogen dioxide MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 1 Monitor Period : 23-30 May 2022  
Analyzer Model : API 200A Station No : Shelter 15  
Serial No : 1505 Site Operator : Mr.Supakit Tamooka

Calibrator Model : Teledyne 700E Serial No : 587  
Calibration Gas Cylinder I.D.: EB0108319  
Certified Date : 13 Jan 2022 Cal Concentration (ppb) : 0,100,200,400  
Expire Date : 12 Jan 2023

Time	NO2 Concentration (ppb)						
	23-24 May 2022	24-25 May 2022	25-26 May 2022	26-27 May 2022	27-28 May 2022	28-29 May 2022	29-30 May 2022
18:00 - 19:00	19.8	27.0	21.5	10.2	18.5	16.3	14.9
19:00 - 20:00	23.3	21.9	8.5	9.7	18.5	17.1	13.3
20:00 - 21:00	14.9	19.6	9.7	9.2	20.7	18.5	18.7
21:00 - 22:00	11.8	13.3	9.5	12.5	14.2	11.5	8.0
22:00 - 23:00	10.9	9.8	14.9	8.9	9.4	10.8	12.1
23:00 - 00:00	10.3	7.9	8.5	11.7	8.5	9.8	8.0
00:00 - 01:00	10.4	7.6	9.4	10.8	14.2	8.4	9.9
01:00 - 02:00	12.0	5.2	5.5	13.2	6.1	5.5	11.8
02:00 - 03:00	11.8	7.6	6.9	9.1	7.8	4.3	6.9
03:00 - 04:00	11.8	7.4	5.0	7.7	8.9	6.2	7.6
04:00 - 05:00	11.2	18.5	8.4	8.4	16.9	11.2	6.8
05:00 - 06:00	13.6	16.8	22.5	16.7	18.6	12.6	6.9
06:00 - 07:00	15.1	15.3	21.9	15.4	14.9	15.4	6.4
07:00 - 08:00	11.9	14.7	18.8	18.1	16.3	17.6	10.9
08:00 - 09:00	13.4	17.4	19.7	18.5	17.1	19.6	11.0
09:00 - 10:00	13.0	14.0	17.7	17.6	8.7	17.6	10.5
10:00 - 11:00	15.5	17.6	11.9	10.1	8.4	17.7	11.6
11:00 - 12:00	11.7	17.5	10.8	12.4	8.2	11.9	8.0
12:00 - 13:00	21.5	19.5	10.9	9.5	8.5	8.8	13.5
13:00 - 14:00	19.6	24.4	10.0	9.9	8.8	10.5	21.8
14:00 - 15:00	12.5	16.5	9.5	8.0	13.5	11.7	14.9
15:00 - 16:00	8.6	20.8	9.8	9.9	13.1	11.7	16.3
16:00 - 17:00	19.9	15.5	9.1	11.8	13.6	13.6	15.0
17:00 - 18:00	13.7	11.7	9.9	12.3	12.8	16.0	16.1
Average-24Hr*	14.1	15.3	12.1	11.7	12.8	12.7	11.7
Max-1Hr	23.3	27.0	22.5	18.5	20.7	19.6	21.8
Min-1Hr	8.6	5.2	5.0	7.7	6.1	4.3	6.4
Standard-1Hr	170 ppb(320 ug/cu.m)						
Standard-24Hr							

Remark : \* Average time between 18:00-18:00

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



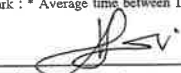
## Ambient Air Monitoring Results : Nitrogen dioxide MTR-PTTGC6-Refinery

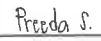
<b>Location :</b> Takuan-Ao Pradu Community 2	<b>Monitor Period :</b> 23-30 May 2022
<b>Analyzer Model :</b> Teledyne T200	<b>Station No :</b> Shelter 16
<b>Serial No :</b> 110	<b>Site Operator :</b> Mr.Supakit Tamooka

<b>Calibrator Model :</b> Teledyne 700E	<b>Serial No :</b> 587
<b>Calibration Gas Cylinder I.D.:</b> EB0108319	
<b>Certified Date :</b> 13 Jan 2022	<b>Cal Concentration (ppb) :</b> 0,100,200,400
<b>Expire Date :</b> 12 Jan 2023	

Time	NO2 Concentration (ppb)						
	23-24 May 2022	24-25 May 2022	25-26 May 2022	26-27 May 2022	27-28 May 2022	28-29 May 2022	29-30 May 2022
18:00 - 19:00	12.5	7.2	5.2	9.9	4.5	4.9	4.3
19:00 - 20:00	11.4	4.2	4.5	9.1	4.1	5.2	4.3
20:00 - 21:00	6.1	6.8	4.7	6.7	4.5	5.9	3.2
21:00 - 22:00	6.5	10.8	7.1	5.0	7.2	5.2	3.3
22:00 - 23:00	9.1	8.7	4.5	9.7	4.2	5.0	4.6
23:00 - 00:00	7.2	7.7	4.0	8.5	6.8	6.9	5.1
00:00 - 01:00	4.2	7.7	6.3	5.0	5.3	4.1	3.6
01:00 - 02:00	6.8	6.9	6.5	4.7	5.8	5.6	5.1
02:00 - 03:00	6.5	4.1	5.5	3.5	6.0	5.0	7.1
03:00 - 04:00	5.5	5.6	5.9	3.3	6.4	4.4	2.9
04:00 - 05:00	5.9	5.0	5.6	3.9	5.7	7.5	3.1
05:00 - 06:00	5.6	6.9	5.1	5.2	5.5	8.4	2.5
06:00 - 07:00	6.8	6.7	5.5	2.6	5.2	7.3	3.4
07:00 - 08:00	10.8	5.9	10.5	1.9	10.8	11.5	5.6
08:00 - 09:00	8.7	5.4	8.7	2.0	6.7	6.7	5.1
09:00 - 10:00	10.4	7.5	6.4	2.3	6.5	7.5	8.7
10:00 - 11:00	8.6	8.4	4.6	6.7	5.5	6.0	6.5
11:00 - 12:00	8.2	8.1	4.9	5.9	5.9	6.8	5.5
12:00 - 13:00	6.7	6.0	5.2	5.4	5.6	3.5	5.9
13:00 - 14:00	5.1	5.9	5.9	4.5	4.8	3.1	5.6
14:00 - 15:00	6.1	6.4	5.2	4.0	4.5	4.0	9.1
15:00 - 16:00	6.1	6.3	13.7	10.5	4.6	8.2	6.7
16:00 - 17:00	6.5	7.5	11.9	5.0	4.7	6.9	9.1
17:00 - 18:00	9.1	6.3	7.1	4.5	4.6	5.3	9.5
Average-24Hr*	7.5	6.8	6.4	5.4	5.7	6.0	5.4
Max-1Hr	12.5	10.8	13.7	10.5	10.8	11.5	9.5
Min-1Hr	4.2	4.1	4.0	1.9	4.1	3.1	2.5
Standard-1Hr	170 ppb(320 ug/cu.m)						
Standard-24Hr	-						

Remark : \* Average time between 18:00-18:00

  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

  
(Miss Preeda Somjai)  
Technical Management Team

## คุณภาพอากาศจากปล่องระบายอากาศ

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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 : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)\_222010\_Cert-Stk/Main  
Branch 6 (Refinery) SAMPLING DATE : 24/05/2022  
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 30-31/05/2022  
RECEIVED DATE : 30/05/2022 SAMPLE CONDITION : Normal  
REPORT DATE : 07/06/2022 OPERATOR : Mr. Song Hangchawankun  
STACK LOCATION : Main Stack SOURCE DESCRIPTION : Combustion  
FUEL TYPE : Fuel gas and Fuel Oil

#### STACK DESCRIPTION

Height : 140.0 m Gas Velocity : 16.6 m/s  
Diameter : 4.5 m Flow rate<sup>1/</sup> : 8,649 Ncu.m/min  
Temperature : 209 °C Excess Oxygen : 4.3 %

PARAMETER	UNIT	RESULTS		ASSIGN VALUE <sup>2/</sup>	STANDARD <sup>3/</sup>	REFERENCE METHODS
		4.3%O <sub>2</sub>	7%O <sub>2</sub>			
Particulate Matter	mg/Ncu.m	10.99	9.23	240	240	US EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.7-239-9-8183

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.7-239-9-6419

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

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

3. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. <sup>2/</sup> The assign value in EIA report.

5. <sup>3/</sup> Notification of the Ministry of Natural Resources and Environment B.E.2554.



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

### STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)\_222010\_Cert-Stk/Main  
Branch 6 (Refinery) SAMPLING DATE : 24/05/2022  
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 30/05/2022  
RECEIVED DATE : 30/05/2022 SAMPLE CONDITION : Normal  
REPORT DATE : 16/06/2022 OPERATOR : Mr. Song Hangchawankun  
STACK LOCATION : Main Stack SOURCE DESCRIPTION : Combustion  
FUEL TYPE : Fuel gas and Fuel Oil

#### STACK DESCRIPTION

Height : 140.0 m Gas Velocity : 16.6 m/s  
Diameter : 4.5 m Flow rate<sup>1/</sup> : 8,649 Ncu.m/min  
Temperature : 209 °C Excess Oxygen : 4.3 %

PARAMETER	UNIT	ND Non-detectable	RESULTS		ASSIGN VALUE <sup>2/</sup>	STANDARD <sup>3/</sup>	REFERENCE METHODS
			4.3%O <sub>2</sub>	7%O <sub>2</sub>			
TVOC	ppm	<0.10	1.85	1.55	-	-	US EPA Method 25A
Hydrogen Sulfide	ppm	<0.25	-	ND	60	-	US EPA Method 16
(H <sub>2</sub> S)	ppm	<0.30	ND	-	-	-	

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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3. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. <sup>2/</sup> The assign value in EIA report.

5. <sup>3/</sup> Notification of the Ministry of Natural Resources and Environment B.E.2554.



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

### STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd.	REF. NO.	: PTTGC6 (Refinery)_222010_Cert-Stk/Main
	Branch 6 (Refinery)	SAMPLING DATE	: 24/05/2022
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 30/05/2022-07/06/2022
RECEIVED DATE	: 30/05/2022	SAMPLE CONDITION	: Normal
REPORT DATE	: 16/06/2022	OPERATOR	: Mr. Song Hanghchwankun
STACK LOCATION	: Main Stack	SOURCE DESCRIPTION	: Combustion
FUEL TYPE	: Fuel gas and Fuel Oil		

#### STACK DESCRIPTION

Height	: 140.0 m	Gas Velocity	: 16.6 m/s
Diameter	: 4.5 m	Flow rate <sup>1/</sup>	: 8,649 Nm <sup>3</sup> /min
Temperature	: 209 °C	Excess Oxygen	: 4.3 %

PARAMETER	UNIT	ND	RESULTS		ASSIGN	STANDARD <sup>3/</sup>	REFERENCE
		Non-detectable	4.3%O <sub>2</sub>	7%O <sub>2</sub>	VALUE <sup>2/</sup>		METHODS
Lead	mg/m <sup>3</sup>	<0.02	ND	ND	5.0	5.0	US EPA Method 29
Mercury	mg/m <sup>3</sup>	<0.0003	ND	ND	2.4	2.4	US EPA Method 29

  
(Miss Krisana Chanthoom)

Analyst

REG.NO. 2-239-9-7802

  
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 2-239-9-6419

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

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3. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. <sup>2/</sup> The assign value in EIA report.

5. <sup>3/</sup> Notification of the Ministry of Natural Resources and Environment B.E.2554.

### The Monitoring Result of Emission Concentration

#### Main Stack

#### PTT Global Chemical Public Company Limited

May 24, 2022

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O <sub>2</sub>	Corrected Gas Conc @7% O <sub>2</sub>
1	4.41	4.40	36.09	36.09	30.40
2	4.32	4.31	37.07	37.07	31.06
3	4.34	4.33	37.26	37.26	31.26
Average	4.36	4.35	36.81	36.81	30.91

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O <sub>2</sub>	Corrected Gas Conc @7% O <sub>2</sub>
1	4.41	4.40	21.98	21.95	18.49
2	4.32	4.31	22.94	22.92	19.20
3	4.34	4.33	22.54	22.52	18.89
Average	4.36	4.35	22.49	22.46	18.86

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O <sub>2</sub>	Corrected Gas Conc @7% O <sub>2</sub>
1	4.41	4.40	85.53	85.57	72.09
2	4.32	4.31	84.07	84.11	70.47
3	4.34	4.33	86.12	86.16	72.28
Average	4.36	4.35	85.24	85.28	71.61



**PTT Global Chemical Public Company Limited**  
**EMISSION TEST RESULT**

**Date:** May 24, 2022  
**Start time:** 2:50 PM  
**O<sub>2</sub> instrument Model:** AMI 70  
**NO<sub>x</sub> instrument Model:** API 200 AH  
**SO<sub>2</sub> instrument Model:** API 100 AH  
**CO instrument Model:** THERMO 48 C  
**Fuel Type :** Fuel Gas and Fuel Oil

**Run # : 1**  
**Location :** Main Stack  
**Finish time :** 3:10 PM  
**Serial No.:** 071023-47  
**Serial No.:** 314  
**Serial No.:** 060  
**Serial No.:** 0412106049  
**Test Operator :** Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
2:50 PM	4.49	36.87	21.06	85.38
2:51 PM	4.48	36.74	22.32	86.68
2:52 PM	4.47	35.61	22.32	87.61
2:53 PM	4.44	36.62	22.32	88.26
2:54 PM	4.37	36.85	23.22	88.19
2:55 PM	4.43	36.41	23.22	87.58
2:56 PM	4.45	35.40	23.22	87.32
2:57 PM	4.42	34.68	21.44	87.09
2:58 PM	4.37	34.96	21.44	85.66
2:59 PM	4.40	34.73	21.44	85.08
3:00 PM	4.36	34.36	21.44	84.32
3:01 PM	4.36	34.64	21.44	84.19
3:02 PM	4.42	35.88	21.44	84.71
3:03 PM	4.37	35.95	21.44	84.60
3:04 PM	4.40	36.55	21.44	84.17
3:05 PM	4.47	37.05	21.44	84.87
3:06 PM	4.44	36.55	21.44	84.82
3:07 PM	4.45	36.29	21.92	83.98
3:08 PM	4.35	36.85	22.24	84.21
3:09 PM	4.33	37.40	22.56	84.38
3:10 PM	4.35	37.47	22.72	83.10
<b>Average</b>	4.41	36.09	21.98	85.53

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist

**PTT Global Chemical Public Company Limited**  
**EMISSION TEST RESULT**

**Date:** May 24, 2022  
**Start time:** 3:11 PM  
**O<sub>2</sub> instrument Model:** AMI 70  
**NO<sub>x</sub> instrument Model:** API 200 AH  
**SO<sub>2</sub> instrument Model:** API 100 AH  
**CO instrument Model:** THERMO 48 C  
**Fuel Type :** Fuel Gas and Fuel Oil

**Run # : 2**  
**Location :** Main Stack  
**Finish time :** 3:31 PM  
**Serial No.:** 071023-47  
**Serial No.:** 314  
**Serial No.:** 060  
**Serial No.:** 0412106049  
**Test Operator :** Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
3:11 PM	4.33	37.42	23.04	83.48
3:12 PM	4.33	36.85	23.04	83.30
3:13 PM	4.33	36.71	23.04	83.05
3:14 PM	4.30	36.78	23.20	82.22
3:15 PM	4.30	37.03	23.58	82.37
3:16 PM	4.29	37.17	22.76	82.36
3:17 PM	4.29	36.82	23.20	82.42
3:18 PM	4.30	36.73	23.04	81.82
3:19 PM	4.34	36.92	22.72	93.15
3:20 PM	4.39	37.33	21.92	95.12
3:21 PM	4.45	37.33	22.40	90.38
3:22 PM	4.38	37.42	23.04	81.87
3:23 PM	4.41	37.72	23.04	83.34
3:24 PM	4.41	37.72	23.04	82.18
3:25 PM	4.41	37.01	23.04	82.11
3:26 PM	4.38	36.39	23.04	83.76
3:27 PM	4.35	36.18	23.04	83.60
3:28 PM	4.28	36.92	22.72	82.43
3:29 PM	4.26	37.61	22.72	82.11
3:30 PM	4.17	37.51	23.04	82.16
3:31 PM	4.11	36.82	23.04	82.34
<b>Average</b>	4.32	37.07	22.94	84.07

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist

# PTT Global Chemical Public Company Limited

## EMISSION TEST RESULT

Date: May 24, 2022  
 Start time: 3:32 PM  
 O<sub>2</sub> instrument Model: AMI 70  
 NO<sub>x</sub> instrument Model: API 200 AH  
 SO<sub>2</sub> instrument Model: API 100 AH  
 CO instrument Model: THERMO 48 C  
 Fuel Type: Fuel Gas and Fuel Oil

Run #: 3  
 Location: Main Stack  
 Finish time: 3:52 PM  
 Serial No.: 071023-47  
 Serial No.: 314  
 Serial No.: 060  
 Serial No.: 0412106049  
 Test Operator: Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
3:32 PM	4.26	36.46	23.04	81.91
3:33 PM	4.33	36.71	23.84	82.24
3:34 PM	4.38	36.66	22.72	81.58
3:35 PM	4.37	36.94	23.36	81.11
3:36 PM	4.38	37.65	22.72	81.03
3:37 PM	4.38	38.27	22.24	81.68
3:38 PM	4.39	38.43	23.04	81.19
3:39 PM	4.39	37.74	22.72	80.81
3:40 PM	4.34	37.26	22.72	80.46
3:41 PM	4.35	37.15	21.92	80.25
3:42 PM	4.26	37.24	23.04	80.82
3:43 PM	4.30	37.84	23.04	81.68
3:44 PM	4.27	38.18	22.40	81.48
3:45 PM	4.28	37.77	22.72	81.02
3:46 PM	4.32	37.01	22.24	80.57
3:47 PM	4.32	36.64	22.88	103.34
3:48 PM	4.35	36.98	21.37	101.73
3:49 PM	4.42	36.82	21.43	110.47
3:50 PM	4.39	36.71	21.28	98.34
3:51 PM	4.33	36.92	22.24	92.18
3:52 PM	4.28	37.12	22.41	84.73
Average	4.34	37.26	22.54	86.12

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)\_222010\_Cert-Stk/CRS  
 Branch 6 (Refinery) SAMPLING DATE : 22/06/2022  
 SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 23/06/2022  
 RECEIVED DATE : 23/06/2022 SAMPLE CONDITION : Normal  
 REPORT DATE : 29/06/2022 OPERATOR : Mr. Song Hangchhankun  
 STACK LOCATION : CRS Stack SOURCE DESCRIPTION : Combustion  
 FUEL TYPE : Fuel gas

#### STACK DESCRIPTION

Height : 100 m Gas Velocity : 8.2 m/s  
 Diameter : 1.66 m Flow rate<sup>U</sup> : 671 Ncu.m/min  
 Temperature : 138 °C Excess Oxygen : 4.3 %

PARAMETER	UNIT	ND	RESULTS		STANDARD	REFERENCE METHODS
		Non-detectable	4.3% O <sub>2</sub>	7% O <sub>2</sub>		
TVOC	ppm	<0.10	5.67	4.73	-	US EPA Method 25A

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

Narisra 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. <sup>U</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

**The Monitoring Result of Emission Concentration  
CRS Stack  
PTT Global Chemical Public Company Limited  
June 22, 2022**

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	4.44	4.41	34.34	34.33	28.94
2	4.25	4.22	34.45	34.44	28.70
3	4.16	4.12	33.69	33.68	27.90
<b>Average</b>	<b>4.28</b>	<b>4.25</b>	<b>34.16</b>	<b>34.15</b>	<b>28.51</b>

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	4.44	4.41	0.17	0.15	0.13
2	4.25	4.22	0.20	0.18	0.15
3	4.16	4.12	0.21	0.18	0.15
<b>Average</b>	<b>4.28</b>	<b>4.25</b>	<b>0.19</b>	<b>0.17</b>	<b>0.14</b>

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	4.44	4.41	0.47	0.43	0.36
2	4.25	4.22	0.39	0.36	0.30
3	4.16	4.12	0.38	0.36	0.30
<b>Average</b>	<b>4.28</b>	<b>4.25</b>	<b>0.41</b>	<b>0.38</b>	<b>0.32</b>

**PTT Global Chemical Public Company Limited  
EMISSION TEST RESULT**

Date: June 22, 2022

Start time: 12:20 PM

O<sub>2</sub> instrument Model: AMI 70NO<sub>x</sub> instrument Model: API 200 AHSO<sub>2</sub> instrument Model: API 100 AH

CO instrument Model: THERMO 48 C

Fuel Type : Fuel Gas

Run # : 1

Location : CRS Stack

Finish time : 12:40 PM

Serial No.: 071023-47

Serial No.: 314

Serial No.: 060

Serial No.: 0412106049

Test Operator : Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
12:20 PM	4.73	33.89	0.18	0.42
12:21 PM	4.76	34.84	0.14	0.42
12:22 PM	4.57	34.73	0.14	0.46
12:23 PM	4.58	34.12	0.11	0.42
12:24 PM	4.41	34.06	0.12	0.41
12:25 PM	4.78	34.27	0.14	0.54
12:26 PM	4.65	33.90	0.14	0.47
12:27 PM	4.35	34.94	0.17	0.44
12:28 PM	4.34	35.55	0.17	0.46
12:29 PM	4.43	34.79	0.17	0.57
12:30 PM	4.48	33.87	0.17	0.53
12:31 PM	4.53	33.93	0.19	0.46
12:32 PM	4.53	34.28	0.21	0.40
12:33 PM	4.39	34.82	0.20	0.54
12:34 PM	4.42	34.42	0.20	0.49
12:35 PM	4.14	33.60	0.22	0.53
12:36 PM	4.34	34.06	0.19	0.53
12:37 PM	4.14	34.37	0.21	0.53
12:38 PM	4.30	34.25	0.19	0.44
12:39 PM	4.12	34.44	0.18	0.43
12:40 PM	4.23	34.00	0.18	0.44
<b>Average</b>	<b>4.44</b>	<b>34.34</b>	<b>0.17</b>	<b>0.47</b>

Signature



( Miss Katesarin Vorradetwittaya )

Environmental Scientist

**PTT Global Chemical Public Company Limited**  
**EMISSION TEST RESULT**

**Date:** June 22, 2022  
**Start time:** 12:41 PM  
**O<sub>2</sub> instrument Model:** AMI 70  
**NO<sub>x</sub> instrument Model:** API 200 AH  
**SO<sub>2</sub> instrument Model:** API 100 AH  
**CO instrument Model:** THERMO 48 C  
**Fuel Type :** Fuel Gas

**Run # : 2**  
**Location :** CRS Stack  
**Finish time :** 1:01 PM  
**Serial No.:** 071023-47  
**Serial No.:** 314  
**Serial No.:** 060  
**Serial No.:** 0412106049  
**Test Operator :** Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
12:41 PM	4.29	34.11	0.22	0.43
12:42 PM	4.16	34.37	0.22	0.44
12:43 PM	4.39	34.97	0.19	0.43
12:44 PM	4.42	35.22	0.21	0.50
12:45 PM	4.35	35.62	0.23	0.51
12:46 PM	4.26	34.79	0.19	0.35
12:47 PM	4.04	34.74	0.19	0.38
12:48 PM	4.26	35.02	0.20	0.43
12:49 PM	4.26	34.92	0.20	0.36
12:50 PM	4.06	35.13	0.21	0.41
12:51 PM	4.23	34.44	0.20	0.35
12:52 PM	4.01	33.47	0.20	0.33
12:53 PM	4.07	33.57	0.19	0.35
12:54 PM	4.39	33.42	0.20	0.36
12:55 PM	4.54	34.15	0.22	0.33
12:56 PM	4.35	34.69	0.20	0.33
12:57 PM	4.50	34.59	0.19	0.36
12:58 PM	4.00	34.20	0.19	0.36
12:59 PM	4.16	34.18	0.20	0.43
1:00 PM	4.21	33.85	0.19	0.35
1:01 PM	4.25	34.03	0.19	0.33
<b>Average</b>	4.25	34.45	0.20	0.39

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist

**PTT Global Chemical Public Company Limited**  
**EMISSION TEST RESULT**

**Date:** June 22, 2022  
**Start time:** 1:02 PM  
**O<sub>2</sub> instrument Model:** AMI 70  
**NO<sub>x</sub> instrument Model:** API 200 AH  
**SO<sub>2</sub> instrument Model:** API 100 AH  
**CO instrument Model:** THERMO 48 C  
**Fuel Type :** Fuel Gas

**Run # : 3**  
**Location :** CRS Stack  
**Finish time :** 1:22 PM  
**Serial No.:** 071023-47  
**Serial No.:** 314  
**Serial No.:** 060  
**Serial No.:** 0412106049  
**Test Operator :** Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
1:02 PM	4.20	34.54	0.21	0.45
1:03 PM	4.08	34.53	0.20	0.33
1:04 PM	4.11	33.82	0.18	0.34
1:05 PM	3.96	33.51	0.20	0.34
1:06 PM	4.34	33.54	0.21	0.39
1:07 PM	4.16	33.84	0.20	0.38
1:08 PM	4.17	33.85	0.20	0.34
1:09 PM	3.96	33.79	0.19	0.34
1:10 PM	4.14	33.57	0.17	0.37
1:11 PM	4.24	33.26	0.20	0.34
1:12 PM	4.40	33.45	0.19	0.34
1:13 PM	4.40	33.68	0.20	0.40
1:14 PM	4.27	34.30	0.24	0.39
1:15 PM	4.19	34.31	0.21	0.41
1:16 PM	3.86	33.63	0.22	0.41
1:17 PM	4.06	33.22	0.19	0.44
1:18 PM	4.19	32.76	0.20	0.36
1:19 PM	4.30	33.66	0.22	0.37
1:20 PM	4.15	33.96	0.22	0.37
1:21 PM	4.16	33.79	0.23	0.46
1:22 PM	4.05	32.55	0.25	0.46
<b>Average</b>	4.16	33.69	0.21	0.38

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist



บริษัท ซีคอต จำกัด  
SECOT CO., LTD.

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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)\_222010\_Cert-Stk/HCU  
Branch 6 (Refinery) SAMPLING DATE : 25/05/2022  
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 30/05/2022  
RECEIVED DATE : 30/05/2022 SAMPLE CONDITION : Normal  
REPORT DATE : 16/06/2022 OPERATOR : Mr. Song Hangchhankun  
STACK LOCATION : HCU Stack SOURCE DESCRIPTION : Combustion  
FUEL TYPE : Fuel gas

#### STACK DESCRIPTION

Height : 61.0 m Gas Velocity : 9.5 m/s  
Diameter : 1.7 m Flow rate <sup>1/</sup> : 651 Ncu.m/min  
Temperature : 242 °C Excess Oxygen : 2.2 %

PARAMETER	UNIT	ND	RESULTS		STANDARD	REFERENCE
		Non-detectable	2.2% O <sub>2</sub>	7% O <sub>2</sub>		
TVOC	ppm	<0.10	1.62	1.21	-	US EPA Method 25A

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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

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

3. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

### The Monitoring Result of Emission Concentration HCU Stack PTT Global Chemical Public Company Limited May 25, 2022

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O <sub>2</sub>	Corrected Gas Conc @7% O <sub>2</sub>
1	2.32	2.30	41.90	41.90	31.31
2	2.32	2.30	42.76	42.76	31.96
3	2.08	2.05	42.71	42.71	31.49
Average	2.24	2.22	42.46	42.46	31.59

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O <sub>2</sub>	Corrected Gas Conc @7% O <sub>2</sub>
1	2.32	2.30	0.51	0.49	0.37
2	2.32	2.30	0.53	0.51	0.38
3	2.08	2.05	0.56	0.55	0.41
Average	2.24	2.22	0.53	0.52	0.38

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O <sub>2</sub>	Corrected Gas Conc @7% O <sub>2</sub>
1	2.32	2.30	0.38	0.38	0.28
2	2.32	2.30	0.42	0.41	0.31
3	2.08	2.05	0.42	0.4	0.29
Average	2.24	2.22	0.41	0.40	0.30

# PTT Global Chemical Public Company Limited

## EMISSION TEST RESULT

Date: May 25, 2022

Start time: 12:40 PM

O<sub>2</sub> instrument Model: AMI 70NO<sub>x</sub> instrument Model: API 200 AHSO<sub>2</sub> instrument Model: API 100 AH

CO instrument Model: THERMO 48 C

Fuel Type : Fuel Gas

Run # : 1

Location : HCU Stack

Finish time : 1:00 PM

Serial No.: 071023-47

Serial No.: 314

Serial No.: 060

Serial No.: 0412106049

Test Operator : Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
12:40 PM	2.28	41.72	0.42	0.23
12:41 PM	2.45	41.52	0.35	0.22
12:42 PM	2.41	42.18	0.38	0.35
12:43 PM	2.44	42.43	0.37	0.38
12:44 PM	2.49	41.74	0.50	0.39
12:45 PM	2.28	42.04	0.58	0.39
12:46 PM	2.16	41.39	0.60	0.39
12:47 PM	2.22	41.12	0.59	0.39
12:48 PM	2.34	41.11	0.46	0.39
12:49 PM	2.27	41.51	0.46	0.39
12:50 PM	2.31	41.63	0.48	0.39
12:51 PM	2.31	41.92	0.55	0.39
12:52 PM	2.33	41.92	0.57	0.39
12:53 PM	2.10	41.50	0.62	0.39
12:54 PM	2.28	41.15	0.67	0.39
12:55 PM	2.36	42.55	0.53	0.42
12:56 PM	2.43	42.85	0.49	0.42
12:57 PM	2.39	42.93	0.47	0.42
12:58 PM	2.45	42.52	0.51	0.42
12:59 PM	2.23	42.08	0.51	0.42
1:00 PM	2.21	42.14	0.53	0.39
Average	2.32	41.90	0.51	0.38

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist

# PTT Global Chemical Public Company Limited

## EMISSION TEST RESULT

Date: May 25, 2022

Start time: 1:01 PM

O<sub>2</sub> instrument Model: AMI 70NO<sub>x</sub> instrument Model: API 200 AHSO<sub>2</sub> instrument Model: API 100 AH

CO instrument Model: THERMO 48 C

Fuel Type : Fuel Gas

Run # : 2

Location : HCU Stack

Finish time : 1:21 PM

Serial No.: 071023-47

Serial No.: 314

Serial No.: 060

Serial No.: 0412106049

Test Operator : Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
1:01 PM	2.39	42.44	0.53	0.42
1:02 PM	2.26	42.79	0.51	0.42
1:03 PM	2.46	42.41	0.52	0.39
1:04 PM	2.35	42.84	0.52	0.42
1:05 PM	2.33	42.80	0.52	0.42
1:06 PM	2.40	42.80	0.51	0.42
1:07 PM	2.43	43.06	0.51	0.42
1:08 PM	2.34	42.65	0.54	0.42
1:09 PM	2.41	42.65	0.52	0.42
1:10 PM	2.40	43.13	0.53	0.42
1:11 PM	2.36	43.66	0.53	0.42
1:12 PM	2.35	42.74	0.53	0.42
1:13 PM	2.27	42.27	0.52	0.42
1:14 PM	2.09	42.26	0.54	0.42
1:15 PM	2.15	41.85	0.54	0.42
1:16 PM	2.43	42.83	0.55	0.42
1:17 PM	2.41	43.61	0.55	0.42
1:18 PM	2.27	43.09	0.54	0.42
1:19 PM	2.11	42.62	0.55	0.42
1:20 PM	2.21	42.20	0.53	0.42
1:21 PM	2.26	43.22	0.53	0.42
Average	2.32	42.76	0.53	0.42

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist

# PTT Global Chemical Public Company Limited

## EMISSION TEST RESULT

**Date:** May 25, 2022  
**Start time:** 1:22 PM  
**O<sub>2</sub> instrument Model:** AMI 70  
**NO<sub>x</sub> instrument Model:** API 200 AH  
**SO<sub>2</sub> instrument Model:** API 100 AH  
**CO instrument Model:** THERMO 48 C  
**Fuel Type :** Fuel Gas

**Run # :** 3  
**Location :** HCU Stack  
**Finish time :** 1:42 PM  
**Serial No.:** 071023-47  
**Serial No.:** 314  
**Serial No.:** 060  
**Serial No.:** 0412106049  
**Test Operator :** Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
1:22 PM	2.23	43.41	0.58	0.42
1:23 PM	2.21	42.81	0.55	0.42
1:24 PM	1.99	42.07	0.57	0.32
1:25 PM	2.21	41.68	0.55	0.44
1:26 PM	2.25	42.48	0.56	0.47
1:27 PM	2.17	42.81	0.55	0.42
1:28 PM	2.01	42.37	0.53	0.42
1:29 PM	1.97	42.44	0.58	0.42
1:30 PM	1.96	42.61	0.57	0.42
1:31 PM	2.08	42.88	0.56	0.42
1:32 PM	1.97	43.60	0.55	0.42
1:33 PM	2.07	42.91	0.57	0.42
1:34 PM	2.18	42.90	0.58	0.42
1:35 PM	2.16	43.52	0.57	0.42
1:36 PM	2.02	43.03	0.54	0.42
1:37 PM	2.16	42.83	0.55	0.42
1:38 PM	1.97	43.21	0.56	0.42
1:39 PM	1.98	41.93	0.55	0.42
1:40 PM	2.00	42.04	0.54	0.42
1:41 PM	2.05	42.33	0.58	0.42
1:42 PM	2.14	43.14	0.57	0.42
<b>Average</b>	2.08	42.71	0.56	0.42

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

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### STACK EMISSION ANALYSIS REPORT

**CLIENT NAME :** PTT Global Chemical Public Co., Ltd. **REF. NO. :** PTTGC6 (Refinery)\_222010\_Cert-Stk/HMU  
**Branch 6 (Refinery)** **SAMPLING DATE :** 26/05/2022  
**SAMPLING BY :** SECOT Co., Ltd. **ANALYTICAL DATE :** 30/05/2022  
**RECEIVED DATE :** 30/05/2022 **SAMPLE CONDITION :** Normal  
**REPORT DATE :** 16/06/2022 **OPERATOR :** Mr. Song Hanghehwanun  
**STACK LOCATION :** HMU Stack **SOURCE DESCRIPTION :** Combustion  
**FUEL TYPE :** Fuel gas

#### STACK DESCRIPTION

**Height :** 60.0 m **Gas Velocity :** 13.5 m/s  
**Diameter :** 2.4 m **Flow rate<sup>1/</sup> :** 2,191 Ncu.m/min  
**Temperature :** 173 °C **Excess Oxygen :** 4.8 %

PARAMETER	UNIT	ND	RESULTS		STANDARD	REFERENCE METHODS
		Non-detectable	4.8%O <sub>2</sub>	7%O <sub>2</sub>		
TVOC	ppm	<0.10	6.17	5.33	-	US EPA Method 25A

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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

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

3. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

**The Monitoring Result of Emission Concentration  
HMU Stack  
PTT Global Chemical Public Company Limited  
May 26, 2022**

**PTT Global Chemical Public Company Limited  
EMISSION TEST RESULT**

Date: May 26, 2022  
 Start time: 10:30 AM  
 O<sub>2</sub> instrument Model: AMI 70  
 NO<sub>x</sub> instrument Model: API 200 AH  
 SO<sub>2</sub> instrument Model: API 100 AH  
 CO instrument Model: THERMO 48 C  
 Fuel Type : Fuel Gas

Run # : 1  
 Location : HMU Stack  
 Finish time : 10:50 AM  
 Serial No.: 071023-47  
 Serial No.: 314  
 Serial No.: 060  
 Serial No.: 0412106049  
 Test Operator : Song H.

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O <sub>2</sub>	Corrected Gas Conc @7% O <sub>2</sub>
1	4.75	4.73	27.76	27.75	23.85
2	4.95	4.94	28.53	28.52	24.84
3	4.80	4.80	28.08	28.06	24.23
<b>Average</b>	<b>4.83</b>	<b>4.82</b>	<b>28.12</b>	<b>28.11</b>	<b>24.30</b>

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O <sub>2</sub>	Corrected Gas Conc @7% O <sub>2</sub>
1	4.75	4.73	0.22	0.16	0.14
2	4.95	4.94	0.22	0.17	0.15
3	4.80	4.80	0.21	0.17	0.15
<b>Average</b>	<b>4.83</b>	<b>4.82</b>	<b>0.22</b>	<b>0.17</b>	<b>0.14</b>

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O <sub>2</sub>	Corrected Gas Conc @7% O <sub>2</sub>
1	4.75	4.73	0.61	0.56	0.48
2	4.95	4.94	0.64	0.60	0.52
3	4.80	4.80	0.71	0.68	0.59
<b>Average</b>	<b>4.83</b>	<b>4.82</b>	<b>0.65</b>	<b>0.61</b>	<b>0.53</b>

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
10:30 AM	4.80	26.38	0.21	0.60
10:31 AM	4.63	28.23	0.21	0.60
10:32 AM	4.73	28.08	0.20	0.60
10:33 AM	4.64	27.54	0.23	0.60
10:34 AM	4.82	28.14	0.22	0.61
10:35 AM	4.89	26.96	0.21	0.61
10:36 AM	4.64	27.49	0.22	0.61
10:37 AM	4.97	27.37	0.23	0.61
10:38 AM	4.97	27.21	0.22	0.61
10:39 AM	4.68	29.58	0.20	0.61
10:40 AM	4.76	28.45	0.22	0.61
10:41 AM	4.45	28.66	0.20	0.61
10:42 AM	4.49	28.66	0.23	0.61
10:43 AM	4.61	27.22	0.23	0.61
10:44 AM	4.68	28.15	0.22	0.61
10:45 AM	5.04	26.78	0.22	0.61
10:46 AM	4.67	27.30	0.22	0.61
10:47 AM	4.65	28.18	0.22	0.61
10:48 AM	4.98	26.82	0.22	0.64
10:49 AM	4.71	28.25	0.22	0.61
10:50 AM	5.02	27.55	0.24	0.61
<b>Average</b>	<b>4.75</b>	<b>27.76</b>	<b>0.22</b>	<b>0.61</b>

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



**PTT Global Chemical Public Company Limited**  
**EMISSION TEST RESULT**

**Date:** May 26, 2022  
**Start time:** 10:51 AM  
**O<sub>2</sub> instrument Model:** AMI 70  
**NO<sub>x</sub> instrument Model:** API 200 AH  
**SO<sub>2</sub> instrument Model:** API 100 AH  
**CO instrument Model:** THERMO 48 C  
**Fuel Type :** Fuel Gas

**Run # : 2**  
**Location :** HMU Stack  
**Finish time :** 11:11 AM  
**Serial No.:** 071023-47  
**Serial No.:** 314  
**Serial No.:** 060  
**Serial No.:** 0412106049  
**Test Operator :** Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
10:51 AM	4.94	27.74	0.22	0.61
10:52 AM	4.61	29.57	0.22	0.61
10:53 AM	5.01	28.39	0.23	0.61
10:54 AM	4.58	29.08	0.23	0.61
10:55 AM	5.10	28.51	0.21	0.61
10:56 AM	4.84	27.58	0.22	0.61
10:57 AM	4.85	28.73	0.23	0.61
10:58 AM	5.21	27.90	0.22	0.64
10:59 AM	5.34	28.09	0.22	0.61
11:00 AM	4.89	30.47	0.22	0.60
11:01 AM	5.09	28.75	0.24	0.60
11:02 AM	4.80	29.20	0.22	0.60
11:03 AM	4.96	28.92	0.21	0.60
11:04 AM	4.84	27.69	0.22	0.74
11:05 AM	4.78	28.44	0.23	0.80
11:06 AM	5.22	27.53	0.22	0.60
11:07 AM	4.99	28.37	0.22	0.60
11:08 AM	4.81	29.49	0.22	0.77
11:09 AM	5.24	27.85	0.23	0.74
11:10 AM	4.81	28.75	0.22	0.60
11:11 AM	4.94	28.06	0.22	0.64
<b>Average</b>	4.95	28.53	0.22	0.64

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

**PTT Global Chemical Public Company Limited**  
**EMISSION TEST RESULT**

**Date:** May 26, 2022  
**Start time:** 11:12 AM  
**O<sub>2</sub> instrument Model:** AMI 70  
**NO<sub>x</sub> instrument Model:** API 200 AH  
**SO<sub>2</sub> instrument Model:** API 100 AH  
**CO instrument Model:** THERMO 48 C  
**Fuel Type :** Fuel Gas

**Run # : 3**  
**Location :** HMU Stack  
**Finish time :** 11:32 AM  
**Serial No.:** 071023-47  
**Serial No.:** 314  
**Serial No.:** 060  
**Serial No.:** 0412106049  
**Test Operator :** Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
11:12 AM	5.05	26.94	0.23	0.67
11:13 AM	4.88	28.93	0.22	0.60
11:14 AM	5.04	27.97	0.22	0.74
11:15 AM	4.60	27.78	0.22	0.74
11:16 AM	4.79	28.40	0.23	0.73
11:17 AM	5.00	27.00	0.25	0.74
11:18 AM	4.77	28.02	0.22	0.67
11:19 AM	5.07	28.13	0.21	0.60
11:20 AM	5.01	27.48	0.22	0.80
11:21 AM	4.96	29.65	0.20	0.77
11:22 AM	4.87	29.16	0.21	0.64
11:23 AM	4.80	28.26	0.21	0.80
11:24 AM	4.53	29.17	0.22	0.70
11:25 AM	4.62	27.50	0.21	0.67
11:26 AM	4.36	27.95	0.19	0.70
11:27 AM	4.79	27.52	0.19	0.77
11:28 AM	4.83	27.02	0.21	0.77
11:29 AM	4.52	28.97	0.20	0.60
11:30 AM	4.93	27.75	0.21	0.80
11:31 AM	4.61	27.81	0.20	0.80
11:32 AM	4.72	28.32	0.21	0.67
<b>Average</b>	4.80	28.08	0.21	0.71

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



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

STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)\_222010\_Cert-Stk/DHDS  
Branch 6 (Refinery) SAMPLING DATE : 22/06/2022  
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 23/06/2022  
RECEIVED DATE : 23/06/2022 SAMPLE CONDITION : Normal  
REPORT DATE : 29/06/2022 OPERATOR : Mr. Song Hangchhankun  
STACK LOCATION : DHDS Stack SOURCE DESCRIPTION : Combustion  
FUEL TYPE : Fuel gas

STACK DESCRIPTION

Height : 80.0 m Gas Velocity : 11.7 m/s  
Diameter : 1.2 m Flow rate<sup>1/</sup> : 475 Ncu.m/min  
Temperature : 165 °C Excess Oxygen : 6.7 %

PARAMETER	UNIT	ND	RESULTS		STANDARD	REFERENCE METHODS
		Non-detectable	6.7%O <sub>2</sub>	7%O <sub>2</sub>		
TVOC	ppm	<0.10	3.20	3.12	-	US EPA Method 25A

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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

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

3. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)\_222010\_Cert-Stk/DHDS  
Branch 6 (Refinery) SAMPLING DATE : 22/06/2022  
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 23-29/06/2022  
RECEIVED DATE : 23/06/2022 SAMPLE CONDITION : Normal  
REPORT DATE : 29/06/2022 OPERATOR : Mr. Song Hangchhankun  
STACK LOCATION : DHDS Stack SOURCE DESCRIPTION : Combustion  
FUEL TYPE : Fuel gas

STACK DESCRIPTION

Height : 80.0 m Gas Velocity : 11.7 m/s  
Diameter : 1.2 m Flow rate<sup>1/</sup> : 475 Ncu.m/min  
Temperature : 165 °C Excess Oxygen : 6.7 %

PARAMETER	UNIT	ND	RESULTS		STANDARD	REFERENCE METHODS
		Non-detectable	6.7%O <sub>2</sub>	7%O <sub>2</sub>		
Lead	mg/m <sup>3</sup>	<0.02	ND	ND	-	US EPA Method 29
Mercury	mg/m <sup>3</sup>	<0.0003	ND	ND	-	US EPA Method 29

Krisana Chanthoom

(Miss Krisana Chanthoom)

Analyst

REG.NO. 7-239-ก-7802

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 7-239-ก-6419

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

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

3. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

**The Monitoring Result of Emission Concentration  
DHDS Stack  
PTT Global Chemical Public Company Limited  
June 22, 2022**

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	6.73	6.69	19.34	19.31	18.89
2	6.67	6.64	19.22	19.20	18.72
3	6.64	6.62	19.49	19.47	18.95
<b>Average</b>	<b>6.68</b>	<b>6.65</b>	<b>19.35</b>	<b>19.33</b>	<b>18.85</b>

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	6.73	6.69	0.14	0.11	0.11
2	6.67	6.64	0.16	0.13	0.13
3	6.64	6.62	0.16	0.12	0.12
<b>Average</b>	<b>6.68</b>	<b>6.65</b>	<b>0.15</b>	<b>0.12</b>	<b>0.12</b>

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	6.73	6.69	3.41	3.39	3.32
2	6.67	6.64	2.57	2.55	2.49
3	6.64	6.62	2.68	2.66	2.59
<b>Average</b>	<b>6.68</b>	<b>6.65</b>	<b>2.89</b>	<b>2.87</b>	<b>2.80</b>

**PTT Global Chemical Public Company Limited  
EMISSION TEST RESULT**

Date: June 22, 2022  
 Start time: 4:30 PM  
 O<sub>2</sub> instrument Model: AMI 70  
 NO<sub>x</sub> instrument Model: API 200 AH  
 SO<sub>2</sub> instrument Model: API 100 AH  
 CO instrument Model: THERMO 48 C  
 Fuel Type: Fuel Gas

Run #: 1  
 Location: DHDS Stack  
 Finish time: 4:50 PM  
 Serial No.: 071023-47  
 Serial No.: 314  
 Serial No.: 060  
 Serial No.: 0412106049  
 Test Operator: Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
4:30 PM	6.87	19.25	0.12	3.62
4:31 PM	6.85	19.10	0.28	3.68
4:32 PM	6.75	19.17	0.21	3.44
4:33 PM	6.71	19.61	0.20	3.45
4:34 PM	6.64	19.61	0.16	3.54
4:35 PM	6.70	19.62	0.14	3.54
4:36 PM	6.73	19.48	0.12	3.57
4:37 PM	6.75	19.40	0.11	3.76
4:38 PM	6.72	19.66	0.11	3.11
4:39 PM	6.67	19.44	0.10	3.59
4:40 PM	6.58	19.15	0.10	3.72
4:41 PM	6.58	18.99	0.11	3.44
4:42 PM	6.64	19.09	0.10	3.56
4:43 PM	6.65	19.39	0.11	3.16
4:44 PM	6.91	19.43	0.11	3.33
4:45 PM	6.85	19.40	0.14	3.06
4:46 PM	6.77	19.43	0.11	3.24
4:47 PM	6.76	19.07	0.13	3.41
4:48 PM	6.80	19.37	0.11	3.14
4:49 PM	6.78	19.43	0.14	3.26
4:50 PM	6.67	19.15	0.14	2.93
<b>Average</b>	<b>6.73</b>	<b>19.34</b>	<b>0.14</b>	<b>3.41</b>

Signature 

( Miss Katesarin Vorradetwittaya )

Environmental Scientist

# PTT Global Chemical Public Company Limited

## EMISSION TEST RESULT

Date: June 22, 2022

Start time: 4:51 PM

O<sub>2</sub> instrument Model: AMI 70NO<sub>x</sub> instrument Model: API 200 AHSO<sub>2</sub> instrument Model: API 100 AH

CO instrument Model: THERMO 48 C

Fuel Type : Fuel Gas

Run # : 2

Location : DHDS Stack

Finish time : 5:11 PM

Serial No.: 071023-47

Serial No.: 314

Serial No.: 060

Serial No.: 0412106049

Test Operator : Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
4:51 PM	6.60	19.27	0.14	2.83
4:52 PM	6.60	19.33	0.17	2.61
4:53 PM	6.59	19.45	0.18	2.66
4:54 PM	6.61	19.27	0.19	2.90
4:55 PM	6.59	18.97	0.18	3.13
4:56 PM	6.57	18.97	0.17	3.16
4:57 PM	6.53	19.29	0.18	2.96
4:58 PM	6.53	18.79	0.19	3.00
4:59 PM	6.51	19.05	0.20	2.53
5:00 PM	6.48	19.44	0.19	2.22
5:01 PM	6.81	19.14	0.21	2.42
5:02 PM	6.76	19.26	0.20	2.32
5:03 PM	6.80	19.36	0.19	2.30
5:04 PM	6.87	19.28	0.11	2.22
5:05 PM	6.84	19.32	0.12	2.17
5:06 PM	6.77	19.38	0.11	2.02
5:07 PM	6.71	19.37	0.11	2.08
5:08 PM	6.71	19.02	0.13	2.17
5:09 PM	6.70	19.07	0.11	2.25
5:10 PM	6.78	19.28	0.11	2.94
5:11 PM	6.76	19.33	0.12	3.15
Average	6.67	19.22	0.16	2.57

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist

# PTT Global Chemical Public Company Limited

## EMISSION TEST RESULT

Date: June 22, 2022

Start time: 5:12 PM

O<sub>2</sub> instrument Model: AMI 70NO<sub>x</sub> instrument Model: API 200 AHSO<sub>2</sub> instrument Model: API 100 AH

CO instrument Model: THERMO 48 C

Fuel Type : Fuel Gas

Run # : 3

Location : DHDS Stack

Finish time : 5:32 PM

Serial No.: 071023-47

Serial No.: 314

Serial No.: 060

Serial No.: 0412106049

Test Operator : Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
5:12 PM	6.67	19.40	0.11	2.87
5:13 PM	6.67	19.41	0.11	2.79
5:14 PM	6.68	19.47	0.12	2.72
5:15 PM	6.73	19.21	0.15	3.07
5:16 PM	6.76	19.15	0.14	3.07
5:17 PM	6.67	19.39	0.14	2.95
5:18 PM	6.62	19.54	0.13	2.65
5:19 PM	6.61	19.75	0.15	2.52
5:20 PM	6.69	19.45	0.16	2.95
5:21 PM	6.65	19.21	0.16	2.84
5:22 PM	6.66	19.65	0.16	2.40
5:23 PM	6.63	19.83	0.14	2.42
5:24 PM	6.60	19.63	0.18	2.67
5:25 PM	6.59	19.56	0.17	2.55
5:26 PM	6.65	19.45	0.16	2.60
5:27 PM	6.68	19.21	0.16	2.72
5:28 PM	6.60	19.46	0.16	2.65
5:29 PM	6.54	19.74	0.19	2.29
5:30 PM	6.57	19.82	0.18	2.27
5:31 PM	6.62	19.53	0.20	2.52
5:32 PM	6.64	19.40	0.20	2.66
Average	6.64	19.49	0.16	2.68

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist



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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd.	REF. NO.	: PTTGC6 (Refinery)_222010_Cert-Stk/GT1
	Branch 6 (Refinery)	SAMPLING DATE	: 24/05/2022
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 30-31/05/2022
RECEIVED DATE	: 30/05/2022	SAMPLE CONDITION	: Normal
REPORT DATE	: 07/06/2022	OPERATOR	: Mr. Song Hangchhwankun
STACK LOCATION	: Gas Turbine 1	SOURCE DESCRIPTION	: Combustion
FUEL TYPE	: Natural Gas		

#### STACK DESCRIPTION

Height	: 60.0	m	Gas Velocity	: 19.6	m/s
Diameter	: 2.5	m	Flow rate <sup>1/</sup>	: 3,240	Ncu.m/min
Temperature	: 200	°C	Excess Oxygen	: 12.9	%

PARAMETER	UNIT	RESULTS		STANDARD <sup>2/</sup>	REFERENCE METHODS
		12.9%O <sub>2</sub>	7%O <sub>2</sub>		
Particulate Matter	mg/Ncu.m	3.32	5.77	60.0	US EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.7-239-ท-8183

Man Narisa Poowanapetch

(Miss Narisa Poowanapetch)

Technical Management Team

REG.NO.7-239-ท-6419

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

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

3. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. <sup>2/</sup> Notification of the Ministry of Natural Resources and Environment B.E.2554.

## The Monitoring Result of Emission Concentration GAS Turbine 1 PTT Global Chemical Public Company Limited May 24, 2022

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	12.91	12.91	28.76	28.75	50.02
2	12.89	12.91	27.45	27.44	47.74
3	12.86	12.90	26.99	26.98	46.88
Average	12.88	12.91	27.73	27.72	48.21

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	12.91	12.91	0.38	0.33	0.57
2	12.89	12.91	0.38	0.33	0.57
3	12.86	12.90	0.42	0.38	0.66
Average	12.88	12.91	0.39	0.35	0.60

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	12.91	12.91	60.53	60.55	105.34
2	12.89	12.91	60.41	60.42	105.11
3	12.86	12.90	59.72	59.73	103.78
Average	12.88	12.91	60.22	60.23	104.74

# PTT Global Chemical Public Company Limited

## EMISSION TEST RESULT

Run # : 1

Date: May 24, 2022  
 Start time: 10:30 AM  
 O<sub>2</sub> instrument Model: AMI 70  
 NO<sub>x</sub> instrument Model: API 200 AH  
 SO<sub>2</sub> instrument Model: API 100 AH  
 CO instrument Model: THERMO 48 C  
 Fuel Type : Natural Gas

Location : GAS Turbine 1  
 Finish time : 10:50 AM  
 Serial No.: 071023-47  
 Serial No.: 314  
 Serial No.: 060  
 Serial No.: 0412106049  
 Test Operator : Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
10:30 AM	12.92	29.76	0.28	62.35
10:31 AM	12.94	29.61	0.32	61.88
10:32 AM	12.95	29.10	0.32	63.11
10:33 AM	12.94	28.66	0.26	64.28
10:34 AM	12.94	28.43	0.41	64.91
10:35 AM	12.96	28.25	0.41	64.08
10:36 AM	12.96	28.19	0.41	63.24
10:37 AM	12.94	28.07	0.41	63.04
10:38 AM	12.93	28.35	0.41	62.41
10:39 AM	12.92	28.51	0.43	60.91
10:40 AM	12.93	28.62	0.43	60.24
10:41 AM	12.92	28.33	0.43	59.61
10:42 AM	12.89	28.18	0.43	59.87
10:43 AM	12.88	28.45	0.43	59.90
10:44 AM	12.88	28.61	0.37	60.04
10:45 AM	12.87	28.54	0.36	59.57
10:46 AM	12.86	29.05	0.36	57.20
10:47 AM	12.86	29.46	0.37	55.90
10:48 AM	12.88	29.36	0.37	56.30
10:49 AM	12.88	29.26	0.37	56.40
10:50 AM	12.88	29.17	0.37	55.86
Average	12.91	28.76	0.38	60.53

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist

# PTT Global Chemical Public Company Limited

## EMISSION TEST RESULT

Run # : 2

Date: May 24, 2022  
 Start time: 10:51 AM  
 O<sub>2</sub> instrument Model: AMI 70  
 NO<sub>x</sub> instrument Model: API 200 AH  
 SO<sub>2</sub> instrument Model: API 100 AH  
 CO instrument Model: THERMO 48 C  
 Fuel Type : Natural Gas

Location : GAS Turbine 1  
 Finish time : 11:11 AM  
 Serial No.: 071023-47  
 Serial No.: 314  
 Serial No.: 060  
 Serial No.: 0412106049  
 Test Operator : Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
10:51 AM	12.89	28.95	0.28	56.10
10:52 AM	12.91	28.79	0.28	56.49
10:53 AM	12.92	28.31	0.28	58.79
10:54 AM	12.91	27.36	0.31	60.93
10:55 AM	12.90	27.14	0.42	61.32
10:56 AM	12.90	27.17	0.41	61.26
10:57 AM	12.89	26.86	0.41	63.22
10:58 AM	12.87	27.01	0.40	62.56
10:59 AM	12.88	27.12	0.39	62.39
11:00 AM	12.89	27.22	0.40	61.05
11:01 AM	12.91	27.19	0.41	60.26
11:02 AM	12.89	27.08	0.39	61.02
11:03 AM	12.87	27.19	0.40	61.12
11:04 AM	12.89	27.24	0.41	61.25
11:05 AM	12.92	26.89	0.41	61.95
11:06 AM	12.88	26.95	0.39	60.12
11:07 AM	12.87	27.32	0.41	59.75
11:08 AM	12.86	27.48	0.40	60.09
11:09 AM	12.86	27.68	0.42	60.18
11:10 AM	12.85	27.77	0.40	59.39
11:11 AM	12.86	27.64	0.41	59.32
Average	12.89	27.45	0.38	60.41

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist

# PTT Global Chemical Public Company Limited

## EMISSION TEST RESULT

**Date:** May 24, 2022  
**Start time:** 11:12 AM  
**O<sub>2</sub> instrument Model:** AMI 70  
**NO<sub>x</sub> instrument Model:** API 200 AH  
**SO<sub>2</sub> instrument Model:** API 100 AH  
**CO instrument Model:** THERMO 48 C  
**Fuel Type :** Natural Gas

**Run # :** 3  
**Location :** GAS Turbine 1  
**Finish time :** 11:32 AM  
**Serial No.:** 071023-47  
**Serial No.:** 314  
**Serial No.:** 060  
**Serial No.:** 0412106049  
**Test Operator :** Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
11:12 AM	12.87	27.17	0.40	60.68
11:13 AM	12.88	26.81	0.42	61.75
11:14 AM	12.87	26.79	0.42	61.02
11:15 AM	12.86	27.28	0.42	59.62
11:16 AM	12.86	27.38	0.42	58.45
11:17 AM	12.86	27.11	0.42	58.78
11:18 AM	12.86	27.09	0.42	58.95
11:19 AM	12.84	27.13	0.42	59.75
11:20 AM	12.83	27.22	0.42	59.01
11:21 AM	12.85	27.27	0.40	59.02
11:22 AM	12.87	27.12	0.41	60.02
11:23 AM	12.85	26.76	0.42	61.41
11:24 AM	12.83	26.84	0.42	61.02
11:25 AM	12.85	26.90	0.40	60.31
11:26 AM	12.87	26.76	0.42	59.92
11:27 AM	12.86	26.48	0.42	60.41
11:28 AM	12.84	26.73	0.42	59.51
11:29 AM	12.84	27.28	0.42	58.51
11:30 AM	12.85	27.25	0.43	57.58
11:31 AM	12.88	27.00	0.42	57.84
11:32 AM	12.87	26.42	0.41	60.58
Average	12.86	26.99	0.42	59.72

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

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

### STACK EMISSION ANALYSIS REPORT

**CLIENT NAME :** PTT Global Chemical Public Co., Ltd. **REF. NO. :** PTTGC6 (Refinery)\_222010\_Cert-Stk/GT2  
**Branch 6 (Refinery)** **SAMPLING DATE :** 24/05/2022  
**SAMPLING BY :** SECOT Co., Ltd. **ANALYTICAL DATE :** 30-31/05/2022  
**RECEIVED DATE :** 30/05/2022 **SAMPLE CONDITION :** Normal  
**REPORT DATE :** 07/06/2022 **OPERATOR :** Mr. Song Hanghchwankun  
**STACK LOCATION :** Gas Turbine 2 **SOURCE DESCRIPTION :** Combustion  
**FUEL TYPE :** Natural Gas

### STACK DESCRIPTION

**Height :** 60.0 m **Gas Velocity :** 17.7 m/s  
**Diameter :** 2.5 m **Flow rate <sup>1/</sup> :** 2,926 Ncu.m/min  
**Temperature :** 200 °C **Excess Oxygen :** 13.3 %

PARAMETER	UNIT	RESULTS		STANDARD <sup>2/</sup>	REFERENCE METHODS
		13.3%O <sub>2</sub>	7%O <sub>2</sub>		
Particulate Matter	mg/Ncu.m	2.58	4.75	60.0	US EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO. 7-239-ก-8183

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 7-239-ก-6419

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

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

3. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. <sup>2/</sup> Notification of the Ministry of Natural Resources and Environment B.E.2554.

**The Monitoring Result of Emission Concentration**  
**GAS Turbine 2**  
**PTT Global Chemical Public Company Limited**  
**May 24, 2022**

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	13.32	13.37	16.99	16.97	31.33
2	13.30	13.34	16.78	16.76	30.82
3	13.27	13.30	16.70	16.68	30.51
<b>Average</b>	<b>13.30</b>	<b>13.34</b>	<b>16.83</b>	<b>16.80</b>	<b>30.88</b>

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	13.32	13.37	0.27	0.23	0.42
2	13.30	13.34	0.25	0.20	0.37
3	13.27	13.30	0.24	0.18	0.33
<b>Average</b>	<b>13.30</b>	<b>13.34</b>	<b>0.25</b>	<b>0.20</b>	<b>0.37</b>

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	13.32	13.37	83.24	83.27	153.71
2	13.30	13.34	81.05	81.08	149.08
3	13.27	13.30	79.82	79.86	146.06
<b>Average</b>	<b>13.30</b>	<b>13.34</b>	<b>81.37</b>	<b>81.40</b>	<b>149.60</b>

**PTT Global Chemical Public Company Limited**  
**EMISSION TEST RESULT**

Date: May 24, 2022  
 Start time: 12:20 PM  
 O<sub>2</sub> instrument Model: AMI 70  
 NO<sub>x</sub> instrument Model: API 200 AH  
 SO<sub>2</sub> instrument Model: API 100 AH  
 CO instrument Model: THERMO 48 C  
 Fuel Type : Natural Gas

Run # : 1  
 Location : GAS Turbine 2  
 Finish time : 12:40 PM  
 Serial No.: 071023-47  
 Serial No.: 314  
 Serial No.: 060  
 Serial No.: 0412106049  
 Test Operator : Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
12:20 PM	13.34	17.38	0.28	84.48
12:21 PM	13.27	17.25	0.27	84.60
12:22 PM	13.33	17.34	0.27	84.39
12:23 PM	13.28	17.04	0.27	84.70
12:24 PM	13.29	17.18	0.27	82.12
12:25 PM	13.28	17.23	0.27	82.05
12:26 PM	13.26	17.09	0.27	81.97
12:27 PM	13.32	17.21	0.27	80.88
12:28 PM	13.34	17.00	0.27	84.54
12:29 PM	13.30	16.77	0.27	79.64
12:30 PM	13.26	16.78	0.26	80.15
12:31 PM	13.38	16.81	0.26	82.23
12:32 PM	13.42	17.09	0.26	86.15
12:33 PM	13.47	17.26	0.27	90.79
12:34 PM	13.40	17.02	0.26	90.32
12:35 PM	13.36	16.78	0.26	86.36
12:36 PM	13.28	16.76	0.26	83.39
12:37 PM	13.30	16.65	0.26	79.79
12:38 PM	13.27	16.67	0.26	82.05
12:39 PM	13.23	16.61	0.26	79.66
12:40 PM	13.24	16.94	0.26	77.82
<b>Average</b>	<b>13.32</b>	<b>16.99</b>	<b>0.27</b>	<b>83.24</b>

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist



## PTT Global Chemical Public Company Limited EMISSION TEST RESULT

**Date:** May 24, 2022  
**Start time:** 12:41 PM  
**O<sub>2</sub> instrument Model:** AMI 70  
**NO<sub>x</sub> instrument Model:** API 200 AH  
**SO<sub>2</sub> instrument Model:** API 100 AH  
**CO instrument Model:** THERMO 48 C  
**Fuel Type :** Natural Gas

**Run # : 2**  
**Location :** GAS Turbine 2  
**Finish time :** 1:01 PM  
**Serial No.:** 071023-47  
**Serial No.:** 314  
**Serial No.:** 060  
**Serial No.:** 0412106049  
**Test Operator :** Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
12:41 PM	13.28	16.96	0.25	81.99
12:42 PM	13.31	16.71	0.26	79.82
12:43 PM	13.27	16.55	0.26	81.65
12:44 PM	13.33	16.79	0.26	81.56
12:45 PM	13.27	16.93	0.26	80.92
12:46 PM	13.33	16.85	0.26	79.89
12:47 PM	13.30	16.79	0.26	81.95
12:48 PM	13.30	16.80	0.26	78.52
12:49 PM	13.25	16.85	0.25	77.79
12:50 PM	13.23	16.81	0.25	78.49
12:51 PM	13.24	16.70	0.26	76.89
12:52 PM	13.25	16.96	0.24	76.09
12:53 PM	13.24	16.78	0.26	78.05
12:54 PM	13.30	16.99	0.24	77.35
12:55 PM	13.32	16.86	0.24	82.55
12:56 PM	13.39	16.73	0.26	85.72
12:57 PM	13.39	16.79	0.25	86.89
12:58 PM	13.40	16.76	0.24	87.15
12:59 PM	13.35	16.68	0.25	84.76
1:00 PM	13.30	16.68	0.26	83.39
1:01 PM	13.31	16.47	0.24	80.72
Average	13.30	16.78	0.25	81.05

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist

## PTT Global Chemical Public Company Limited EMISSION TEST RESULT

**Date:** May 24, 2022  
**Start time:** 1:02 PM  
**O<sub>2</sub> instrument Model:** AMI 70  
**NO<sub>x</sub> instrument Model:** API 200 AH  
**SO<sub>2</sub> instrument Model:** API 100 AH  
**CO instrument Model:** THERMO 48 C  
**Fuel Type :** Natural Gas

**Run # : 3**  
**Location :** GAS Turbine 2  
**Finish time :** 1:22 PM  
**Serial No.:** 071023-47  
**Serial No.:** 314  
**Serial No.:** 060  
**Serial No.:** 0412106049  
**Test Operator :** Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
1:02 PM	13.29	16.78	0.23	82.39
1:03 PM	13.29	16.46	0.23	80.38
1:04 PM	13.27	16.71	0.23	80.42
1:05 PM	13.25	16.45	0.25	81.59
1:06 PM	13.25	16.46	0.25	80.42
1:07 PM	13.22	16.37	0.24	77.22
1:08 PM	13.24	16.53	0.26	75.09
1:09 PM	13.20	16.61	0.26	73.69
1:10 PM	13.28	16.83	0.24	77.29
1:11 PM	13.25	16.62	0.24	76.96
1:12 PM	13.27	16.82	0.24	76.32
1:13 PM	13.30	16.66	0.23	76.56
1:14 PM	13.30	16.83	0.23	81.86
1:15 PM	13.30	16.64	0.23	82.69
1:16 PM	13.31	16.58	0.25	83.66
1:17 PM	13.30	16.36	0.23	82.63
1:18 PM	13.31	16.37	0.24	82.66
1:19 PM	13.33	16.56	0.24	83.03
1:20 PM	13.32	16.59	0.23	83.13
1:21 PM	13.21	17.91	0.27	78.75
1:22 PM	13.23	17.66	0.27	79.38
Average	13.27	16.70	0.24	79.82

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist



บริษัท ซีคอต จำกัด  
SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd.	REF. NO.	: PTTGC6 (Refinery)_222010_Cert-Stk/GT3
	Branch 6 (Refinery)	SAMPLING DATE	: 25/05/2022
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 30-31/05/2022
RECEIVED DATE	: 30/05/2022	SAMPLE CONDITION	: Normal
REPORT DATE	: 07/06/2022	OPERATOR	: Mr. Song Hangchewankun
STACK LOCATION	: Gas Turbine 3	SOURCE DESCRIPTION	: Combustion
FUEL TYPE	: Natural Gas		

#### STACK DESCRIPTION

Height	: 60.0	m	Gas Velocity	: 16.9	m/s
Diameter	: 2.5	m	Flow rate <sup>1/</sup>	: 2,934	Ncu.m/min
Temperature	: 187	°C	Excess Oxygen	: 13.3	%

PARAMETER	UNIT	RESULTS		STANDARD <sup>2/</sup>	REFERENCE METHODS
		13.3%O <sub>2</sub>	7%O <sub>2</sub>		
Particulate Matter	mg/Ncu.m	3.78	6.95	60.0	US EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.7-239-ท-8183

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.7-239-ท-6419

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

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

3. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. <sup>2/</sup> Notification of the Ministry of Natural Resources and Environment B.E.2554.

### The Monitoring Result of Emission Concentration GAS Turbine 3 PTT Global Chemical Public Company Limited May 25, 2022

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O <sub>2</sub>	Corrected Gas Conc @7% O <sub>2</sub>
1	11.64	11.69	23.82	23.80	35.92
2	11.62	11.65	23.39	23.37	35.12
3	11.61	11.61	23.26	23.24	34.77
Average	11.63	11.65	23.49	23.47	35.27

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O <sub>2</sub>	Corrected Gas Conc @7% O <sub>2</sub>
1	11.64	11.69	0.16	0.14	0.21
2	11.62	11.65	0.15	0.13	0.20
3	11.61	11.61	0.15	0.13	0.19
Average	11.63	11.65	0.15	0.13	0.20

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O <sub>2</sub>	Corrected Gas Conc @7% O <sub>2</sub>
1	11.64	11.69	63.90	63.91	96.45
2	11.62	11.65	64.59	64.60	97.07
3	11.61	11.61	64.72	64.72	96.84
Average	11.63	11.65	64.40	64.41	96.79

**PTT Global Chemical Public Company Limited**  
**EMISSION TEST RESULT**

**Date:** May 25, 2022  
**Start time:** 10:30 AM  
**O<sub>2</sub> instrument Model:** AMI 70  
**NO<sub>x</sub> instrument Model:** API 200 AH  
**SO<sub>2</sub> instrument Model:** API 100 AH  
**CO instrument Model:** THERMO 48 C  
**Fuel Type :** Natural Gas

**Run # :** 1  
**Location :** GAS Turbine 3  
**Finish time :** 10:50 AM  
**Serial No.:** 071023-47  
**Serial No.:** 314  
**Serial No.:** 060  
**Serial No.:** 0412106049  
**Test Operator :** Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
10:30 AM	11.71	22.96	0.16	65.08
10:31 AM	11.64	22.87	0.16	64.70
10:32 AM	11.62	24.81	0.14	63.63
10:33 AM	11.68	24.39	0.14	64.76
10:34 AM	11.67	24.29	0.15	64.75
10:35 AM	11.66	24.02	0.17	64.76
10:36 AM	11.65	23.72	0.17	65.35
10:37 AM	11.64	23.86	0.16	64.53
10:38 AM	11.60	23.73	0.15	64.10
10:39 AM	11.59	23.63	0.17	62.46
10:40 AM	11.60	24.10	0.19	61.89
10:41 AM	11.57	23.89	0.17	64.01
10:42 AM	11.64	24.00	0.17	63.81
10:43 AM	11.68	23.89	0.16	63.69
10:44 AM	11.76	23.50	0.17	65.65
10:45 AM	11.66	23.49	0.16	64.38
10:46 AM	11.63	23.72	0.16	63.98
10:47 AM	11.57	23.77	0.17	62.06
10:48 AM	11.71	23.84	0.16	62.61
10:49 AM	11.63	23.89	0.17	62.49
10:50 AM	11.61	23.90	0.16	63.14
<b>Average</b>	11.64	23.82	0.16	63.90

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist

**PTT Global Chemical Public Company Limited**  
**EMISSION TEST RESULT**

**Date:** May 25, 2022  
**Start time:** 10:51 AM  
**O<sub>2</sub> instrument Model:** AMI 70  
**NO<sub>x</sub> instrument Model:** API 200 AH  
**SO<sub>2</sub> instrument Model:** API 100 AH  
**CO instrument Model:** THERMO 48 C  
**Fuel Type :** Natural Gas

**Run # :** 2  
**Location :** GAS Turbine 3  
**Finish time :** 11:11 AM  
**Serial No.:** 071023-47  
**Serial No.:** 314  
**Serial No.:** 060  
**Serial No.:** 0412106049  
**Test Operator :** Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
10:51 AM	11.53	23.89	0.17	63.21
10:52 AM	11.59	23.89	0.15	63.06
10:53 AM	11.66	23.65	0.17	64.69
10:54 AM	11.54	23.44	0.15	64.41
10:55 AM	11.52	23.63	0.15	61.36
10:56 AM	11.62	23.55	0.17	64.12
10:57 AM	11.65	23.53	0.15	63.99
10:58 AM	11.67	23.43	0.16	64.74
10:59 AM	11.69	23.31	0.17	64.79
11:00 AM	11.64	23.31	0.16	65.35
11:01 AM	11.56	23.46	0.16	63.53
11:02 AM	11.63	23.47	0.15	63.97
11:03 AM	11.58	23.35	0.16	65.50
11:04 AM	11.67	23.27	0.15	65.75
11:05 AM	11.55	23.12	0.14	65.23
11:06 AM	11.67	23.14	0.14	65.98
11:07 AM	11.58	23.19	0.14	64.67
11:08 AM	11.71	23.21	0.15	65.12
11:09 AM	11.70	23.05	0.14	66.35
11:10 AM	11.62	23.02	0.13	65.88
11:11 AM	11.65	23.35	0.13	64.73
<b>Average</b>	11.62	23.39	0.15	64.59

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist

# PTT Global Chemical Public Company Limited

## EMISSION TEST RESULT

Date: May 25, 2022

Start time: 11:12 AM

O<sub>2</sub> instrument Model: AMI 70NO<sub>x</sub> instrument Model: API 200 AHSO<sub>2</sub> instrument Model: API 100 AH

CO instrument Model: THERMO 48 C

Fuel Type : Natural Gas

Run # : 3

Location : GAS Turbine 3

Finish time : 11:32 AM

Serial No.: 071023-47

Serial No.: 314

Serial No.: 060

Serial No.: 0412106049

Test Operator : Song H.

Time, min	O <sub>2</sub> (%)	NO <sub>x</sub> (ppm)	SO <sub>2</sub> (ppm)	CO (ppm)
11:12 AM	11.68	23.16	0.13	65.60
11:13 AM	11.69	23.19	0.13	65.90
11:14 AM	11.63	23.15	0.15	65.72
11:15 AM	11.54	23.42	0.16	64.25
11:16 AM	11.53	23.39	0.15	64.10
11:17 AM	11.63	23.29	0.16	64.40
11:18 AM	11.64	23.10	0.16	65.42
11:19 AM	11.74	22.96	0.14	66.47
11:20 AM	11.63	23.10	0.13	66.07
11:21 AM	11.65	23.22	0.17	64.57
11:22 AM	11.70	23.10	0.15	66.53
11:23 AM	11.58	23.27	0.13	64.48
11:24 AM	11.54	23.34	0.13	62.05
11:25 AM	11.42	23.51	0.15	61.61
11:26 AM	11.52	23.78	0.16	62.01
11:27 AM	11.49	23.63	0.16	63.20
11:28 AM	11.58	23.50	0.16	62.15
11:29 AM	11.64	23.37	0.16	64.55
11:30 AM	11.71	22.92	0.16	67.28
11:31 AM	11.70	22.94	0.16	67.20
11:32 AM	11.62	23.05	0.15	65.55
Average	11.61	23.26	0.15	64.72

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)\_222010\_Cert-Stk/Scrubber  
 Branch 6 (Refinery) SAMPLING DATE : 27/05/2022  
 SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 30/05/2022  
 RECEIVED DATE : 30/05/2022 SAMPLE CONDITION : Normal  
 REPORT DATE : 16/06/2022 OPERATOR : Mr. Song Hangchewankun  
 STACK LOCATION : Inlet Sulfur Scrubber SOURCE DESCRIPTION : Process

#### STACK DESCRIPTION

Height : 5.0 m Gas Velocity : 2.5 m/s  
 Diameter : 0.6 m Flow rate <sup>1/</sup> : 38.6 Ncu.m/min  
 Temperature : 35.0 °C Excess Oxygen : 20.0 %

PARAMETER	UNIT	ND	RESULTS	STANDARD	REFERENCE
		Non-detectable	Inlet		METHOD
Hydrogen Sulfide (H <sub>2</sub> S)	ppm	<0.30	ND	-	US EPA Method 16

(Miss Sudaporn Soonthorn)

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. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

**The Monitoring Result of Emission Concentration**  
**Sulfur scrubber (Inlet)**  
**PTT Global Chemical Public Company Limited**  
**May 27, 2022**

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)	
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2
1	20.04	20.00	2.96	2.94
2	20.02	20.01	3.48	3.46
3	20.02	20.04	3.76	3.73
<b>Average</b>	<b>20.03</b>	<b>20.02</b>	<b>3.40</b>	<b>3.38</b>

**PTT Global Chemical Public Company Limited**  
**EMISSION TEST RESULT**

Date: May 27, 2022

Start time: 12:10 PM

O<sub>2</sub> instrument Model: AMI 70SO<sub>2</sub> instrument Model: API 100 AH

Fuel Type : -

Run # : 1

Location : Sulfur scrubber (Inlet)

Finish time : 12:30 PM

Serial No.: 071023-47

Serial No.: 060

Test Operator : Song H.

Time, min	O <sub>2</sub> (%)	SO <sub>2</sub> (ppm)
12:10 PM	20.04	2.54
12:11 PM	20.05	2.17
12:12 PM	20.05	2.87
12:13 PM	20.04	2.70
12:14 PM	20.05	2.31
12:15 PM	20.05	2.97
12:16 PM	20.05	3.23
12:17 PM	20.06	2.63
12:18 PM	20.05	2.74
12:19 PM	20.05	2.94
12:20 PM	20.04	2.62
12:21 PM	20.04	3.32
12:22 PM	20.05	3.29
12:23 PM	20.05	2.75
12:24 PM	20.04	3.34
12:25 PM	20.04	3.44
12:26 PM	20.04	2.84
12:27 PM	20.04	3.45
12:28 PM	20.03	3.71
12:29 PM	20.03	2.93
12:30 PM	20.03	3.32
<b>Average</b>	<b>20.04</b>	<b>2.96</b>

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist

**PTT Global Chemical Public Company Limited**  
**EMISSION TEST RESULT**

**Date:** May 27, 2022  
**Start time:** 12:31 PM  
**O<sub>2</sub> instrument Model:** AMI 70  
**SO<sub>2</sub> instrument Model:** API 100 AH  
**Fuel Type :** -

**Run # : 2**  
**Location :** Sulfur scrubber (Inlet)  
**Finish time :** 12:51 PM  
**Serial No.:** 071023-47  
**Serial No.:** 060  
**Test Operator :** Song H.

Time, min	O <sub>2</sub> (%)	SO <sub>2</sub> (ppm)
12:31 PM	20.02	3.27
12:32 PM	20.02	2.95
12:33 PM	20.02	3.60
12:34 PM	20.02	3.25
12:35 PM	20.02	3.20
12:36 PM	20.02	3.59
12:37 PM	20.02	3.03
12:38 PM	20.02	3.41
12:39 PM	20.02	3.84
12:40 PM	20.02	3.83
12:41 PM	20.02	3.01
12:42 PM	20.02	3.45
12:43 PM	20.02	3.37
12:44 PM	20.02	3.17
12:45 PM	20.02	3.94
12:46 PM	20.02	3.97
12:47 PM	20.02	3.22
12:48 PM	20.02	3.72
12:49 PM	20.02	4.12
12:50 PM	20.02	3.61
12:51 PM	20.02	3.44
<b>Average</b>	20.02	3.48

Signature



( Miss Katesarin Vorradetwittaya )

Environmental Scientist

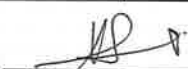
**PTT Global Chemical Public Company Limited**  
**EMISSION TEST RESULT**

**Date:** May 27, 2022  
**Start time:** 12:52 PM  
**O<sub>2</sub> instrument Model:** AMI 70  
**SO<sub>2</sub> instrument Model:** API 100 AH  
**Fuel Type :** -

**Run # : 3**  
**Location :** Sulfur scrubber (Inlet)  
**Finish time :** 1:12 PM  
**Serial No.:** 071023-47  
**Serial No.:** 060  
**Test Operator :** Song H.

Time, min	O <sub>2</sub> (%)	SO <sub>2</sub> (ppm)
12:52 PM	20.02	4.07
12:53 PM	20.02	4.19
12:54 PM	20.02	3.28
12:55 PM	20.02	3.54
12:56 PM	20.02	4.11
12:57 PM	20.02	4.00
12:58 PM	20.02	3.23
12:59 PM	20.02	3.81
1:00 PM	20.02	3.93
1:01 PM	20.02	3.30
1:02 PM	20.02	3.84
1:03 PM	20.02	3.79
1:04 PM	20.02	3.30
1:05 PM	20.02	3.85
1:06 PM	20.02	4.21
1:07 PM	20.02	3.39
1:08 PM	20.02	3.69
1:09 PM	20.02	4.30
1:10 PM	20.02	4.04
1:11 PM	20.02	3.28
1:12 PM	20.02	3.82
<b>Average</b>	20.02	3.76

Signature



( Miss Katesarin Vorradetwittaya )

Environmental Scientist



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

# STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)\_222010\_Cert-Stk/Scrubber  
Branch 6 (Refinery) SAMPLING DATE : 27/05/2022  
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 30/05/2022  
RECEIVED DATE : 30/05/2022 SAMPLE CONDITION : Normal  
REPORT DATE : 16/06/2022 OPERATOR : Mr. Song Hangchwankun  
STACK LOCATION : Out Sulfur Scrubber SOURCE DESCRIPTION : Process

## STACK DESCRIPTION

Height : 5.0 m Gas Velocity : 2.6 m/s  
Diameter : 0.6 m Flow rate <sup>1/</sup> : 38.6 Nm<sup>3</sup>/min  
Temperature : 40.0 °C Excess Oxygen : 20.3 %

PARAMETER	UNIT	ND	RESULTS	STANDARD <sup>2/</sup>	REFERENCE METHOD
		Non-detectable	Outlet		
Hydrogen Sulfide (H <sub>2</sub> S)	ppm	<0.30	ND	60	US EPA Method 16

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpet

(Miss Narisa Poowasanpet)

Technical Management Team

## The Monitoring Result of Emission Concentration Sulfur scrubber (Outlet) PTT Global Chemical Public Company Limited May 27, 2022

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)	
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O <sub>2</sub>
1	20.18	20.18	0.55	0.51
2	20.21	20.24	0.54	0.49
3	20.26	20.33	0.72	0.66
Average	20.21	20.25	0.60	0.55

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

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

3. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. <sup>2/</sup> Notification of the Ministry of Natural Resources and Environment B.E.2554.

**PTT Global Chemical Public Company Limited**  
**EMISSION TEST RESULT**

Date: May 27, 2022 Run # : 1  
 Start time: 12:10 PM Location : Sulfur scrubber (Outlet)  
 O<sub>2</sub> instrument Model: AMI 70 Finish time: 12:30 PM  
 SO<sub>2</sub> instrument Model: API 100 AH Serial No.: 111117-2  
 Fuel Type : - Serial No.: 058  
 Test Operator : Song H.

Time, min	O <sub>2</sub> (%)	SO <sub>2</sub> (ppm)
12:10 PM	20.20	0.68
12:11 PM	20.20	0.32
12:12 PM	20.20	0.28
12:13 PM	20.19	0.24
12:14 PM	20.19	0.58
12:15 PM	20.19	0.79
12:16 PM	20.18	0.39
12:17 PM	20.18	0.46
12:18 PM	20.18	0.39
12:19 PM	20.18	0.32
12:20 PM	20.18	0.41
12:21 PM	20.18	0.63
12:22 PM	20.18	0.63
12:23 PM	20.18	0.72
12:24 PM	20.18	0.77
12:25 PM	20.18	0.84
12:26 PM	20.18	0.89
12:27 PM	20.17	0.57
12:28 PM	20.17	0.57
12:29 PM	20.17	0.52
12:30 PM	20.17	0.52
Average	20.18	0.55

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist

**PTT Global Chemical Public Company Limited**  
**EMISSION TEST RESULT**

Date: May 27, 2022 Run # : 2  
 Start time: 12:31 PM Location : Sulfur scrubber (Outlet)  
 O<sub>2</sub> instrument Model: AMI 70 Finish time: 12:51 PM  
 SO<sub>2</sub> instrument Model: API 100 AH Serial No.: 111117-2  
 Fuel Type : - Serial No.: 058  
 Test Operator : Song H.

Time, min	O <sub>2</sub> (%)	SO <sub>2</sub> (ppm)
12:31 PM	20.17	0.31
12:32 PM	20.17	0.58
12:33 PM	20.17	0.57
12:34 PM	20.17	0.66
12:35 PM	20.17	0.73
12:36 PM	20.18	0.74
12:37 PM	20.18	0.84
12:38 PM	20.19	0.87
12:39 PM	20.19	0.63
12:40 PM	20.20	0.63
12:41 PM	20.15	0.66
12:42 PM	20.22	0.61
12:43 PM	20.23	0.64
12:44 PM	20.24	0.23
12:45 PM	20.24	0.27
12:46 PM	20.24	0.29
12:47 PM	20.24	0.32
12:48 PM	20.24	0.38
12:49 PM	20.25	0.43
12:50 PM	20.25	0.51
12:51 PM	20.25	0.54
Average	20.21	0.54

Signature

( Miss Katesarin Vorradetwittaya )

Environmental Scientist



# PTT Global Chemical Public Company Limited

## EMISSION TEST RESULT

**Date:** May 27, 2022  
**Start time:** 12:52 PM  
**O<sub>2</sub> instrument Model:** AMI 70  
**SO<sub>2</sub> instrument Model:** API 100 AH  
**Fuel Type :** -

**Run # :** 3  
**Location :** Sulfur scrubber (Outlet)  
**Finish time :** 1:12 PM  
**Serial No.:** 111117-2  
**Serial No.:** 058  
**Test Operator :** Song H.

Time, min	O <sub>2</sub> (%)	SO <sub>2</sub> (ppm)
12:52 PM	20.25	0.63
12:53 PM	20.25	0.65
12:54 PM	20.25	0.78
12:55 PM	20.25	0.84
12:56 PM	20.25	0.69
12:57 PM	20.25	0.64
12:58 PM	20.25	0.64
12:59 PM	20.25	0.71
1:00 PM	20.26	0.79
1:01 PM	20.26	0.71
1:02 PM	20.26	0.71
1:03 PM	20.26	0.71
1:04 PM	20.26	0.71
1:05 PM	20.26	0.79
1:06 PM	20.25	0.71
1:07 PM	20.26	0.71
1:08 PM	20.26	0.71
1:09 PM	20.26	0.71
1:10 PM	20.26	0.71
1:11 PM	20.26	0.78
1:12 PM	20.26	0.71
<b>Average</b>	20.26	0.72

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



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### STACK EMISSION ANALYSIS REPORT

**CLIENT NAME :** PTT Global Chemical Public Co., Ltd. **REF. NO. :** PTTGC6 (Refinery)\_222010\_Cert-Stk/VRU RTF  
**Branch 6 (Refinery)**  
**SAMPLING DATE :** 26/05/2022  
**SAMPLING BY :** SECOT Co., Ltd. **ANALYTICAL DATE :** 30/05/2022, 08-09/06/2022  
**RECEIVED DATE :** 30/05/2022 **SAMPLE CONDITION :** Normal  
**REPORT DATE :** 16/06/2022 **OPERATOR :** Mr. Song Hangchhankun  
**STACK LOCATION :** VRU Stack of Tank Farm **SOURCE DESCRIPTION :** Process

PARAMETER	UNIT	ND	RESULT*			STANDARD	REFERENCE METHOD
		Non-detectable	Inlet (V5202)	Outlet (V5204)	Outlet (V5205)		
TVOC as propane	ppm	<0.10	204,925	56.6	39.4	-	US EPA Method
	mg/l	-	370	0.10	0.07	-	25A
Benzene	ppm	<0.06	3,849	ND	ND	-	US EPA Method 18
	mg/l	-	12.3	<0.0002	<0.0002	-	

Signature

(Miss Sudaporn Soonthorn)

Analyst

Signature

(Miss Narisa Poowasanetch)

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



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# STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd.	REF. NO.	: PTTGC6 (Refinery)_222010_Cert-Stk/VRU RTL
	Branch 6 (Refinery)	SAMPLING DATE	: 26/05/2022
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 30/05/2022, 08-09/06/2022
RECEIVED DATE	: 30/05/2022	SAMPLE CONDITION	: Normal
REPORT DATE	: 16/06/2022	OPERATOR	: Mr. Song Hangchhwanun
STACK LOCATION	: VRU Stack of Truck Loading	SOURCE DESCRIPTION	: Process

PARAMETER	UNIT	ND	RESULT*		ASSIGN	STANDARD <sup>2/</sup>	REFERENCE
		Non-detectable	Inlet	Outlet	VALUE <sup>1/</sup>		METHOD
TVOC as propane	ppm	<0.10	86,775	314	-	-	US EPA Method
	mg/l	-	157	0.57	15.0	17.0	25A
Benzene	ppm	<0.06	80.2	10.76	-	-	US EPA Method
	mg/l	-	0.26	0.03	0.21	-	18

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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

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

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

4. <sup>1/</sup> The assign value in EIA report.

5. <sup>2/</sup> Notification of the Ministry of Natural Resources and Environment B.E.2553.

## ระดับเสียง

---



## Noise Monitoring Result : Community Noise

### MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community-1  
SLM Model : RION NL-21  
Site Operator : Mr.Supakit Tamooka

Monitor Period : 23-30 May 2022  
Serial No : 00198274

Calibrator Model : RION NC-74  
Calibration Ref dB(A) : 94.0  
SLM Reading / Adjust dB(A) : 93.9/0.1  
Cal Sheet No.: NC-74-2022-052

Serial No : 34283648  
Certified Date : 24 Dec 2021  
Expire Date : 23 Dec 2022

Time	Equivalent Sound Pressure Level (dB(A))						
	23-24 May 2022	24-25 May 2022	25-26 May 2022	26-27 May 2022	27-28 May 2022	28-29 May 2022	29-30 May 2022
18:00 - 19:00	53.3	54.7	53.6	53.3	54.0	55.6	53.5
19:00 - 20:00	53.4	53.0	52.3	52.5	54.2	55.0	52.3
20:00 - 21:00	53.9	53.1	53.0	52.9	51.5	55.5	53.9
21:00 - 22:00	53.6	53.2	53.3	52.6	52.3	54.0	51.9
22:00 - 23:00	52.6	52.6	52.8	52.7	52.7	54.2	51.4
23:00 - 00:00	52.6	52.4	53.2	53.5	53.3	54.8	52.5
00:00 - 01:00	53.0	52.2	53.6	53.1	52.3	53.9	54.0
01:00 - 02:00	52.5	52.8	53.6	53.1	51.9	54.0	53.9
02:00 - 03:00	52.8	52.7	53.4	53.4	52.1	53.8	54.2
03:00 - 04:00	52.8	52.1	53.4	52.9	52.9	53.5	54.5
04:00 - 05:00	54.2	53.0	53.2	52.6	53.3	53.6	54.4
05:00 - 06:00	54.2	53.2	53.9	54.2	53.1	53.5	53.6
06:00 - 07:00	54.8	54.2	54.5	55.2	54.0	52.9	53.8
07:00 - 08:00	54.3	54.4	54.7	54.8	55.7	53.7	52.9
08:00 - 09:00	54.7	54.0	54.0	54.0	54.6	54.3	52.2
09:00 - 10:00	54.2	54.1	54.7	53.8	54.5	54.3	51.8
10:00 - 11:00	54.3	54.8	54.7	53.6	54.8	53.7	54.7
11:00 - 12:00	55.0	59.5	53.3	53.1	53.5	53.4	62.9
12:00 - 13:00	55.6	54.7	53.4	53.2	54.1	53.6	54.1
13:00 - 14:00	55.4	55.9	58.1	53.9	54.6	53.5	54.4
14:00 - 15:00	54.9	53.8	54.0	53.7	54.4	53.1	54.6
15:00 - 16:00	53.8	55.9	58.2	54.3	53.6	54.1	55.0
16:00 - 17:00	53.7	54.7	53.4	54.4	54.5	54.6	54.2
17:00 - 18:00	54.0	54.2	52.9	54.2	55.2	54.1	54.1

Leq(24)*	54.0	54.3	54.2	53.6	53.8	54.1	54.8
Ldn	59.9	59.6	60.1	59.9	59.5	60.3	60.4
Lmax **	72.3	86.1	73.6	72.8	72.1	79.3	78.4

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

Remark : \* Average time between 18:00-18:00

\*\* Maximum Sound Pressure Level between 18:00-18:00

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Background Noise

### MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community-1  
SLM Model : RION NL-21  
Site Operator : Mr.Supakit Tamooka

Monitor Period : 23-30 May 2022  
Serial No : 00198274

Calibrator Model : RION NC-74  
Calibration Ref dB(A) : 94.0  
SLM Reading / Adjust dB(A) : 93.9/0.1  
Cal Sheet No.: NC-74-2022-052

Serial No : 34283648  
Certified Date : 24 Dec 2021  
Expire Date : 23 Dec 2022

Time	L90 (dB(A))						
	23-24 May 2022	24-25 May 2022	25-26 May 2022	26-27 May 2022	27-28 May 2022	28-29 May 2022	29-30 May 2022
18:00 - 19:00	51.9	52.6	51.4	51.3	52.1	52.5	51.2
19:00 - 20:00	52.3	51.8	51.2	50.3	51.7	52.8	50.9
20:00 - 21:00	52.7	51.9	51.6	51.3	50.2	53.2	51.4
21:00 - 22:00	52.3	51.8	51.8	51.4	51.2	52.4	50.8
22:00 - 23:00	51.5	51.4	51.5	51.6	51.5	52.5	50.2
23:00 - 00:00	51.6	51.3	52.2	52.2	52.0	53.4	51.1
00:00 - 01:00	51.7	51.2	52.6	51.9	51.2	52.7	52.6
01:00 - 02:00	51.4	51.6	52.5	51.8	50.9	52.8	52.8
02:00 - 03:00	51.8	51.8	52.4	52.1	51.0	52.5	53.1
03:00 - 04:00	51.9	51.0	52.3	51.8	51.7	52.3	53.3
04:00 - 05:00	52.2	51.9	52.2	51.5	51.9	52.4	53.4
05:00 - 06:00	52.7	51.8	52.4	52.5	51.9	52.3	52.3
06:00 - 07:00	52.7	52.6	52.7	53.3	52.1	51.9	51.0
07:00 - 08:00	52.6	52.1	52.6	52.8	53.7	52.2	49.7
08:00 - 09:00	53.0	51.9	52.4	51.9	53.0	52.7	49.2
09:00 - 10:00	52.5	52.0	52.1	52.4	52.9	52.7	47.7
10:00 - 11:00	52.2	51.9	52.1	52.1	53.1	52.1	51.1
11:00 - 12:00	52.3	51.3	51.3	51.5	52.2	51.9	51.7
12:00 - 13:00	52.7	51.7	51.3	51.3	52.3	52.0	51.9
13:00 - 14:00	52.5	52.7	52.5	52.2	52.6	51.6	51.7
14:00 - 15:00	52.7	51.3	51.7	52.1	52.5	51.2	52.2
15:00 - 16:00	51.8	52.0	51.7	52.6	53.6	51.6	52.2
16:00 - 17:00	52.1	51.9	51.6	52.4	52.3	52.1	52.1
17:00 - 18:00	52.3	51.6	50.9	52.5	52.3	51.7	51.9
L90(avg)*	52.2	51.8	52.0	52.0	52.2	52.3	51.7

Remark : \* Average time between 18:00-18:00

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Community Noise

### MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community-2  
SLM Model : RION NL-21  
Site Operator : Mr.Supakit Tamooka

Monitor Period : 23-30 May 2022  
Serial No : 00187489

Calibrator Model : RION NC-74  
Calibration Ref dB(A) : 94.0  
SLM Reading / Adjust dB(A) : 93.7/0.3  
Cal Sheet No.: NC-74-2022-052

Serial No : 34283648  
Certified Date : 24 Dec 2021  
Expire Date : 23 Dec 2022

Time	Equivalent Sound Pressure Level (dB(A))						
	23-24 May 2022	24-25 May 2022	25-26 May 2022	26-27 May 2022	27-28 May 2022	28-29 May 2022	29-30 May 2022
18:00 - 19:00	59.8	52.5	52.1	57.1	52.9	51.4	50.9
19:00 - 20:00	44.6	63.1	63.1	50.5	53.6	55.6	50.6
20:00 - 21:00	49.8	45.5	53.4	61.3	51.6	52.9	51.5
21:00 - 22:00	49.4	44.8	49.2	49.4	63.4	66.8	67.2
22:00 - 23:00	49.4	44.3	49.6	49.6	49.8	50.4	50.4
23:00 - 00:00	48.1	44.1	49.6	49.4	49.8	50.6	49.4
00:00 - 01:00	52.5	43.9	49.6	49.3	49.4	50.7	49.5
01:00 - 02:00	63.1	44.2	50.2	49.5	49.4	50.1	49.5
02:00 - 03:00	45.5	44.0	49.9	50.9	49.6	50.8	50.3
03:00 - 04:00	49.4	44.0	50.0	49.5	49.3	50.2	50.1
04:00 - 05:00	49.8	44.4	50.2	50.5	49.4	54.9	54.9
05:00 - 06:00	50.2	63.1	50.5	49.5	49.4	50.0	49.8
06:00 - 07:00	62.4	50.1	64.1	50.0	49.8	49.8	49.2
07:00 - 08:00	62.9	52.6	54.3	62.9	50.2	49.9	49.6
08:00 - 09:00	53.5	51.1	55.0	53.5	62.4	66.6	63.5
09:00 - 10:00	54.9	50.0	52.8	54.9	51.5	51.6	52.6
10:00 - 11:00	54.4	54.2	57.2	54.4	51.9	50.6	51.6
11:00 - 12:00	54.4	55.2	53.9	54.4	52.9	50.3	53.6
12:00 - 13:00	53.4	53.7	53.8	53.4	53.6	50.1	54.9
13:00 - 14:00	53.1	56.0	57.2	60.5	51.9	50.5	54.4
14:00 - 15:00	58.2	53.2	58.8	61.1	53.4	51.3	53.2
15:00 - 16:00	52.1	62.5	54.4	53.6	51.9	53.7	55.0
16:00 - 17:00	49.4	53.1	55.1	58.3	52.6	65.9	53.6
17:00 - 18:00	48.1	54.9	62.1	55.9	52.1	50.6	53.1

Leq(24)*	56.2	55.6	56.7	56.1	54.7	58.3	56.7
Ldn	63.2	60.9	62.4	58.7	57.8	60.5	59.4
Lmax **	73.9	77.8	79.0	80.3	75.5	78.8	77.0

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

Remark : \* Average time between 18:00-18:00

\*\* Maximum Sound Pressure Level between 18:00-18:00

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Background Noise

### MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community-2  
SLM Model : RION NL-21  
Site Operator : Mr.Supakit Tamooka

Monitor Period : 23-30 May 2022  
Serial No : 00187489

Calibrator Model : RION NC-74  
Calibration Ref dB(A) : 94.0  
SLM Reading / Adjust dB(A) : 93.7/0.3  
Cal Sheet No.: NC-74-2022-052

Serial No : 34283648  
Certified Date : 24 Dec 2021  
Expire Date : 23 Dec 2022

Time	L90 (dB(A))						
	23-24 May 2022	24-25 May 2022	25-26 May 2022	26-27 May 2022	27-28 May 2022	28-29 May 2022	29-30 May 2022
18:00 - 19:00	44.6	43.1	49.2	49.7	49.4	49.7	49.1
19:00 - 20:00	42.7	44.4	48.9	49.0	49.4	49.5	49.2
20:00 - 21:00	49.1	44.0	48.7	49.0	48.9	49.7	49.2
21:00 - 22:00	48.9	43.2	48.8	48.6	49.0	49.8	49.0
22:00 - 23:00	48.8	42.9	49.0	48.9	48.9	49.2	48.9
23:00 - 00:00	44.1	42.9	49.0	48.7	49.1	49.5	48.8
00:00 - 01:00	43.1	43.1	49.0	48.6	48.9	49.4	48.8
01:00 - 02:00	44.4	42.9	49.2	48.8	48.8	49.1	48.7
02:00 - 03:00	44.0	42.9	49.1	49.1	48.9	49.5	48.9
03:00 - 04:00	48.8	42.9	49.2	48.8	48.7	49.2	49.2
04:00 - 05:00	49.0	42.8	49.1	48.9	48.6	49.0	49.1
05:00 - 06:00	49.0	43.4	49.2	48.8	48.8	49.0	48.9
06:00 - 07:00	49.8	44.2	49.4	48.7	49.0	48.8	48.4
07:00 - 08:00	49.4	46.2	49.7	49.4	49.0	48.7	48.5
08:00 - 09:00	49.7	45.3	50.7	49.7	49.8	49.3	49.4
09:00 - 10:00	50.5	47.1	50.4	50.5	49.9	49.2	49.7
10:00 - 11:00	50.5	50.9	51.1	50.5	49.8	49.1	49.4
11:00 - 12:00	51.2	51.5	51.4	51.2	50.3	49.0	49.6
12:00 - 13:00	50.7	50.1	50.6	50.7	50.2	43.0	51.7
13:00 - 14:00	49.8	50.7	51.9	50.2	49.7	45.2	51.6
14:00 - 15:00	50.1	50.5	51.9	51.8	49.6	49.0	49.9
15:00 - 16:00	48.5	50.4	51.5	50.7	49.9	48.5	51.2
16:00 - 17:00	47.6	49.8	53.0	50.9	50.1	48.9	50.4
17:00 - 18:00	44.1	49.6	49.7	53.5	49.7	48.8	49.1

L90(avg)*	48.5	47.3	50.2	50.0	49.4	48.9	49.5
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Remark : \* Average time between 18:00-18:00

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Community Noise

### MTR-PTTGC6-Refinery

Location : North of Refinery Monitor Period : 23-30 May 2022  
 SLM Model : RION NL-21 Serial No : 00187511  
 Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : RION NC-74 Serial No : 34283648  
 Calibration Ref dB(A) : 94.0 Certified Date : 24 Dec 2021  
 SLM Reading / Adjust dB(A) : 93.8/0.2 Expire Date : 23 Dec 2022  
 Cal Sheet No.: NC-74-2022-052

Time	Equivalent Sound Pressure Level (dB(A))						
	23-24 May 2022	24-25 May 2022	25-26 May 2022	26-27 May 2022	27-28 May 2022	28-29 May 2022	29-30 May 2022
15:00 - 16:00	70.5	70.9	75.0	68.9	69.0	69.5	72.1
16:00 - 17:00	70.7	70.9	68.8	69.0	69.0	70.0	71.2
17:00 - 18:00	69.6	69.2	68.8	68.8	68.9	69.3	70.1
18:00 - 19:00	69.2	69.5	68.6	68.5	69.1	69.3	71.8
19:00 - 20:00	69.9	69.0	68.7	68.6	68.8	69.2	69.6
20:00 - 21:00	69.0	69.0	69.8	68.2	68.7	69.2	69.1
21:00 - 22:00	69.2	70.4	69.0	68.4	68.6	69.4	69.1
22:00 - 23:00	69.0	69.0	69.5	68.3	68.7	69.3	69.2
23:00 - 00:00	69.3	69.8	69.2	69.3	68.8	69.3	69.4
00:00 - 01:00	69.2	69.8	68.9	68.9	68.8	69.1	69.4
01:00 - 02:00	69.4	69.6	68.8	68.7	68.7	69.1	69.3
02:00 - 03:00	69.0	69.6	68.6	68.6	68.7	69.2	69.3
03:00 - 04:00	69.2	69.8	68.9	68.7	68.9	69.3	69.4
04:00 - 05:00	69.3	69.6	69.4	68.7	69.1	69.4	69.8
05:00 - 06:00	69.6	69.4	69.1	69.8	69.1	69.3	70.9
06:00 - 07:00	69.4	70.1	68.8	69.4	69.2	69.3	69.6
07:00 - 08:00	69.1	69.1	69.0	68.8	69.2	69.2	69.3
08:00 - 09:00	69.3	69.3	69.4	68.9	69.4	69.3	69.5
09:00 - 10:00	69.6	71.0	69.5	69.2	69.5	69.6	69.0
10:00 - 11:00	69.5	69.5	69.2	69.5	69.6	69.6	69.6
11:00 - 12:00	70.0	69.4	69.2	69.1	69.4	69.6	69.6
12:00 - 13:00	70.3	69.3	68.8	69.3	69.2	69.3	69.9
13:00 - 14:00	70.6	69.4	68.8	69.0	69.2	70.5	69.6
14:00 - 15:00	69.8	69.6	68.8	69.0	69.0	72.5	69.6

Leq(24)*	69.6	69.7	69.5	68.9	69.0	69.6	69.9
Ldn	75.8	76.1	75.6	75.4	75.3	75.7	76.1
Lmax **	94.9	94.2	90.9	88.5	81.2	93.8	92.2

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

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

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

(Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

Preeda S.  
 (Miss Preeda Somjai)  
 Technical Management Team



## Noise Monitoring Result : Background Noise

### MTR-PTTGC6-Refinery

Location : North of Refinery Monitor Period : 23-30 May 2022  
 SLM Model : RION NL-21 Serial No : 00187511  
 Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : RION NC-74 Serial No : 34283648  
 Calibration Ref dB(A) : 94.0 Certified Date : 24 Dec 2021  
 SLM Reading / Adjust dB(A) : 93.8/0.2 Expire Date : 23 Dec 2022  
 Cal Sheet No.: NC-74-2022-052

Time	L90 (dB(A))						
	23-24 May 2022	24-25 May 2022	25-26 May 2022	26-27 May 2022	27-28 May 2022	28-29 May 2022	29-30 May 2022
15:00 - 16:00	68.8	68.7	68.6	68.5	68.6	68.9	68.8
16:00 - 17:00	69.0	69.5	68.4	68.4	68.5	68.8	70.1
17:00 - 18:00	68.6	68.6	68.4	68.4	68.5	68.7	69.0
18:00 - 19:00	68.6	68.5	68.3	68.1	68.5	68.8	68.9
19:00 - 20:00	68.6	68.5	68.3	68.1	68.4	68.8	68.8
20:00 - 21:00	68.5	68.5	68.6	67.9	68.2	68.8	68.8
21:00 - 22:00	68.6	68.8	68.6	68.0	68.3	68.9	68.7
22:00 - 23:00	68.6	68.6	68.7	67.9	68.4	69.0	68.8
23:00 - 00:00	68.8	69.2	68.7	68.4	68.5	68.9	69.0
00:00 - 01:00	68.7	69.0	68.4	68.5	68.5	68.8	69.1
01:00 - 02:00	68.9	68.9	68.4	68.4	68.4	68.8	69.0
02:00 - 03:00	68.6	68.8	68.3	68.4	68.4	68.9	69.0
03:00 - 04:00	68.8	69.0	68.6	68.4	68.5	69.0	69.1
04:00 - 05:00	68.8	68.7	68.7	68.4	68.8	69.0	69.4
05:00 - 06:00	68.8	68.7	68.4	68.9	68.7	69.0	69.0
06:00 - 07:00	68.7	68.7	68.4	68.8	68.6	69.0	68.8
07:00 - 08:00	68.7	68.7	68.6	68.5	68.7	68.9	68.8
08:00 - 09:00	68.8	68.8	68.9	68.5	68.8	69.0	68.6
09:00 - 10:00	69.0	69.6	69.0	68.7	68.9	69.1	68.4
10:00 - 11:00	69.0	69.0	68.7	68.8	69.2	69.2	69.2
11:00 - 12:00	69.2	68.9	68.7	68.7	69.0	69.1	69.1
12:00 - 13:00	69.5	68.8	68.4	68.6	68.8	69.0	69.1
13:00 - 14:00	69.6	68.7	68.3	68.4	68.8	68.8	69.1
14:00 - 15:00	68.7	68.7	68.4	68.6	68.7	68.8	69.1

L90(avg)*	68.8	68.8	68.5	68.4	68.6	68.9	69.0
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Remark : \* Average time between 15:00-15:00

(Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

Preeda S.  
 (Miss Preeda Somjai)  
 Technical Management Team

## คุณภาพน้ำทิ้ง

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**บริษัท ซีคอต จำกัด**  
**SECOT CO., LTD.**

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร 10800  
239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND  
TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	0016/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 06/01/2022	SAMPLING TIME	: 14.10
RECEIVED DATE	: 07/01/2022	ANALYTICAL DATE	: 07-14/01/2022
REPORT DATE	: 15/01/2022	SITE OPERATOR	: Mr. Baworn Deechaia
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_January

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า Neutralization Basin	
Flow Rate <sup>1/</sup>	m <sup>3</sup> /hr	-	-	4.3	-
Temperature	°C	2550 B	< 0.5	34.5	-
pH	-	4500-H <sup>+</sup> B	< 0.10	6.96	-
Total Dissolved Solids	mg/l	2540 C	< 50	1,020	-
Total Suspended Solids	mg/l	2540 D	< 5	848	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	111	-
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	33.4	-
Phenols	mg/l	5530 B,D	< 0.10	1.0	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	636	-
COD	mg/l	5220 C	< 15.00	1,746	-
Ammonia Nitrogen	mg/l	4500-NH <sub>3</sub> B,C	< 0.02	34.3	-
Arsenic (As)	mg/l	3114 C	< 0.0001	8.22	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	< 0.01	-
Lead (Pb)	mg/l	3120 B	< 0.008	< 0.03	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0992	-

REFERENCE - STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA APHA WED)

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

*Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

- Remark :**
1. Reported analysis refers to submitted sample only.
  2. This report shall not be reproduced, except in full, without official approval.
  3. <sup>1/</sup> Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)
  4. - Not available.



**บริษัท ซีคอต จำกัด**  
**SECOT CO., LTD.**

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร 10800  
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TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	0016/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 06/01/2022	SAMPLING TIME	: 14.20
RECEIVED DATE	: 07/01/2022	ANALYTICAL DATE	: 07-14/01/2022
REPORT DATE	: 15/01/2022	SITE OPERATOR	: Mr. Baworn Deechaia
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_January

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า CPI	
Flow Rate <sup>1/</sup>	m <sup>3</sup> /hr	-	-	52	-
Temperature	°C	2550 B	< 0.5	44.1	-
pH	-	4500-H <sup>+</sup> B	< 0.10	6.45	-
Total Dissolved Solids	mg/l	2540 C	< 50	498	-
Total Suspended Solids	mg/l	2540 D	< 5	45	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	8.8	-
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	9.8	-
Phenols	mg/l	5530 B,D	< 0.10	2.3	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	244	-
COD	mg/l	5220 C	< 15.00	550	-
Ammonia Nitrogen	mg/l	4500-NH <sub>3</sub> B,C	< 0.02	38.4	-
Arsenic (As)	mg/l	3114 C	< 0.0001	4.89	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0058	-

REFERENCE - STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA APHA WED)

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

*Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

- Remark :**
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  3. <sup>1/</sup> Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)
  4. - Not available.





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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0016/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 06/01/2022	SAMPLING TIME	: 14.00
RECEIVED DATE	: 07/01/2022	ANALYTICAL DATE	: 07-14/01/2022
REPORT DATE	: 15/01/2022	SITE OPERATOR	: Mr. Baworn Decchaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_January

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				น้ำทิ้งหลังผ่านการบำบัด Observation Basin	
Flow Rate <sup>2/</sup>	m <sup>3</sup> /hr			40	
Temperature	°C	2550 B	< 0.5	33.3	≤ 40
pH		4500-H <sup>+</sup> B	< 0.10	7.73	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,950	≤ 39,320 <sup>3/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	ND	≤ 1
Phenols	mg/l	5330 B,C	< 0.001	ND	≤ 1
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	22.78	≤ 120
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.05	
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0670	≤ 0.25
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 0.03
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 0.2
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	

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

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED. 2020.

*Khanchuda Insorn*

(Miss Khanchuda Insorn)

Analyst

REG. NO. 2-239-ก-5976

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3. Notification of the Ministry of Industry, B.E.2560 (2017).

4. Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

5. In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on January 6, 2022 found to be 34,320 mg/l therefore the Standard of TDS found to be 39,320 mg/l).

6. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0016/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 06/01/2022	SAMPLING TIME	: 13.50
RECEIVED DATE	: 07/01/2022	ANALYTICAL DATE	: 07-14/01/2022
REPORT DATE	: 15/01/2022	SITE OPERATOR	: Mr. Baworn Decchaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_January

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				บ่อ LLOD-S	
Temperature	°C	2550 B	< 0.5	32.1	≤ 40
pH		4500-H <sup>+</sup> B	< 0.10	8.34	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,158	≤ 39,320 <sup>3/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	1.0	≤ 20
COD	mg/l	5220 C	< 15.00	< 15.00	≤ 120

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

*Khanchuda Insorn*

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5. - Not available.



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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery)			REQUEST SERVICE No. :	0188/65
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Grab		
SAMPLING DATE	03/02/2022	SAMPLING TIME	09.33		
RECEIVED DATE	04/02/2022	ANALYTICAL DATE	04-11/02/2022		
REPORT DATE	11/02/2022	SITE OPERATOR	Mr. Baworn Deechaiya		
SAMPLE CONDITION	Normal	FILE CODE	222010_WW_February		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า Neutralization Basin	
Flow Rate <sup>1/</sup>	m <sup>3</sup> /hr	-	-	3.10	-
Temperature	°C	2550 B	< 0.5	40.2	-
pH	-	4500-H <sup>+</sup> B	< 0.10	7.09	-
Total Dissolved Solids	mg/l	2540 C	< 50	668	-
Total Suspended Solids	mg/l	2540 D	< 5	194	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	42.5	-
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	6.0	-
Phenols	mg/l	5530 B,D	< 0.10	1.2	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	413	-
COD	mg/l	5220 C	< 15.00	925	-
Ammonia Nitrogen	mg/l	4500-NH <sub>3</sub> B,C	< 0.02	28.6	-
Arsenic (As)	mg/l	3114 C	< 0.0001	3.93	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	< 0.01	-
Lead (Pb)	mg/l	3120 B	< 0.008	< 0.03	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0354	-

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

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-5976

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(Mrs. Araya Tipparuk)

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4. - Not available.



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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery)			REQUEST SERVICE No. :	0188/65
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Grab		
SAMPLING DATE	03/02/2022	SAMPLING TIME	09.58		
RECEIVED DATE	04/02/2022	ANALYTICAL DATE	04-11/02/2022		
REPORT DATE	11/02/2022	SITE OPERATOR	Mr. Baworn Deechaiya		
SAMPLE CONDITION	Normal	FILE CODE	222010_WW_February		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า CPI	
Flow Rate <sup>1/</sup>	m <sup>3</sup> /hr	-	-	57.1	-
Temperature	°C	2550 B	< 0.5	50.6	-
pH	-	4500-H <sup>+</sup> B	< 0.10	6.85	-
Total Dissolved Solids	mg/l	2540 C	< 50	490	-
Total Suspended Solids	mg/l	2540 D	< 5	54	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	19.8	-
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	2.2	-
Phenols	mg/l	5530 B,D	< 0.10	2.4	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	718	-
COD	mg/l	5220 C	< 15.00	896	-
Ammonia Nitrogen	mg/l	4500-NH <sub>3</sub> B,C	< 0.02	38.9	-
Arsenic (As)	mg/l	3114 C	< 0.0001	5.44	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	< 0.03	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0216	-

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

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-5976

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(Mrs. Araya Tipparuk)

Technical Management Team

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4. - Not available.



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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	0188/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 03/02/2022	SAMPLING TIME	: 09.44
RECEIVED DATE	: 04/02/2022	ANALYTICAL DATE	: 04-11/02/2022
REPORT DATE	: 11/02/2022	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_February

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				น้ำทิ้งหลังผ่านการบำบัดที่ Observation Basin	
Flow Rate <sup>2/</sup>	m <sup>3</sup> /hr	-	-	37.7	-
Temperature	°C	2550 B	< 0.5	33.3	≤ 40
pH	-	4500-H <sup>+</sup> B	< 0.10	7.98	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,338	≤ 30,540 <sup>3/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	ND	≤ 1
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	41.90	≤ 120
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.09	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0849	≤ 0.25
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 0.03
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 0.2
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

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

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED. 2020.

*Khemchuda Insom*

(Miss Khemchuda Insom)

Analyst

REG. NO. 2-239-ก-5976

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  4. <sup>2/</sup> Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)
  5. <sup>3/</sup> In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on February 3, 2022 found to be 25,540 mg/l therefore the Standard of TDS found to be 30,540 mg/l).
  6. - Not available.



**บริษัท ซีคอต จำกัด**  
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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	0188/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 03/02/2022	SAMPLING TIME	: 09.14
RECEIVED DATE	: 04/02/2022	ANALYTICAL DATE	: 04-11/02/2022
REPORT DATE	: 11/02/2022	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_February

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				น้ำ LLOD-S	
Temperature	°C	2550 B	< 0.5	31.2	≤ 40
pH	-	4500-H <sup>+</sup> B	< 0.10	7.64	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,104	≤ 30,540 <sup>2/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	2.7	≤ 20
COD	mg/l	5220 C	< 15.00	31.06	≤ 120

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

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(Miss Khemchuda Insom)

Analyst

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  5. - Not available.



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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	0441/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 03/03/2022	SAMPLING TIME	: 09.30
RECEIVED DATE	: 04/03/2022	ANALYTICAL DATE	: 04-11/03/2022
REPORT DATE	: 11/03/2022	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า Neutralization Basin	
Flow Rate <sup>1/</sup>	m <sup>3</sup> /hr	-	-	3.45	-
Temperature	°C	2550 B	< 0.5	45.8	-
pH	-	4500-H <sup>+</sup> B	< 0.10	7.49	-
Total Dissolved Solids	mg/l	2540 C	< 50	834	-
Total Suspended Solids	mg/l	2540 D	< 5	30	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	49.9	-
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	1.1	-
Phenols	mg/l	5530 B,D	< 0.10	1.7	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	228	-
COD	mg/l	5220 C	< 15.00	372	-
Ammonia Nitrogen	mg/l	4500-NH <sub>3</sub> B,C	< 0.02	34.1	-
Arsenic (As)	mg/l	3114 C	< 0.0001	4.35	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	< 0.03	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0180	-

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

*Khernchuda Insorn*

(Miss Khernchuda Insorn)

Analyst

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  4. - Not available.



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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	0441/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 03/03/2022	SAMPLING TIME	: 09.45
RECEIVED DATE	: 04/03/2022	ANALYTICAL DATE	: 04-11/03/2022
REPORT DATE	: 11/03/2022	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า CPI	
Flow Rate <sup>1/</sup>	m <sup>3</sup> /hr	-	-	54.5	-
Temperature	°C	2550 B	< 0.5	47.6	-
pH	-	4500-H <sup>+</sup> B	< 0.10	8.21	-
Total Dissolved Solids	mg/l	2540 C	< 50	926	-
Total Suspended Solids	mg/l	2540 D	< 5	10	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	228	-
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	2.7	-
Phenols	mg/l	5530 B,D	< 0.10	1.7	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	518	-
COD	mg/l	5220 C	< 15.00	605	-
Ammonia Nitrogen	mg/l	4500-NH <sub>3</sub> B,C	< 0.02	38.2	-
Arsenic (As)	mg/l	3114 C	< 0.0001	5.50	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0446	-

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

*Khernchuda Insorn*

(Miss Khernchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

*Araya Tipparuk*

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Technical Management Team

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- Remark :**
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  3. <sup>1/</sup> Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)
  4. - Not available.



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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0441/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 03/03/2022	SAMPLING TIME	: 09.24
RECEIVED DATE	: 04/03/2022	ANALYTICAL DATE	: 04-11/03/2022
REPORT DATE	: 11/03/2022	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				น้ำทิ้งหลังผ่านการบำบัดที่ Observation Basin	
Flow Rate <sup>2/</sup>	m <sup>3</sup> /hr	-	-	70.0	-
Temperature	°C	2550 B	< 0.5	32.1	≤ 40
pH	-	4500-H <sup>+</sup> B	< 0.10	7.93	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,112	< 39,020 <sup>3/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	6	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	ND	≤ 1
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	35.35	≤ 120
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.10	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0973	≤ 0.25
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 0.03
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 0.2
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0005	≤ 0.005
Benzene	μg/l	5030 C / 8260 D	< 0.20	ND	-

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

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED., 2020.

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

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3.<sup>1/</sup> Notification of the Ministry of Industry, B.E.2560 (2017).

4.<sup>2/</sup> Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

5.<sup>3/</sup> In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on March 3, 2022

found to be 34,020 mg/l therefore the Standard of TDS found to be 39,020 mg/l).

6. - Not available.



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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0441/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 03/03/2022	SAMPLING TIME	: 09.00
RECEIVED DATE	: 04/03/2022	ANALYTICAL DATE	: 04-11/03/2022
REPORT DATE	: 11/03/2022	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				น้ำ LLOD-S	
Temperature	°C	2550 B	< 0.5	31.3	≤ 40
pH	-	4500-H <sup>+</sup> B	< 0.10	7.51	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	962	≤ 39,020 <sup>2/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	1.9	≤ 20
COD	mg/l	5220 C	< 15.00	< 15.00	≤ 120

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

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3.<sup>1/</sup> Notification of the Ministry of Industry, B.E.2560 (2017).

4.<sup>2/</sup> In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on March 3, 2022 found to be 34,020 mg/l therefore the Standard of TDS found to be 39,020 mg/l).

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	0754/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/04/2022	SAMPLING TIME	: 10.33
RECEIVED DATE	: 08/04/2022	ANALYTICAL DATE	: 08-19/04/2022
REPORT DATE	: 20/04/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า Neutralization Basin	
Flow Rate <sup>1/</sup>	m <sup>3</sup> /hr	-	-	5.59	-
Temperature	°C	2550 B	< 0.5	41.3	-
pH	-	4500-H <sup>+</sup> B	< 0.10	6.98	-
Total Dissolved Solids	mg/l	2540 C	< 50	1.162	-
Total Suspended Solids	mg/l	2540 D	< 5	112	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	115	-
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	8.7	-
Phenols	mg/l	5530 B,D	< 0.10	1.1	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	310	-
COD	mg/l	5220 C	< 15.00	485	-
Ammonia Nitrogen	mg/l	4500-NH <sub>3</sub> B,C	< 0.02	24.8	-
Arsenic (As)	mg/l	3114 C	< 0.0001	2.52	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0295	-

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>ST</sup> ED 2017 (AWWA APHA WEF)

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Technical Management Team

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4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	0754/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/04/2022	SAMPLING TIME	: 10.48
RECEIVED DATE	: 08/04/2022	ANALYTICAL DATE	: 08-19/04/2022
REPORT DATE	: 20/04/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า CPI	
Flow Rate <sup>1/</sup>	m <sup>3</sup> /hr	-	-	56.0	-
Temperature	°C	2550 B	< 0.5	48.8	-
pH	-	4500-H <sup>+</sup> B	< 0.10	7.57	-
Total Dissolved Solids	mg/l	2540 C	< 50	628	-
Total Suspended Solids	mg/l	2540 D	< 5	14	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	124	-
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	4.5	-
Phenols	mg/l	5530 B,D	< 0.10	2.6	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	427	-
COD	mg/l	5220 C	< 15.00	637	-
Ammonia Nitrogen	mg/l	4500-NH <sub>3</sub> B,C	< 0.02	27.4	-
Arsenic (As)	mg/l	3114 C	< 0.0001	2.65	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0204	-

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>ST</sup> ED 2017 (AWWA APHA WEF)

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3. <sup>1/</sup> Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

4. - Not available.



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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0754/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/04/2022	SAMPLING TIME	: 10.37
RECEIVED DATE	: 08/04/2022	ANALYTICAL DATE	: 08-19/04/2022
REPORT DATE	: 20/04/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				น้ำทิ้งหลังผ่านการบำบัดที่ Observation Basin	
Flow Rate <sup>2/</sup>	m <sup>3</sup> /hr			175	
Temperature	°C	2550 B	< 0.5	33.3	≤ 40
pH		4500-H <sup>+</sup> B	< 0.10	7.76	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,728	≤ 20,900 <sup>3/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	ND	≤ 1
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	< 15.00	≤ 120
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.14	
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0680	≤ 0.25
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 0.03
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 0.2
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA APHA WFP)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED. 2020

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REG. NO. 7-239-ก-5863

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  3. Notification of the Ministry of Industry, B.E.2560 (2017).
  4. <sup>2/</sup> Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)
  5. <sup>3/</sup> In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on April 7, 2022 found to be 15,900 mg/l therefore the Standard of TDS found to be 20,900 mg/l).
  6. - Not available.



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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	0754/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/04/2022	SAMPLING TIME	: 10.03
RECEIVED DATE	: 08/04/2022	ANALYTICAL DATE	: 08-19/04/2022
REPORT DATE	: 20/04/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				บ่อ LLOD-S	
Temperature	°C	2550 B	< 0.5	31.1	≤ 40
pH		4500-H <sup>+</sup> B	< 0.10	7.70	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,336	≤ 20,900 <sup>2/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	8	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	3.1	≤ 20
COD	mg/l	5220 C	< 15.00	26.61	≤ 120

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA APHA WFP)

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

*(Mrs. Araya Tipparuk)*

(Mrs. Araya Tipparuk)

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  5. - Not available.



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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0930/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 05/05/2022	SAMPLING TIME	: 10.35
RECEIVED DATE	: 06/05/2022	ANALYTICAL DATE	: 06-13/05/2022
REPORT DATE	: 17/05/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า Neutralization Basin	
Flow Rate <sup>1/</sup>	m <sup>3</sup> /hr	-	-	2.60	-
Temperature	°C	2550 B	< 0.5	43.5	-
pH	-	4500-H <sup>+</sup> B	< 0.10	6.84	-
Total Dissolved Solids	mg/l	2540 C	< 50	999	-
Total Suspended Solids	mg/l	2540 D	< 5	33	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	63.2	-
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	5.2	-
Phenols	mg/l	5530 B,D	< 0.10	1.6	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	247	-
COD	mg/l	5220 C	< 15.00	420	-
Ammonia Nitrogen	mg/l	4500-NH <sub>3</sub> B,C	< 0.02	34.0	-
Arsenic (As)	mg/l	3114 C	< 0.0001	3.63	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0131	-

REFERENCE - STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2012 (AWWA APHA WEF)

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

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REG. NO. 2-239-ก-5863

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4. - Not available.



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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0930/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 05/05/2022	SAMPLING TIME	: 11.00
RECEIVED DATE	: 06/05/2022	ANALYTICAL DATE	: 06-13/05/2022
REPORT DATE	: 17/05/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า CPI	
Flow Rate <sup>1/</sup>	m <sup>3</sup> /hr	-	-	55.0	-
Temperature	°C	2550 B	< 0.5	44.9	-
pH	-	4500-H <sup>+</sup> B	< 0.10	7.08	-
Total Dissolved Solids	mg/l	2540 C	< 50	716	-
Total Suspended Solids	mg/l	2540 D	< 5	15	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	49.8	-
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	4.7	-
Phenols	mg/l	5530 B,D	< 0.10	1.8	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	427	-
COD	mg/l	5220 C	< 15.00	503	-
Ammonia Nitrogen	mg/l	4500-NH <sub>3</sub> B,C	< 0.02	36.5	-
Arsenic (As)	mg/l	3114 C	< 0.0001	3.05	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0286	-

REFERENCE - STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2012 (AWWA APHA WEF)

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-5976

*Mrs. Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-5863

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

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

3. <sup>1/</sup> Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

4. - Not available.





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**SECOT CO., LTD.**

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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	0930/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 05/05/2022	SAMPLING TIME	: 10.27
RECEIVED DATE	: 06/05/2022	ANALYTICAL DATE	: 06-13/05/2022
REPORT DATE	: 17/05/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				น้ำทิ้งหลังผ่านการบำบัดที่ Observation Basin	
Flow Rate <sup>2/</sup>	m <sup>3</sup> /hr	-	-	50	-
Temperature	°C	2550 B	< 0.5	33.6	≤ 40
pH	-	4500-H <sup>+</sup> B	< 0.10	8.09	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1.731	< 30,020 <sup>3/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	ND	≤ 1
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	33.97	≤ 120
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.05	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0734	≤ 0.25
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 0.03
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 0.2
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

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

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED. 2020.

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

*(Mrs. Araya Tipparuk)*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

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  - 4.<sup>2/</sup> Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)
  - 5.<sup>3/</sup> In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on May 5, 2022 found to be 25,020 mg/l therefore the Standard of TDS found to be 30,020 mg/l).
  6. - Not available.



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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	0930/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 05/05/2022	SAMPLING TIME	: 10.20
RECEIVED DATE	: 06/05/2022	ANALYTICAL DATE	: 06-13/05/2022
REPORT DATE	: 17/05/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				บ่อ LLOD-S	
Temperature	°C	2550 B <sup>+</sup>	< 0.5	30.8	≤ 40
pH	-	4500-H <sup>+</sup> B	< 0.10	7.91	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	950	≤ 30,020 <sup>2/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	1.4	≤ 20
COD	mg/l	5220 C	< 15.00	< 15.00	≤ 120

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

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

*(Mrs. Araya Tipparuk)*

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  - 4.<sup>2/</sup> In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on May 5, 2022 found to be 25,020 mg/l therefore the Standard of TDS found to be 30,020 mg/l).
  4. - Not available.



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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	1200/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/06/2022	SAMPLING TIME	: 09.20
RECEIVED DATE	: 03/06/2022	ANALYTICAL DATE	: 03-10/06/2022
REPORT DATE	: 10/06/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_June

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า Neutralization Basin	
Flow Rate <sup>1/</sup>	m <sup>3</sup> /hr			5	-
Temperature	°C	2550 B	< 0.5	41.2	-
pH		4500-H <sup>+</sup> B	< 0.10	6.81	-
Total Dissolved Solids	mg/l	2540 C	< 50	904	-
Total Suspended Solids	mg/l	2540 D	< 5	20	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	5.1	-
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	0.59	-
Phenols	mg/l	5530 B,D	< 0.10	1.5	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	180	-
COD	mg/l	5220 C	< 15.00	274	-
Ammonia Nitrogen	mg/l	4500-NH <sub>3</sub> B,C	< 0.02	32.9	-
Arsenic (As)	mg/l	3114 C	< 0.0001	3.00	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0083	-

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

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

*Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

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4. - Not available.



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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	1200/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/06/2022	SAMPLING TIME	: 09.45
RECEIVED DATE	: 03/06/2022	ANALYTICAL DATE	: 03-10/06/2022
REPORT DATE	: 10/06/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_June

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า CPI	
Flow Rate <sup>1/</sup>	m <sup>3</sup> /hr			50	-
Temperature	°C	2550 B	< 0.5	43.3	-
pH		4500-H <sup>+</sup> B	< 0.10	6.67	-
Total Dissolved Solids	mg/l	2540 C	< 50	578	-
Total Suspended Solids	mg/l	2540 D	< 5	< 5	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	61.3	-
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	2.0	-
Phenols	mg/l	5530 B,D	< 0.10	2.4	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	401	-
COD	mg/l	5220 C	< 15.00	474	-
Ammonia Nitrogen	mg/l	4500-NH <sub>3</sub> B,C	< 0.02	40.2	-
Arsenic (As)	mg/l	3114 C	< 0.0001	4.28	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0078	-

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

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

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(Mrs. Araya Tipparuk)

Technical Management Team

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4. - Not available.



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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	1200/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/06/2022	SAMPLING TIME	: 09.15
RECEIVED DATE	: 03/06/2022	ANALYTICAL DATE	: 03-10/06/2022
REPORT DATE	: 10/06/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_June

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>U</sup>
				น้ำทิ้งหลังผ่านการบำบัดที่ Observation Basin	
Flow Rate <sup>2/</sup>	m <sup>3</sup> /hr	-	-	-	-
Temperature	°C	2550 B	< 0.5	33.4	≤ 40
pH	-	4500-H <sup>+</sup> B	< 0.10	8.02	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	2,110	≤ 39,220 <sup>3/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	10	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Sulfide as H <sub>2</sub> S	mg/l	4500-S <sup>2-</sup> F	< 0.20	ND	≤ 1
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	25.40	≤ 120
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.02	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0863	≤ 0.25
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 0.03
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 0.2
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0006	≤ 0.005
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

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

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED. 2020

*Khemchuda Insorn*

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Analyst

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4. <sup>2/</sup> Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

5. <sup>3/</sup> In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on June 2, 2022 found to be 34,220 mg/l therefore the Standard of TDS found to be 39,220 mg/l).

6. - Not available.



**บริษัท ซีคอต จำกัด**  
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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	1200/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/06/2022	SAMPLING TIME	: 08.59
RECEIVED DATE	: 03/06/2022	ANALYTICAL DATE	: 03-10/06/2022
REPORT DATE	: 10/06/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_WW_June

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>U</sup>
				บ่อบำบัด LLOD-S	
Temperature	°C	2550 B	< 0.5	32.3	≤ 40
pH	-	4500-H <sup>+</sup> B	< 0.10	7.99	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,180	≤ 39,220 <sup>2/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Fat Oil & Grase	mg/l	5520 B	< 0.50	ND	≤ 5
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	2.2	≤ 20
COD	mg/l	5220 C	< 15.00	19.76	≤ 120

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

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

*(Mrs. Araya Tipparuk)*

(Mrs. Araya Tipparuk)

Technical Management Team

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4. - Not available.

## คุณภาพน้ำทะเล

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**บริษัท ซีคอต จำกัด**  
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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical Public Company Limited	REQUEST SERVICE No.	: 0015/65
	Branch 6 (Refinery)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 15.00
SAMPLING DATE	: 06/01/2022	ANALYTICAL DATE	: 07-14/01/2022
RECEIVED DATE	: 07/01/2022	SITE OPERATOR	: Mr. Aniwat Pimwanna
REPORT DATE	: 15/01/2022	FILE CODE	: 222010_CW_January
SAMPLE CONDITION	: Normal		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	31.3
pH	-	4500-H <sup>+</sup> B	< 0.10	7.98
Total Dissolved Solids	mg/l	2540 C	< 50	34,320
Total Suspended Solids	mg/l	2540 D	< 5	12
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	4.4
COD	mg/l	5220 C	< 15.00	26.57

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

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

*Araya Tipparuk*

(Mrs, Araya Tipparuk)

Technical Management Team

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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical Public Company Limited	REQUEST SERVICE No.	: 0187/65
	Branch 6 (Refinery)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 10.59
SAMPLING DATE	: 03/02/2022	ANALYTICAL DATE	: 04-11/02/2022
RECEIVED DATE	: 04/02/2022	SITE OPERATOR	: Mr. Aniwat Pimwanna
REPORT DATE	: 11/02/2022	FILE CODE	: 222010_CW_February
SAMPLE CONDITION	: Normal		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	33.3
pH	-	4500-H <sup>+</sup> B	< 0.10	8.17
Total Dissolved Solids	mg/l	2540 C	< 50	25,540
Total Suspended Solids	mg/l	2540 D	< 5	28
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	4.9
COD	mg/l	5220 C	< 15.00	34.68

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

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

*Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

**Remark :**

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Company Limited ,	REQUEST SERVICE No.	: 0440/65
	Branch 6 (Refinery)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 10.20
SAMPLING DATE	: 03/03/2022	ANALYTICAL DATE	: 04-11/03/2022
RECEIVED DATE	: 04/03/2022	SITE OPERATOR	: Mr. Aniwat Pimwanna
REPORT DATE	: 11/03/2022	FILE CODE	: 222010_CW_March
SAMPLE CONDITION	: Normal		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	31.2
pH	-	4500-H <sup>+</sup> B	< 0.10	7.87
Total Dissolved Solids	mg/l	2540 C	< 50	34,020
Total Suspended Solids	mg/l	2540 D	< 5	23
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	2.2
COD	mg/l	5220 C	< 15.00	22.17

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

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

*NT*

(Mrs. Araya Tipparuk)

Technical Management Team

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Company Limited ,	REQUEST SERVICE No.	: 0753/65
	Branch 6 (Refinery)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 12.35
SAMPLING DATE	: 07/04/2022	ANALYTICAL DATE	: 08-19/04/2022
RECEIVED DATE	: 08/04/2022	SITE OPERATOR	: Mr. Aniwat Pimwanna
REPORT DATE	: 19/04/2022	FILE CODE	: 222010_CW_April
SAMPLE CONDITION	: Normal		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	34.8
pH	-	4500-H <sup>+</sup> B	< 0.10	8.09
Total Dissolved Solids	mg/l	2540 C	< 50	15,900
Total Suspended Solids	mg/l	2540 D	< 5	84
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	3.0
COD	mg/l	5220 C	< 15.00	28.05

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

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Technical Management Team

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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical Public Company Limited ,	REQUEST SERVICE No.	: 0929/65
	Branch 6 (Refinery)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 11.20
SAMPLING DATE	: 05/05/2022	ANALYTICAL DATE	: 06-13/05/2022
RECEIVED DATE	: 06/05/2022	SITE OPERATOR	: Mr. Aniwat Pimwanna
REPORT DATE	: 13/05/2022	FILE CODE	: 222010_CW_May
SAMPLE CONDITION	: Normal		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION
				จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	31.3
pH	-	4500-H <sup>+</sup> B	< 0.10	8.21
Total Dissolved Solids	mg/l	2540 C	< 50	25,020
Total Suspended Solids	mg/l	2540 D	< 5	46
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	3.3
COD	mg/l	5220 C	< 15.00	40.14

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

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Analyst

*Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

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**WATER AND WASTEWATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical Public Company Limited ,	REQUEST SERVICE No.	: 1199/65
	Branch 6 (Refinery)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 10.30
SAMPLING DATE	: 02/06/2022	ANALYTICAL DATE	: 03-10/06/2022
RECEIVED DATE	: 03/06/2022	SITE OPERATOR	: Mr. Aniwat Pimwanna
REPORT DATE	: 10/06/2022	FILE CODE	: 222010_CW_June
SAMPLE CONDITION	: Normal		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION
				จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	33.7
pH	-	4500-H <sup>+</sup> B	< 0.10	8.21
Total Dissolved Solids	mg/l	2540 C	< 50	34,220
Total Suspended Solids	mg/l	2540 D	< 5	41
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	8.4
COD	mg/l	5220 C	< 15.00	43.75

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

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 04/05/2022	SAMPLING TIME	: 10:23-10:33
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 04,06-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-1	STANDARD <sup>u</sup>
pH	-	4500-H B	< 0.10	6.95	u
Conductivity*	μS/cm	2510 B	< 1.0	267	-
Salinity*	ppt	2520 B	< 0.01	0.1	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0887	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	< 0.01	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 17<sup>th</sup> ED. 2017 (AWWA, APHA, WEF)

*Khemchuda Insorn*

(Miss Khemchuda Insorn)  
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REG. NO. 7-239-R-5976

*Araya Tippiaruk*

(Mrs. Araya Tippiaruk)  
Technical Management Team  
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  3. <sup>u</sup> Notification of the Ministry of Industry, B.E.2559 (2016).
  4. \* Not Registered Department of Industrial Works.
  5. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 04/05/2022	SAMPLING TIME	: 10:51-10:58
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 04,06-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-2	STANDARD <sup>u</sup>
pH	-	4500-H B	< 0.10	6.35	u
Conductivity*	μS/cm	2510 B	< 1.0	497	-
Salinity*	ppt	2520 B	< 0.01	0.2	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	< 0.01	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	0.01	≤ 5.0

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

*Khemchuda Insorn*

(Miss Khemchuda Insorn)  
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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1136/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 26/05/2022	SAMPLING TIME	: 09:38-09:48
RECEIVED DATE	: 27/05/2022	ANALYTICAL DATE	: 27-30/05/2022
REPORT DATE	: 31/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-2	STANDARD <sup>1/</sup>
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0735	≤ 0.1

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA-APHA-WEF)

  
( Miss Krisana Chanthoom )  
Analyst  
REG. NO. 7-239-9-7802

  
(Mrs. Araya Tipparuk)  
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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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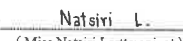
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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 04/05/2022	SAMPLING TIME	: 10:23-10:33, 10:51-10:58
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 06, 09-14/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-1	MW-2	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA-APHA-WEF)

  
( Miss Natsiri Lertterapipat )  
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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 04/05/2022	SAMPLING TIME	: 10:23-10:33, 10:51-10:58
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 06-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-1	MW-2	
<b>Total Petroleum Hydrocarbons</b>						
- TPH (C <sub>7</sub> - C <sub>9</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>10</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>17</sub> - C <sub>21</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED. 2020.

(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 7-239-P-6419

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-P-5863

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 04/05/2022	SAMPLING TIME	: 10:23-10:33, 10:51-10:58
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 05-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>u</sup>
				MW-1	MW-2	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	*
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	*
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	*
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	*

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 7-239-P-6419

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-P-5863

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

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3: <sup>u</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 0949/65  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump  
SAMPLING DATE : 05/05/2022 SAMPLING TIME : 10:04-10:14, 14:17-14:27  
RECEIVED DATE : 07/05/2022 ANALYTICAL DATE : 05/07-09/05/2022  
REPORT DATE : 23/05/2022 SITE OPERATOR : Mr. Watcharakan Pramakhate  
SAMPLE CONDITION : Normal FILE CODE : 222010\_GW\_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-3	MW-4	
pH		4500-H <sup>+</sup> B	< 0.10	6.68	6.90	1/
Conductivity*	µS/cm	2510 B	< 1.0	480	592	
Salinity*	ppt	2520 B	< 0.01	0.2	0.3	
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0654	0.0982	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	< 0.03	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	< 0.01	< 0.01	≤ 5.0

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

*Khemchuda Insorn*

(Miss Khemchuda Insorn)  
Analyst  
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  4. \* Not Registered Department of Industrial Works.
  5. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 0949/65  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump  
SAMPLING DATE : 05/05/2022 SAMPLING TIME : 10:04-10:14, 14:17-14:27  
RECEIVED DATE : 07/05/2022 ANALYTICAL DATE : 09-10, 12-14/05/2022  
REPORT DATE : 23/05/2022 SITE OPERATOR : Mr. Watcharakan Pramakhate  
SAMPLE CONDITION : Normal FILE CODE : 222010\_GW\_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-3	MW-4	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

*Natsiri L.*

(Miss Natsiri Lertterapipat)  
Analyst  
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*Araya Tipparuk*

(Mrs. Araya Tipparuk)  
Technical Management Team  
REG. NO. 7-239-n-5863

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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No : 0949/65				
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Pneumatic Bladder Pump		
SAMPLING DATE	05/05/2022	SAMPLING TIME	10:04-10:14, 14:17-14:27		
RECEIVED DATE	07/05/2022	ANALYTICAL DATE	11-12/05/2022		
REPORT DATE	23/05/2022	SITE OPERATOR	Mr. Watcharakan Pramakhate		
SAMPLE CONDITION	Normal	FILE CODE	222010_GW_May		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-3	MW-4	
Total Petroleum Hydrocarbons						
- TPH (C <sub>7</sub> - C <sub>6</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>&gt; 8</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>&gt; 16</sub> - C <sub>32</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane <sup>1</sup>						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED. 2020.

*Maim Poowasanetch*

(Miss Narisa Poowasanetch)

Analyst

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Technical Management Team

REG. NO. 2-239-ก-5863

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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No : 0949/65				
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Pneumatic Bladder Pump		
SAMPLING DATE	05/05/2022	SAMPLING TIME	10:04-10:14, 14:17-14:27		
RECEIVED DATE	07/05/2022	ANALYTICAL DATE	10-11, 18-19/05/2022		
REPORT DATE	23/05/2022	SITE OPERATOR	Mr. Watcharakan Pramakhate		
SAMPLE CONDITION	Normal	FILE CODE	222010_GW_May		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-3	MW-4	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	*
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.4
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.4
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	*
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	*
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	*

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

*Maim Poowasanetch*

(Miss Narisa Poowasanetch)

Analyst

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0949/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/05/2022	SAMPLING TIME	: 09:38-09:46, 09:07-09:16
RECEIVED DATE	: 07/05/2022	ANALYTICAL DATE	: 05/07-09/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-5	MW-6	
pH	*	4500-H <sup>+</sup> B	< 0.10	7.08	6.44	M
Conductivity*	µS/cm	2510 B	< 1.0	801	2,194	
Salinity*	ppt	2520 B	< 0.01	0.4	1.3	
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0693	0.0430	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	< 0.03	< 0.03	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	< 0.01	< 0.01	≤ 5.0

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

*Khemchuda Insom*

(Miss Khemchuda Insom)

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Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0949/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/05/2022	SAMPLING TIME	: 09:38-09:46, 09:07-09:16
RECEIVED DATE	: 07/05/2022	ANALYTICAL DATE	: 09-10, 12-14/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-5	MW-6	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

*Natsiri L.*

(Miss Natsiri Lertterapipat)

Analyst

REG. NO. 7-239-N-0001

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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0949/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/05/2022	SAMPLING TIME	: 09:38-09:46, 09:07-09:16
RECEIVED DATE	: 07/05/2022	ANALYTICAL DATE	: 11-12/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD <sup>U</sup>
		METHODS	(non-detectable)	MW-5	MW-6	
Total Petroleum Hydrocarbons						
- TPH (C <sub>7</sub> - C <sub>9</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>10</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>17</sub> - C <sub>27</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 1<sup>st</sup> ED. 2000

(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 2-239-ก-6419

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-5863

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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0949/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/05/2022	SAMPLING TIME	: 09:38-09:46, 09:07-09:16
RECEIVED DATE	: 07/05/2022	ANALYTICAL DATE	: 10-11, 18-19/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-5	MW-6	
alpha-BHC	mg/l	6630 B	< 0.00001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

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

(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 2-239-ก-6419

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-5863

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3. <sup>U</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 04/05/2022	SAMPLING TIME	: 09:55-10:04, 14:23-14:33
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 04.06-10/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-7	MW-8	
pH		4500-H <sup>+</sup> B	< 0.10	7.01	7.08	4 <sup>U</sup>
Conductivity*	µS/cm	2510 B	< 1.0	1.156	1.057	-
Salinity*	ppt	2520 B	< 0.01	0.7	0.6	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0508	0.0353	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	< 0.03	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

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

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  4. \* Not Registered Department of Industrial Works.
  5. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 04/05/2022	SAMPLING TIME	: 09:55-10:04, 14:23-14:33
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 06.09-14/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-7	MW-8	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

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## GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 04/05/2022	SAMPLING TIME	: 09:55-10:04, 14:23-14:33
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 06-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-7	MW-8	
<b>Total Petroleum Hydrocarbons</b>						
- TPH (C <sub>5</sub> - C <sub>9</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>7-8</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>7-16</sub> - C <sub>35</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

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(Miss Narisa Poowasanpetch)

Analyst

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Technical Management Team

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## GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 04/05/2022	SAMPLING TIME	: 09:55-10:04, 14:23-14:33
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 05-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-7	MW-8	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	

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

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0882/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 25/04/2022	SAMPLING TIME	: 10.50-11.01, 11.22-11.32
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 25.28-29/04/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-9	MW-11	
pH	*	4500-H <sup>+</sup> B	< 0.10	7.35	7.76	1/
Conductivity*	µS/cm	2510 B	< 1.0	1.339	511	1/
Salinity*	ppt	2520 B	< 0.01	0.8	0.2	1/
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0036	0.0035	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	< 0.03	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

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

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0882/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 25/04/2022	SAMPLING TIME	: 10.50-11.01, 11.22-11.32
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 28-29/04/2022, 05-06/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-9	MW-11	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0882/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 25/04/2022	SAMPLING TIME	: 10.50-11.01, 11.22-11.32
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 05-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-9	MW-11	
<b>Total Petroleum Hydrocarbons</b>						
- TPH (C <sub>5</sub> - C <sub>9</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>10</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>17</sub> - C <sub>32</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

*Naim Poowasanpetch*

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Analyst

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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0882/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 25/04/2022	SAMPLING TIME	: 10.50-11.01, 11.22-11.32
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 04-07/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-9	MW-11	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	*
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	*
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	*
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	*

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

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Analyst

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REG. NO. 7-239-5863

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3. <sup>U</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.



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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 03/05/2022	SAMPLING TIME	: 15:12-15:20, 14:46-14:55
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 03,06-10/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITI	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-10	MW-12	
pH	-	4500-H <sup>+</sup> B	< 0.10	7.58	7.73	M
Conductivity*	µS/cm	2510 B	< 1.0	1,425	1,804	-
Salinity*	ppt	2520 B	< 0.01	0.8	1.1	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0014	0.0079	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE - STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA APHA, WEF)

(Miss Khemchuda Insorn)

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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. \* Not Registered Department of Industrial Works.

5. - Not available.



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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 03/05/2022	SAMPLING TIME	: 15:12-15:20, 14:46-14:55
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 06, 09-14/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-10	MW-12	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE - STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA APHA, WEF)

(Miss Natsiri Lertterapipat)

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4. - Not available.



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## GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 03/05/2022	SAMPLING TIME	: 15:12-15:20, 14:46-14:55
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 06-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-10	MW-12	
Total Petroleum Hydrocarbons						
- TPH (C <sub>5</sub> - C <sub>6</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>8</sub> - C <sub>12</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>10</sub> - C <sub>20</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetraatriacontane						
- Pentatriacontane						

REFERENCE : US EPA SW846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 1<sup>st</sup> ED. 2010.

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## GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 03/05/2022	SAMPLING TIME	: 15:12-15:20, 14:46-14:55
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 05-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-10	MW-12	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2011 (APHA, AWWA, WEF)

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3. <sup>U</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0882/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 25/04/2022	SAMPLING TIME	: 11.52-12.01, 14.43-14.53
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 25.28-29/04/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-13	MW-15	
pH	-	4500-H <sup>+</sup> B	< 0.10	7.80	7.61	U
Conductivity*	µS/cm	2510 B	< 1.0	413	1.062	-
Salinity*	ppt	2520 B	< 0.01	0.2	0.6	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0028	< 0.0005	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

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

*Khemchuda Insom*

(Miss Khemchuda Insom)

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  4. \* Not Registered Department of Industrial Works.
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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0882/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 25/04/2022	SAMPLING TIME	: 11.52-12.01, 14.43-14.53
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 28-29/04/2022, 05-06/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-13	MW-15	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 22<sup>nd</sup> ED. 2017 (AWWA, APHA, WEF)

*Natsiri L.*

(Miss Natsiri Lertterapipat)

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## GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0882/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 25/04/2022	SAMPLING TIME	: 11.52-12.01, 14.43-14.53
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 05-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1)</sup>
				MW-13	MW-15	
<b>Total Petroleum Hydrocarbons</b>						
- TPH (C <sub>5</sub> - C <sub>9</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>9</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>16</sub> - C <sub>35</sub> )	mg/l	3510 C / 8015 D	< 0,050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE. 3<sup>rd</sup> ED. 2020.

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Technical Management Team

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## GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0882/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 25/04/2022	SAMPLING TIME	: 11.52-12.01, 14.43-14.53
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 04-07/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1)</sup>
				MW-13	MW-15	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

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

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(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 7-239-ก-6419

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Technical Management Team

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  4. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 03/05/2022	SAMPLING TIME	: 11:16-11:25, 10:47-10:58
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 03.06-10/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-14	MW-16	
pH	-	4500-H <sup>+</sup> B	< 0.10	7.88	7.92	U
Conductivity*	μS/cm	2510 B	< 1.0	1,960	358	-
Salinity*	ppt	2520 B	< 0.01	1.2	0.1	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0046	0.0039	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA-APHA-WEF)

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

*Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

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

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3. <sup>U</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. \* Not Registered Department of Industrial Works.

5. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 03/05/2022	SAMPLING TIME	: 11:16-11:25, 10:47-10:58
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 06, 09-14/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-14	MW-16	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA-APHA-WEF)

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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 03/05/2022	SAMPLING TIME	: 11:16-11:25, 10:47-10:58
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 06-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD <sup>U</sup>
		METHODS	(non-detectable)	MW-14	MW-16	
Total Petroleum Hydrocarbons						
- TPH (C <sub>7</sub> - C <sub>9</sub> )	mg/l	5030 C / 8260 D	< 0,003	ND	ND	≤ 1,4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>10</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0,025	ND	ND	≤ 1,7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>17</sub> - C <sub>33</sub> )	mg/l	3510 C / 8015 D	< 0,050	ND	ND	≤ 0,1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED. 2020.

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(Miss Narisa Poowasanpetch)

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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0923/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 03/05/2022	SAMPLING TIME	: 11:16-11:25, 10:47-10:58
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 05-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>u</sup>
				MW-14	MW-16	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	

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

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(Miss Narisa Poowasanpetch)

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0882/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 25/26/04/2022	SAMPLING TIME	: 15.10-15.20, 09.35-09.47
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 25/28-29/04/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITI	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-17	MW-19	
pH		4500-H <sup>+</sup> B	< 0.10	7.94	7.84	✓
Conductivity*	µS/cm	2510 B	< 1.0	334	334	✓
Salinity*	ppt	2520 B	< 0.01	0.1	0.1	✓
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0053	0.0007	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	< 0.03	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 19<sup>th</sup> ED. 2012 (AWWA APHA WEF)

( Miss Khemchuda Insorn )

Analyst

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Technical Management Team

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4. \* Not Registered Department of Industrial Works.

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0882/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 25/26/04/2022	SAMPLING TIME	: 15.10-15.20, 09.35-09.47
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 28-29/04/2022, 05-06/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-17	MW-19	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 19<sup>th</sup> ED. 2012 (AWWA APHA WEF)

( Miss Natsiri Lertterapipat )

Analyst

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0882/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 25/26/04/2022	SAMPLING TIME	: 15.10-15.20, 09.35-09.47
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 05-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD <sup>1)</sup>
		METHODS	(non-detectable)	MW-17	MW-19	
Total Petroleum Hydrocarbons						
- TPH (C <sub>7</sub> - C <sub>10</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>11</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>17</sub> - C <sub>21</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- n-Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED. 2020.

*Narisa Poowasanpetch*  
(Miss Narisa Poowasanpetch)

Analyst  
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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0882/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 25/26/04/2022	SAMPLING TIME	: 15.10-15.20, 09.35-09.47
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 04-07/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1)</sup>
				MW-17	MW-19	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	*
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	*
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	*
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	*

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 19<sup>th</sup> ED. 2011 (AMERICAN WATER WORKS ASSOCIATION)

*Narisa Poowasanpetch*  
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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0890/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 29/04/2022	SAMPLING TIME	: 10:17-10:27, 09:52-09:59
RECEIVED DATE	: 30/04/2022	ANALYTICAL DATE	: 29/04/2022, 03-07/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-18	MW-20	
pH	-	4500-H <sup>+</sup> B	< 0.10	7.67	7.60	11
Conductivity*	µS/cm	2510 B	< 1.0	504	660	1
Salinity*	ppt	2520 B	< 0.01	0.2	0.3	2
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0059	0.0054	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA-APHA-WEF)

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( Miss Khemchuda Insorn )

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3. <sup>U</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. \* Not Registered Department of Industrial Works.

5. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0890/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 29/04/2022	SAMPLING TIME	: 10:17-10:27, 09:52-09:59
RECEIVED DATE	: 30/04/2022	ANALYTICAL DATE	: 03, 05-08/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-18	MW-20	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA-APHA-WEF)

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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0890/65
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REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-18	MW-20	
<b>Total Petroleum Hydrocarbons</b>						
- TPH (C <sub>5</sub> - C <sub>9</sub> )	mg/l	5030 C / 8260 D	< 0,003	ND	ND	≤ 1,4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>9</sub> - C <sub>10</sub> )	mg/l	3510 C / 8015 D	< 0,025	ND	ND	≤ 1,7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>10</sub> - C <sub>19</sub> )	mg/l	3510 C / 8015 D	< 0,050	ND	ND	≤ 0,1
- n-Octadecane						
- n-Eicosane						
- n-Doocosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetatriacontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED. 2016

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CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0890/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 29/04/2022	SAMPLING TIME	: 10:17-10:27, 09.52-09.59
RECEIVED DATE	: 30/04/2022	ANALYTICAL DATE	: 04-07/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-18	MW-20	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	*
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	*
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	*
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	*

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2011 (AWWA, APHA, WEF)

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0882/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 26/04/2022	SAMPLING TIME	: 10.12-10.26, 10.48-11.00
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 26.28-29/04/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-21	MW-23	
pH	*	4500-H <sup>+</sup> B	< 0.10	7.40	7.51	W
Conductivity*	µS/cm	2510 B	< 1.0	290	638	*
Salinity*	ppt	2520 B	< 0.01	0.1	0.3	*
Arsenic (As)	mg/l	3114 C	< 0.0001	ND	0.0078	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

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

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SAMPLING DATE	: 26/04/2022	SAMPLING TIME	: 10.12-10.26, 10.48-11.00
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 28-29/04/2022, 05-06/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-21	MW-23	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

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RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 05-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD <sup>1/</sup>
		METHODS	(non-detectable)	MW-21	MW-23	
Total Petroleum Hydrocarbons						
- TPH (C <sub>7</sub> - C <sub>9</sub> )	mg/l	5030 C / 8260 D	< 0.003	0.021	0.010	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>9</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0.025	0.092	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>16</sub> - C <sub>32</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE. 1<sup>st</sup> ED. 2020

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REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>u</sup>
				MW-21	MW-23	
alpha-BHC	mg/l	6630 B	< 0.00001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.00003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.00003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.00001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.00001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.00003	ND	ND	
Heptachlor epoxide	mg/l	6630 B	< 0.00001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.00003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.00003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.00003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.00003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.00003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.00003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.00003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.00003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.00003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.00003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.00003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.00003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.00001	ND	ND	
Endosulfan Sulfate	mg/l	6630 B	< 0.00003	ND	ND	
Endrin ketone	mg/l	6630 B	< 0.00003	ND	ND	

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

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GROUND WATER ANALYSIS REPORT

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SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 29/04/2022	SAMPLING TIME	: 09:27-09:36
RECEIVED DATE	: 30/04/2022	ANALYTICAL DATE	: 29/04/2022, 03-07/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-22	STANDARD <sup>1/</sup>
pH	-	4500-H B	< 0.10	7.71	<sup>1/</sup>
Conductivity*	µS/cm	2510 B	< 1.0	669	-
Salinity*	ppt	2520 B	< 0.01	0.3	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0054	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	≤ 5.0

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

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0890/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 29/04/2022	SAMPLING TIME	: 09:27-09:36
RECEIVED DATE	: 30/04/2022	ANALYTICAL DATE	: 03, 05-08/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-22	STANDARD <sup>1/</sup>
Naphthalene	mg/l	6440 C	< 0.00005	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	≤ 24

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

*Natsiri L.*

(Miss Natsiri Lertterapipat)

Analyst

REG. NO. 7-239-P-0001

*Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-P-5863

- Remark :**
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  3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).
  4. - Not available.





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GROUND WATER ANALYSIS REPORT

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REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-22	STANDARD <sup>U</sup>
<b>Total Petroleum Hydrocarbons</b>					
- TPH (C <sub>5</sub> - C <sub>9</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	≤ 1.4
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C <sub>10</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C <sub>16</sub> - C <sub>35</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	≤ 0.1
- n-Octadecane					
- n-Eicosane					
- n-Docosane					
- n-Tetracosane					
- n-Hexacosane					
- n-Octacosane					
- n-Triacontane					
- n-Dotriacontane					
- n-Tetratriacontane					
- Pentatriacontane					

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

*Narisa Poowasanpetch*

(Miss Narisa Poowasanpetch)

Analyst

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(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0890/65
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SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-22	STANDARD <sup>U</sup>
alpha-BHC	mg/l	6630 B	< 0.000001	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	
Endrin ketone	mg/l	6630 B	< 0.000003	ND	

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

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4. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0885/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 28/04/2022	SAMPLING TIME	: 14.58-15.06, 14.31-14.40
RECEIVED DATE	: 29/04/2022	ANALYTICAL DATE	: 28-29/04/2022, 03-06/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-24	MW-25	
pH	*	4500-H <sup>+</sup> B	< 0.10	7.66	7.45	<sup>U</sup>
Conductivity*	μS/cm	2510 B	< 1.0	14,790	352	-
Salinity*	ppt	2520 B	< 0.01	10.0	0.1	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0055	0.0270	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA-APHA-WEF)

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  4. \* Not Registered Department of Industrial Works.
  5. - Not available.



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GROUND WATER ANALYSIS REPORT

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REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-24	MW-25	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA-APHA-WEF)

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REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD <sup>v</sup>
		METHODS	(non-detectable)	MW-24	MW-25	
Total Petroleum Hydrocarbons						
- TPH (C <sub>7</sub> - C <sub>16</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>7-8</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>7-16</sub> - C <sub>32</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 1<sup>st</sup> ED. 2020.

*Maim Poowasanpetch*

(Miss Narisa Poowasanpetch)

Analyst

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*(Mrs. Araya Tipparak)*

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Technical Management Team

REG. NO. 7-239-P-5863

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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0885/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 28/04/2022	SAMPLING TIME	: 14.58-15.06, 14.31-14.40
RECEIVED DATE	: 29/04/2022	ANALYTICAL DATE	: 04-07/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>v</sup>
				MW-24	MW-25	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	*
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane <sup>1</sup>	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	*
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	*
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	*

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 22<sup>nd</sup> ED. 2017 (APWA/AFHA WEB)

*Maim Poowasanpetch*

(Miss Narisa Poowasanpetch)

Analyst

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GROUND WATER ANALYSIS REPORT

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SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 28/04/2022	SAMPLING TIME	: 10.34-10.45, 10.06-10.16
RECEIVED DATE	: 29/04/2022	ANALYTICAL DATE	: 28-29/04/2022, 03-06/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-26	MW-28	
pH	-	4500-H <sup>+</sup> B	< 0.10	7.19	8.05	1/
Conductivity*	µS/cm	2510 B	< 1.0	596	307	-
Salinity*	ppt	2520 B	< 0.01	0.3	0.1	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0171	0.0034	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 22<sup>nd</sup> ED. 2017 (AWWA APHA WEF)

*Khemchuda Insom*

(Miss Khemchuda Insom)  
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GROUND WATER ANALYSIS REPORT

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SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-26	MW-28	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 22<sup>nd</sup> ED. 2017 (AWWA APHA WEF)

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(Miss Natsiri Lertterapipat)  
Analyst  
REG. NO. 7-239-ก-0001

*Araya Tipparuk*

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Technical Management Team  
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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).  
4. - Not available.



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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery)			REQUEST SERVICE No	0885/65
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Pneumatic Bladder Pump		
SAMPLING DATE	28/04/2022	SAMPLING TIME	10.34-10.45, 10.06-10.16		
RECEIVED DATE	29/04/2022	ANALYTICAL DATE	03-09/05/2022		
REPORT DATE	21/05/2022	SITE OPERATOR	Mr. Watcharakan Pramakhate		
SAMPLE CONDITION	Normal	FILE CODE	222010_GW_April		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-26	MW-28	
Total Petroleum Hydrocarbons						
- TPH (C <sub>5</sub> - C <sub>9</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>10</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	≤ 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>17</sub> - C <sub>32</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE: US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

*Maim Poowasanpetch*

(Miss Narisa Poowasanpetch)

Analyst

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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery)			REQUEST SERVICE No	0885/65
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Pneumatic Bladder Pump		
SAMPLING DATE	28/04/2022	SAMPLING TIME	10.34-10.45, 10.06-10.16		
RECEIVED DATE	29/04/2022	ANALYTICAL DATE	04-07/05/2022		
REPORT DATE	21/05/2022	SITE OPERATOR	Mr. Watcharakan Pramakhate		
SAMPLE CONDITION	Normal	FILE CODE	222010_GW_April		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-26	MW-28	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	*
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	*
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	*
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	*

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 1<sup>st</sup> ED. 2017 (AWWA, APHA, WEF)

*Maim Poowasanpetch*

(Miss Narisa Poowasanpetch)

Analyst

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4. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 0882/65  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump  
SAMPLING DATE : 26/04/2022 SAMPLING TIME : 14.29-14.42, 14.59-15.13  
RECEIVED DATE : 28/04/2022 ANALYTICAL DATE : 26.28-29/04/2022  
REPORT DATE : 21/05/2022 SITE OPERATOR : Mr. Watcharakon Pramakhate  
SAMPLE CONDITION : Normal FILE CODE : 222010\_GW\_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-27	MW-29	
pH	*	4500-H <sup>+</sup> B	< 0.10	7.89	7.21	1/
Conductivity*	µS/cm	2510 B	< 1.0	420	802	
Salinity*	ppt	2520 B	< 0.01	0.2	0.3	
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0034	0.0007	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

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

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4. \* Not Registered Department of Industrial Works.

5. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 0882/65  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump  
SAMPLING DATE : 26/04/2022 SAMPLING TIME : 14.29-14.42, 14.59-15.13  
RECEIVED DATE : 28/04/2022 ANALYTICAL DATE : 28-29/04/2022, 05-06/05/2022  
REPORT DATE : 21/05/2022 SITE OPERATOR : Mr. Watcharakon Pramakhate  
SAMPLE CONDITION : Normal FILE CODE : 222010\_GW\_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-27	MW-29	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0882/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 26/04/2022	SAMPLING TIME	: 14.29-14.42, 14.59-15.13
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 05-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD <sup>U</sup>
		METHODS	(non-detectable)	MW-27	MW-29	
<b>Total Petroleum Hydrocarbons</b>						
- TPH (C <sub>7</sub> - C <sub>9</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	0.051	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>8</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>18</sub> - C <sub>33</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Doocosane						
- n-Tetraosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : USEPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 1<sup>st</sup> ED. 2006

(Miss Narisa Poowasanpetch)

Analyst

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(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0882/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 26/04/2022	SAMPLING TIME	: 14.29-14.42, 14.59-15.13
RECEIVED DATE	: 28/04/2022	ANALYTICAL DATE	: 04-07/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-27	MW-29	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	*
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	*
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	*
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	*

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

(Miss Narisa Poowasanpetch)

Analyst

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  4. \* Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0885/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 27,28/04/2022	SAMPLING TIME	: 09.37-09.49, 09.39-09.52
RECEIVED DATE	: 29/04/2022	ANALYTICAL DATE	: 28-29/04/2022, 03-06/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITI <sup>u</sup>	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>u</sup>
				MW-30	MW-31	
pH		4500-H <sup>+</sup> B	< 0.10	7.77	7.15	
Conductivity*	μS/cm	2510 B	< 1.0	409	910	
Salinity*	ppt	2520 B	< 0.01	0.2	0.5	
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0182	0.0019	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

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

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

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4. \* Not Registered Department of Industrial Works.

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0885/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 27,28/04/2022	SAMPLING TIME	: 09.37-09.49, 09.39-09.52
RECEIVED DATE	: 29/04/2022	ANALYTICAL DATE	: 03, 05-08/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>u</sup>
				MW-30	MW-31	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	0.0002	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

*Natsiri L.*

(Miss Natsiri Lertterapipat)

Analyst

REG. NO. 7-239-R-0001

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0885/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 27/28/04/2022	SAMPLING TIME	: 09:37-09:49, 09:39-09:52
RECEIVED DATE	: 29/04/2022	ANALYTICAL DATE	: 03-09/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-30	MW-31	

<b>Total Petroleum Hydrocarbons</b>						
- TPH (C <sub>5</sub> - C <sub>10</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	0.018	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>11</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>17</sub> - C <sub>25</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED., 2020.

*Naim Poowasanpetch*  
(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 2-239-R-6419

*(Mrs. Araya Tipparak)*

(Mrs. Araya Tipparak)

Technical Management Team

REG. NO. 2-239-R-5863

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

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3. <sup>U</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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GROUND WATER ANALYSIS REPORT

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RECEIVED DATE	: 29/04/2022	ANALYTICAL DATE	: 04-07/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-30	MW-31	

alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	*
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	*
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	*
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	*

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

*Naim Poowasanpetch*  
(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 2-239-R-6419

*(Mrs. Araya Tipparak)*

(Mrs. Araya Tipparak)

Technical Management Team

REG. NO. 2-239-R-5863

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4. - Not available.



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GROUND WATER ANALYSIS REPORT

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SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 27/04/2022	SAMPLING TIME	: 14.48-14.57, 14.21-14.31
RECEIVED DATE	: 29/04/2022	ANALYTICAL DATE	: 27.29/04/2022, 03-06/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-32	MW-33	
pH	*	4500-H <sup>+</sup> B	< 0.10	7.80	7.71	U
Conductivity*	μS/cm	2510 B	< 1.0	675	526	-
Salinity*	ppt	2520 B	< 0.01	0.4	0.3	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0067	0.0039	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>ST</sup> ED. 2017 (AWWA APHA WEF)

*Khemchuda Inorn*

(Miss Khemchuda Inorn)

Analyst

REG. NO. 7-239-n-5976

*Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-5863

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4. \* Not Registered Department of Industrial Works.

5. - Not available.



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GROUND WATER ANALYSIS REPORT

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SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-32	MW-33	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>ST</sup> ED. 2017 (AWWA APHA WEF)

*Natsiri L.*

(Miss Natsiri Lertterapipat)

Analyst

REG. NO. 7-239-n-0001

*Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-5863

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SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD <sup>1/</sup>
		METHODS	(non-detectable)	MW-32	MW-33	
<b><u>Total Petroleum Hydrocarbons</u></b>						
- TPH (C <sub>7</sub> - C <sub>6</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1,4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>8</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0,025	ND	ND	≤ 1,7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>16</sub> - C <sub>32</sub> )	mg/l	3510 C / 8015 D	< 0,050	ND	ND	≤ 0,1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetratriacontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 1<sup>st</sup> ED., 2020.

(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 7-239-ก-6419

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

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SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-32	MW-33	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	*
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	*
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	*
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	*

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 1<sup>st</sup> ED. 2017 (AWWA, APHA, WEF)

(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 7-239-ก-6419

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

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REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>u</sup>
				MW-34	MW-35	
pH	*	4500-H <sup>+</sup> B	< 0.10	7.42	7.71	<sup>u</sup>
Conductivity*	µS/cm	2510 B	< 1.0	421	263	*
Salinity*	ppt	2520 B	< 0.01	0.1	0.1	*
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0058	0.0070	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

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

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-5976

*Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-5863

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SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>u</sup>
				MW-34	MW-35	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

*Natsiri L.*

(Miss Natsiri Lertrapiwat)

Analyst

REG. NO. 2-239-ก-0001

*Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-5863

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4. - Not available.



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SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD <sup>1/</sup>
		METHODS	(non-detectable)	MW-34	MW-35	
<b><u>Total Petroleum Hydrocarbons</u></b>						
- TPH (C <sub>8</sub> - C <sub>6</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>8</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>16</sub> - C <sub>32</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetatriacontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED. 2020.

*Miss Narisa Poowasanpetch*  
(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 7-239-N-6419

*(Mrs. Araya Tipparuk)*  
(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-N-5863

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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0885/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 27/04/2022	SAMPLING TIME	: 10.37-10.50, 10.06-10.20
RECEIVED DATE	: 29/04/2022	ANALYTICAL DATE	: 04-07/05/2022
REPORT DATE	: 21/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-34	MW-35	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	

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

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(Miss Narisa Poowasanpetch)

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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0949/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/05/2022	SAMPLING TIME	: 10:26-10:42, 11:01-11:15
RECEIVED DATE	: 07/05/2022	ANALYTICAL DATE	: 06-09/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITI	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-36	MW-37	
pH	-	4500-H <sup>+</sup> B	< 0.10	6.78	7.25	W
Conductivity*	µS/cm	2510 B	< 1.0	2,432	2,181	-
Salinity*	ppt	2520 B	< 0.01	1.4	1.2	*
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0240	0.0255	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	< 0.03	< 0.03	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

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

(Miss Khemchuda Insorn)

Analyst

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(Mrs. Araya Tippanuk)

Technical Management Team

REG. NO. 7-239-n-5863

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4. \* Not Registered Department of Industrial Works.  
5. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0949/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/05/2022	SAMPLING TIME	: 10:26-10:42, 11:01-11:15
RECEIVED DATE	: 07/05/2022	ANALYTICAL DATE	: 09-10, 12-14/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-36	MW-37	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

(Miss Natsiri Lertterapipat)

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Technical Management Team

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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0949/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/05/2022	SAMPLING TIME	: 10:26-10:42, 11:01-11:15
RECEIVED DATE	: 07/05/2022	ANALYTICAL DATE	: 11-12/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakun Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>u</sup>
				MW-36	MW-37	
Total Petroleum Hydrocarbons						
- TPH (C <sub>5</sub> - C <sub>9</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>10</sub> - C <sub>19</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>20</sub> - C <sub>32</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED. 2020

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Technical Management Team

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3. <sup>u</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0949/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/05/2022	SAMPLING TIME	: 10:26-10:42, 11:01-11:15
RECEIVED DATE	: 07/05/2022	ANALYTICAL DATE	: 10-11, 18-19/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakun Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>u</sup>
				MW-36	MW-37	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	*
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	*
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	*
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	*

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

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3. <sup>u</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0949/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/05/2022	SAMPLING TIME	: 09:51-10:02, 15:06-15:17
RECEIVED DATE	: 07/05/2022	ANALYTICAL DATE	: 06-09/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-38	MW-39	
pH	-	4500-H <sup>+</sup> B	< 0.10	6.34	6.90	U
Conductivity*	µS/cm	2510 B	< 1.0	1.953	3.069	*
Salinity*	ppt	2520 B	< 0.01	1.1	1.8	*
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0933	0.0145	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	< 0.01	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	< 0.03	< 0.03	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	< 0.01	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

(Miss Khemchuda Insom)

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0949/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/05/2022	SAMPLING TIME	: 09:51-10:02, 15:06-15:17
RECEIVED DATE	: 07/05/2022	ANALYTICAL DATE	: 09-10, 12-14/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>U</sup>
				MW-38	MW-39	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

(Miss Natsiri Lertterapipat)

Analyst

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

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3. <sup>U</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.





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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0949/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/05/2022	SAMPLING TIME	: 09:51-10:02, 15:06-15:17
RECEIVED DATE	: 07/05/2022	ANALYTICAL DATE	: 11-12/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD <sup>U</sup>
		METHODS	(non-detectable)	MW-38	MW-39	
Total Petroleum Hydrocarbons						
- TPH (C <sub>5</sub> - C <sub>6</sub> )	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>&gt;8</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>&gt;16</sub> - C <sub>32</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED. 2020.

(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 7-239-n-6419

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-5863

- Remark :**
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  3. <sup>u</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0949/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/05/2022	SAMPLING TIME	: 09:51-10:02, 15:06-15:17
RECEIVED DATE	: 07/05/2022	ANALYTICAL DATE	: 10-11, 18-19/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>u</sup>
				MW-38	MW-39	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01

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

(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 7-239-n-6419

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-5863

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GROUND WATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 0949/65  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump  
SAMPLING DATE : 06/05/2022 SAMPLING TIME : 15:36-15:47  
RECEIVED DATE : 07/05/2022 ANALYTICAL DATE : 06-09/05/2022  
REPORT DATE : 23/05/2022 SITE OPERATOR : Mr. Watcharakon Pramakhate  
SAMPLE CONDITION : Normal FILE CODE : 222010\_GW\_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-40	STANDARD <sup>u</sup>
pH		4500-H <sup>+</sup> B	< 0.10	6.86	u
Conductivity*	µS/cm	2510 B	< 1.0	1,215	-
Salinity*	ppt	2520 B	< 0.01	0.6	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0327	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	< 0.03	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	< 0.01	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA-APHA-WEF)

*Khemchuda Insorn*

(Miss Khemchuda Insorn)  
Analyst  
REG. NO. 7-239-ก-5976

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Technical Management Team  
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4. \* Not Registered Department of Industrial Works.

5. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 0949/65  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump  
SAMPLING DATE : 06/05/2022 SAMPLING TIME : 15:36-15:47  
RECEIVED DATE : 07/05/2022 ANALYTICAL DATE : 09-10, 12-14/05/2022  
REPORT DATE : 23/05/2022 SITE OPERATOR : Mr. Watcharakon Pramakhate  
SAMPLE CONDITION : Normal FILE CODE : 222010\_GW\_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-40	STANDARD <sup>u</sup>
Naphthalene	mg/l	6440 C	< 0.00005	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA-APHA-WEF)

*Natsiri L.*

(Miss Natsiri Lertterapipat)  
Analyst  
REG. NO. 7-239-ก-0001

*Araya Tipparuk*

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Technical Management Team  
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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0949/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/05/2022	SAMPLING TIME	: 15:36-15:47
RECEIVED DATE	: 07/05/2022	ANALYTICAL DATE	: 11-12/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-40	STANDARD <sup>u</sup>
<b>Total Petroleum Hydrocarbons</b>					
- TPH (C <sub>7</sub> - C <sub>9</sub> )	mg/l	5030 C / 8260 D	< 0.003	0.004	≤ 1.4
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C <sub>9</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0.025	ND	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C <sub>16</sub> - C <sub>25</sub> )	mg/l	3510 C / 8015 D	< 0.050	ND	≤ 0.1
- n-Octadecane					
- n-Eicosane					
- n-Docosane					
- n-Tetracosane					
- n-Hexacosane					
- n-Octacosane					
- n-Triacontane					
- n-Dotriacontane					
- n-Tetriacontane					
- Pentatriacontane					

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED., 2020.

*Miss Narisa Poowasanpetch*

(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 7-239-n-6419

*Mrs. Araya Tipparak*

(Mrs. Araya Tipparak)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0949/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/05/2022	SAMPLING TIME	: 15:36-15:47
RECEIVED DATE	: 07/05/2022	ANALYTICAL DATE	: 10-11, 18-19/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-40	STANDARD <sup>u</sup>
alpha-BHC	mg/l	6630 B	< 0.000001	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	
Endrin ketone	mg/l	6630 B	< 0.000003	ND	

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21<sup>st</sup> ED. 2017 (AWWA APHA AWWA)

*Miss Narisa Poowasanpetch*

(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 7-239-n-6419

*Mrs. Araya Tipparak*

(Mrs. Araya Tipparak)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0966/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/05/2022	SAMPLING TIME	: 09:45-10:09, 10:35-10:55
RECEIVED DATE	: 08/05/2022	ANALYTICAL DATE	: 07,09-10/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>u</sup>
				MW-41	MW-42	
pH	-	4500-H <sup>+</sup> B	< 0.10	7.16	7.48	u
Conductivity*	µS/cm	2510 B	< 1.0	3,328	34,670	-
Salinity*	ppt	2520 B	< 0.01	2.0	25.7	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0159	0.0030	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	< 0.03	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

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

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

*Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

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GROUND WATER ANALYSIS REPORT

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SAMPLING DATE	: 07/05/2022	SAMPLING TIME	: 09:45-10:09, 10:35-10:55
RECEIVED DATE	: 08/05/2022	ANALYTICAL DATE	: 09-10, 12-14/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakon Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>u</sup>
				MW-41	MW-42	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

*Natsiri L.*

(Miss Natsiri Lertrapiwat)

Analyst

REG. NO. 7-239-ก-0001

*Araya Tipparuk*

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Technical Management Team

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SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-41	MW-42	
Total Petroleum Hydrocarbons						
- TPH (C <sub>7</sub> - C <sub>9</sub> )	mg/l	5030 C / 8260 D	< 0,003	ND	0,007	≤ 1,4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C <sub>10</sub> - C <sub>16</sub> )	mg/l	3510 C / 8015 D	< 0,025	ND	ND	≤ 1,7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C <sub>16</sub> - C <sub>32</sub> )	mg/l	3510 C / 8015 D	< 0,050	ND	ND	≤ 0,1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- n-Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED. 2000

*Maim Poowasanpetch*

(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 7-239-ก-6419

*(Mrs. Araya Tipparak)*

(Mrs. Araya Tipparak)

Technical Management Team

REG. NO. 7-239-ก-5863

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**GROUND WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 0966/65
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RECEIVED DATE	: 08/05/2022	ANALYTICAL DATE	: 10-11,18-19/05/2022
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SAMPLE CONDITION	: Normal	FILE CODE	: 222010_GW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1/</sup>
				MW-41	MW-42	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	*
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	*
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	*
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	*

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

*Maim Poowasanpetch*

(Miss Narisa Poowasanpetch)

Analyst

REG. NO. 7-239-ก-6419

*(Mrs. Araya Tipparak)*

(Mrs. Araya Tipparak)

Technical Management Team

REG. NO. 7-239-ก-5863

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

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

3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.

## คุณภาพดิน

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**SECOT CO., LTD.**

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**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1367/63
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 20/08/2020	SAMPLING TIME	: 10.45-10.55
RECEIVED DATE	: 21/08/2020	ANALYTICAL DATE	: 21-31/08/2020
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-1	STANDARD <sup>1)</sup>
pH	-	9045 D	-	9.00	-
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.111	-
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	-
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	14.16	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	21.14	≤ 750
Mercury (Hg)	mg/kg	7471 B	< 0.05	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	24.95	≤ 41,000

REFERENCE : USEPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOIL WASTE, 3<sup>rd</sup> ED., 2014

*Khemchuda Insorn*

( Miss Khemchuda Insorn )

Analyst

REG. NO. 7-239-ก-5976

*Arya Tipparuk*

(Mrs. Arya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

- Remark :**
1. Reported analysis refers to submitted sample only.
  2. This report shall not be reproduced, except in full, without official approval.
  3. <sup>1)</sup> Notification of the Ministry of Industry, B.E.2559 (2016).
  4. Reference method : Operation Manual Chemical Analysis in Soil, Land Development Department.
  5. - Not available.



**บริษัท ซีคอต จำกัด**  
**SECOT CO., LTD.**

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

**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1367/63
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 20/08/2020	SAMPLING TIME	: 10.45-10.55
RECEIVED DATE	: 21/08/2020	ANALYTICAL DATE	: 21-23, 31/08/2020
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-1	STANDARD <sup>1)</sup>
Naphthalene	mg/kg	3540 C / 8270 D	< 0.005	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 C	< 0.00075	ND	≤ 210

REFERENCE : USEPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOIL WASTE, 3<sup>rd</sup> ED., 2014

*Natsiri L.*

( Miss Natsiri Lerterapitap )

Analyst

REG. NO. 7-239-ก-6423

*Arya Tipparuk*

(Mrs. Arya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

- Remark :**
1. Reported analysis refers to submitted sample only.
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  3. <sup>1)</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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

**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1367/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 20/08/2020 SAMPLING TIME : 10.45-10.55  
RECEIVED DATE : 21/08/2020 ANALYTICAL DATE : 21-23/27-28/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-1	STANDARD <sup>1/</sup>
Total Petroleum Hydrocarbon					
- C <sub>1</sub> - C <sub>8</sub>	mg/kg	5035 A / 8260 C	< 0.003	ND	≤ 25
- C <sub>9</sub> - C <sub>16</sub>	mg/kg	3540 C / 8015 D	< 0.25	17,19	≤ 25
- C <sub>17</sub> - C <sub>35</sub>	mg/kg	3540 C / 8015 D	< 1.85	ND	≤ 8

REFERENCE : USEPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED. 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)

Analyst

REG. NO. 2-239-8-6424

*A. P.*  
(Mrs. Araya Tippanuk)

Technical Management Team

REG. NO. 2-239-8-5863

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

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

3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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

**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1367/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 20/08/2020 SAMPLING TIME : 10.45-10.55  
RECEIVED DATE : 21/08/2020 ANALYTICAL DATE : 22-24/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-1	STANDARD <sup>1/</sup>
alpha-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.3
gamma-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 29
Heptachlor	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 5.5
Aldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.1
beta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.9
delta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	*
Heptachlor epoxide	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 2.7
o,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Endosulfan I	mg/kg	3550C / 8081B	< 0.0002	ND	*
gamma-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
alpha-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
p,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Dieldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 1.5
o,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 25
o,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
p,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endosulfan II	mg/kg	3550C / 8081B	< 0.0002	ND	*
p,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
Endrin aldehyde	mg/kg	3550C / 8081B	< 0.0002	ND	*
Endosulfan sulfate	mg/kg	3550C / 8081B	< 0.0002	ND	*
Endrin ketone	mg/kg	3550C / 8081B	< 0.0002	ND	*

REFERENCE : USEPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED. 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)

Analyst

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*A. P.*  
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Remark : 1. Reported analysis refers to submitted sample only.

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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.





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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1367/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 20/08/2020 SAMPLING TIME : 10.10-10.20  
RECEIVED DATE : 21/08/2020 ANALYTICAL DATE : 21-31/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-3	STANDARD <sup>1)</sup>
pH	-	9045 D	-	8.76	-
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.054	-
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	-
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	3.16	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	9.50	≤ 750
Mercury (Hg)	mg/kg	7471 B	< 0.05	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	3.83	≤ 41,000

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOIL WASTES, 8<sup>th</sup> ED., 2014

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

*A R*

(Mrs. Araya Tipparuk)

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

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

3. <sup>1)</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. Reference method : Operation Manual Chemical Analysis in Soil, Land Development Department.

5. - Not available.



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

SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1367/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 20/08/2020 SAMPLING TIME : 10.10-10.20  
RECEIVED DATE : 21/08/2020 ANALYTICAL DATE : 21-31/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-3	STANDARD <sup>1)</sup>
Naphthalene	mg/kg	3540 C / 8270 D	< 0.005	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 C	< 0.00075	ND	≤ 210

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOIL WASTES, 8<sup>th</sup> ED., 2014

*Natsiri L.*

(Miss Natsiri Lertlerapipat)

Analyst

REG. NO. 7-239-ก-6423

*A R*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

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**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1367/63				
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Hand Auger		
SAMPLING DATE	20/08/2020	SAMPLING TIME	10.10-10.20		
RECEIVED DATE	21/08/2020	ANALYTICAL DATE	21-23,27-28/08/2020		
REPORT DATE	01/09/2020	SITE OPERATOR	Mr. Jirakon Limsila		
SAMPLE CONDITION	Normal	FILE CODE	220010_Soil_August		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-3	STANDARD <sup>1/</sup>
Total Petroleum Hydrocarbon					
-C <sub>1</sub> -C <sub>8</sub>	mg/kg	5035 A / 8260 C	< 0.003	ND	≤ 25
-C <sub>9</sub> -C <sub>16</sub>	mg/kg	3540 C / 8015 D	< 0.25	ND	≤ 25
-C <sub>17</sub> -C <sub>35</sub>	mg/kg	3540 C / 8015 D	< 1.85	ND	≤ 8

REFERENCE : USEPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)

Analyst

REG. NO. 2-239-ก-6424

*A. P.*  
(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-5863

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

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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1367/63				
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Hand Auger		
SAMPLING DATE	20/08/2020	SAMPLING TIME	10.10-10.20		
RECEIVED DATE	21/08/2020	ANALYTICAL DATE	22-24/08/2020		
REPORT DATE	01/09/2020	SITE OPERATOR	Mr. Jirakon Limsila		
SAMPLE CONDITION	Normal	FILE CODE	220010_Soil_August		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-3	STANDARD <sup>1/</sup>
alpha-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.3
gamma-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 29
Heptachlor	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 5.5
Aldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.1
beta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.9
delta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	-
Heptachlor epoxide	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 2.7
o,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Endosulfan I	mg/kg	3550C / 8081B	< 0.0002	ND	-
gamma-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
alpha-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
p,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Dieldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 1.5
o,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 25
o,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
p,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endosulfan II	mg/kg	3550C / 8081B	< 0.0002	ND	-
p,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
Endrin aldehyde	mg/kg	3550C / 8081B	< 0.0002	ND	-
Endosulfan sulfate	mg/kg	3550C / 8081B	< 0.0002	ND	-
Endrin ketone	mg/kg	3550C / 8081B	< 0.0002	ND	-

REFERENCE : USEPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)

Analyst

REG. NO. 2-239-ก-6424

*A. P.*  
(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-5863

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

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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.



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

**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	1341/63
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Hand Auger
SAMPLING DATE	18/08/2020	SAMPLING TIME	09.10-09.20
RECEIVED DATE	19/08/2020	ANALYTICAL DATE	19-22/08/2020
REPORT DATE	01/09/2020	SITE OPERATOR	Mr. Jirakon Limsila
SAMPLE CONDITION	Normal	FILE CODE	220010_Soil_August

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD <sup>1)</sup>
		METHODS	(non-detectable)	MW-09		
pH	-	9045 D	-	8.02	-	
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.020	-	
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	-	
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	9.87	≤ 27	
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 810	
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	8.33	≤ 750	
Mercury (Hg)	mg/kg	7471B	< 0.05	ND	≤ 610	
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	4.30	≤ 41,000	

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 8<sup>th</sup> ED., 2014

*Khemchuda Insorn*

( Miss Khemchuda Insorn )

Analyst

REG. NO. 3-239-ท-5976

*Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 3-239-ท-5863

- Remark :**
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  2. This report shall not be reproduced, except in full, without official approval.
  3. <sup>1)</sup> Notification of the Ministry of Industry, B.E.2559 (2016).
  4. Reference method : Operation Manual Chemical Analysis in Soil, Land Development Department.
  5. - Not available.



**บริษัท ซีคอต จำกัด**  
**SECOT CO., LTD.**

239 ถนนวิมลสองประชา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร 10800  
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**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	1341/63
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Hand Auger
SAMPLING DATE	18/08/2020	SAMPLING TIME	09.10-09.20
RECEIVED DATE	19/08/2020	ANALYTICAL DATE	20-22.31/08/2020
REPORT DATE	01/09/2020	SITE OPERATOR	Mr. Jirakon Limsila
SAMPLE CONDITION	Normal	FILE CODE	220010_Soil_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD
		METHODS	(non-detectable)	MW-09	
Naphthalene	mg/kg	3540 C / 8270 D	< 0.005	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 C	< 0.00075	ND	≤ 210

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 8<sup>th</sup> ED., 2014

*Natsiri L*

( Miss Natsiri Lerttrapipat )

Analyst

REG. NO. 3-239-ท-6423

*Araya Tipparuk*

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Technical Management Team

REG. NO. 3-239-ท-5863

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL., Branch 6 (Refinery) REQUEST SERVICE No. : 1341/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 18/08/2020 SAMPLING TIME : 09.10-09.20  
RECEIVED DATE : 19/08/2020 ANALYTICAL DATE : 21-22,27-28/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-09	STANDARD <sup>U</sup>
Total Petroleum Hydrocarbon					
-C <sub>5</sub> -C <sub>8</sub>	mg/kg	5035 A / 8260 C	< 0.003	ND	≤ 25
-C <sub>9</sub> -C <sub>16</sub>	mg/kg	3540 C / 8015 D	< 0.25	ND	≤ 25
-C <sub>17</sub> -C <sub>33</sub>	mg/kg	3540 C / 8015 D	< 1.85	ND	≤ 8

REFERENCE: US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)  
Analyst

REG. NO. 2-239-9-6424

*Araya Tipparak*  
(Mrs. Araya Tipparak)  
Technical Management Team

REG. NO. 2-239-9-5863

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3. <sup>U</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL., Branch 6 (Refinery) REQUEST SERVICE No. : 1341/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 18/08/2020 SAMPLING TIME : 09.10-09.20  
RECEIVED DATE : 19/08/2020 ANALYTICAL DATE : 22-24/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-09	STANDARD <sup>U</sup>
alpha-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.3
gamma-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 29
Heptachlor	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 5.5
Aldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.1
beta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.9
delta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	*
Heptachlor epoxide	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 2.7
o,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Endosulfan I	mg/kg	3550C / 8081B	< 0.0002	ND	*
gamma-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
alpha-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
p,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Dieldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 1.5
o,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 25
o,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
p,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endosulfan II	mg/kg	3550C / 8081B	< 0.0002	ND	*
p,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
Endrin aldehyde	mg/kg	3550C / 8081B	< 0.0002	ND	*
Endosulfan sulfate	mg/kg	3550C / 8081B	< 0.0002	ND	*
Endrin ketone	mg/kg	3550C / 8081B	< 0.0002	ND	*

REFERENCE: US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)  
Analyst

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Technical Management Team

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3. <sup>U</sup> Notification of the Ministry of Industry, B.E.2559 (2016).  
4. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	1339/63
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 17/08/2020	SAMPLING TIME	: 13.20-13.30
RECEIVED DATE	: 18/08/2020	ANALYTICAL DATE	: 18-22/08/2020
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-14	STANDARD <sup>U</sup>
pH		9045 D		9.04	
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity		0.061	
Salinity	ppt	EC25 (1:5) / Electrical Conductivity		0.0	
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	10.14	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	5.91	≤ 750
Mercury (Hg)	mg/kg	7471B	< 0.05	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	4.72	≤ 41,000

REFERENCE: US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Khemluda Insorn*

(Miss Khemluda Insorn)

Analyst

REG. NO. 7-239-8-6423

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  4. Reference method : Operation Manual Chemical Analysis in Soil, Land Development Department.
  5. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	1339/63
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 17/08/2020	SAMPLING TIME	: 13.20-13.30
RECEIVED DATE	: 18/08/2020	ANALYTICAL DATE	: 20-22, 31/08/2020
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-14	STANDARD <sup>U</sup>
Naphthalene	mg/kg	3540 C / 8270 D	< 0.005	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 C	< 0.00075	ND	≤ 210

REFERENCE: US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Natsiri L.*

(Miss Natsiri Lertterapipat)

Analyst

REG. NO. 7-239-8-6423

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

SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1339/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 17/08/2020 SAMPLING TIME : 13.20-13.30  
RECEIVED DATE : 18/08/2020 ANALYTICAL DATE : 21-22,27-28/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-14	STANDARD <sup>U</sup>
Total Petroleum Hydrocarbon					
- C <sub>6</sub> -C <sub>9</sub>	mg/kg	5035 A / 8260 C	< 0.003	ND	≤ 25
- C <sub>10</sub> -C <sub>14</sub>	mg/kg	3540 C / 8015 D	< 0.25	12.81	≤ 25
- C <sub>15</sub> -C <sub>35</sub>	mg/kg	3540 C / 8015 D	< 1.85	ND	≤ 8

REFERENCE: US EPA 846 TEST METHODS FOR EVALUATING WATER AND SOIL WASTE, 1<sup>st</sup> ED., 2014

*Kesarin Sinsueg*  
(Miss Kesarin Sinsueg)  
Analyst

REG. NO. 7-239-8-6424

*Araya Tipparuk*  
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Technical Management Team  
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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1339/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 17/08/2020 SAMPLING TIME : 13.20-13.30  
RECEIVED DATE : 18/08/2020 ANALYTICAL DATE : 22-24/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-14	STANDARD <sup>U</sup>
alpha-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.3
gamma-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 29
Heptachlor	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 5.5
Aldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.1
beta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.9
delta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	-
Heptachlor epoxide	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 2.7
o,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Endosulfan I	mg/kg	3550C / 8081B	< 0.0002	ND	-
gamma-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
alpha-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
p,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Dieldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 1.5
o,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 25
o,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
p,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endosulfan II	mg/kg	3550C / 8081B	< 0.0002	ND	-
p,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
Endrin aldehyde	mg/kg	3550C / 8081B	< 0.0002	ND	-
Endosulfan sulfate	mg/kg	3550C / 8081B	< 0.0002	ND	-
Endrin ketone	mg/kg	3550C / 8081B	< 0.0002	ND	-

REFERENCE: US EPA 846 TEST METHODS FOR EVALUATING WATER AND SOIL WASTE, 1<sup>st</sup> ED., 2014

*Kesarin Sinsueg*  
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Analyst  
REG. NO. 7-239-8-6424

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4. - Not available.



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

**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1341/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 18/08/2020 SAMPLING TIME : 11.50-12.00  
RECEIVED DATE : 19/08/2020 ANALYTICAL DATE : 19-22/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limasila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-23	STANDARD <sup>1/</sup>
pH	-	9045 D	-	8.20	-
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.042	-
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	-
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	13.74	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	5.38	≤ 750
Mercury (Hg)	mg/kg	7471 B	< 0.05	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	2.85	≤ 41,000

REFERENCE : USE EPA SM 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2014

*Khemhuda Inorn*

(Miss Khemhuda Inorn)

Analyst

REG. NO. 2-239-n-5976

*A. T.*

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Technical Management Team

REG. NO. 2-239-n-5863

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  4. Reference method : Operation Manual Chemical Analysis in Soil, Land Development Department.
  5. - Not available.



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**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1341/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 18/08/2020 SAMPLING TIME : 11.50-12.00  
RECEIVED DATE : 19/08/2020 ANALYTICAL DATE : 20-22, 31/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limasila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-23	STANDARD <sup>1/</sup>
Naphthalene	mg/kg	3540 C / 8270 D	< 0.005	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 C	< 0.00075	ND	≤ 210

REFERENCE : USE EPA SM 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2014

*Natsiri L.*

(Miss Natsiri Lerttapirot)

Analyst

REG. NO. 2-239-n-6423

*A. T.*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-n-5863

- Remark :**
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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1341/63				
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger		
SAMPLING DATE	: 18/08/2020	SAMPLING TIME	: 11.50-12.00		
RECEIVED DATE	: 19/08/2020	ANALYTICAL DATE	: 21-22,27-28/08/2020		
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila		
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-23	STANDARD <sup>1)</sup>
Total Petroleum Hydrocarbon					
-C <sub>7</sub> -C <sub>12</sub>	mg/kg	5035 A / 8260 C	< 0.003	ND	≤ 25
+C <sub>13</sub> -C <sub>16</sub>	mg/kg	3540 C / 8015 D	< 0.35	ND	≤ 25
-C <sub>16</sub> -C <sub>25</sub>	mg/kg	3540 C / 8015 D	< 1.85	ND	≤ 8

REFERENCE : U.S EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOIL WASTE, 3<sup>rd</sup> ED., 2014

*Kesarin Sinsueg*  
(Miss Kesarin Sinsueg)

Analyst

REG. NO. 7-239-0-6424

*Araya Tippanuk*  
(Mrs. Araya Tippanuk)

Technical Management Team

REG. NO. 7-239-0-5863

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1341/63				
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger		
SAMPLING DATE	: 18/08/2020	SAMPLING TIME	: 11.50-12.00		
RECEIVED DATE	: 19/08/2020	ANALYTICAL DATE	: 22-24/08/2020		
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila		
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-23	STANDARD <sup>1)</sup>
alpha-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.3
gamma-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 29
Heptachlor	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 5.5
Aldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.1
beta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.9
delta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	-
Heptachlor epoxide	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 2.7
o,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Endosulfan I	mg/kg	3550C / 8081B	< 0.0002	ND	-
gamma-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
alpha-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
p,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Dieldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 1.5
o,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 25
o,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
p,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endosulfan II	mg/kg	3550C / 8081B	< 0.0002	ND	-
p,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
Endrin aldehyde	mg/kg	3550C / 8081B	< 0.0002	ND	-
Endosulfan sulfate	mg/kg	3550C / 8081B	< 0.0002	ND	-
Endrin ketone	mg/kg	3550C / 8081B	< 0.0002	ND	-

REFERENCE : U.S EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOIL WASTE, 3<sup>rd</sup> ED., 2014

*Kesarin Sinsueg*  
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4. - Not available.





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#### SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	1339/63
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 17/08/2020	SAMPLING TIME	: 11.30-11.40
RECEIVED DATE	: 18/08/2020	ANALYTICAL DATE	: 18-22/08/2020
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-24	STANDARD <sup>1/</sup>
pH	-	9045 D	-	3.81	-
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.048	-
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	-
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	4.72	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	6.22	≤ 750
Mercury (Hg)	mg/kg	7471 B	< 0.05	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	3.20	≤ 41,000

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2014

*Khemchuda Inorn*

( Miss Khemchuda Inorn )

Analyst

REG. NO. 7-239-ก-5976

*Araya Tipparuk*

( Mrs. Araya Tipparuk )

Technical Management Team

REG. NO. 7-239-ก-5863

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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. Reference method : Operation Manual Chemical Analysis in Soil, Land Development Department.

5. - Not available.



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#### SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	1339/63
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 17/08/2020	SAMPLING TIME	: 11.30-11.40
RECEIVED DATE	: 18/08/2020	ANALYTICAL DATE	: 20-22, 31/08/2020
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-24	STANDARD <sup>1/</sup>
Naphthalene	mg/kg	3540 C / 8270 D	< 0.005	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 C	< 0.00075	ND	≤ 210

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2014

*Natsiri L.*

( Miss Natsiri Lertterapipat )

Analyst

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*Araya Tipparuk*

( Mrs. Araya Tipparuk )

Technical Management Team

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1339/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 17/08/2020 SAMPLING TIME : 11.30-11.40  
RECEIVED DATE : 18/08/2020 ANALYTICAL DATE : 21-22,27-28/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-24	STANDARD <sup>1)</sup>
Total Petroleum Hydrocarbon					
*C <sub>9</sub> -C <sub>18</sub>	mg/kg	5035 A / 8260 C	< 0.003	ND	≤ 25
*C <sub>9</sub> *C <sub>16</sub>	mg/kg	3540 C / 8015 D	< 0.25	ND	≤ 25
*C <sub>15</sub> -C <sub>28</sub>	mg/kg	3540 C / 8015 D	< 1.85	ND	≤ 8

REFERENCE : USEPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)  
Analyst

REG. NO. 7-239-B-6424

*A. T.*  
(Mrs. Araya Tipparuk)  
Technical Management Team

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3. <sup>1)</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1339/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 17/08/2020 SAMPLING TIME : 11.30-11.40  
RECEIVED DATE : 18/08/2020 ANALYTICAL DATE : 22-24/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-24	STANDARD <sup>1)</sup>
alpha-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.3
gamma-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 29
Heptachlor	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 5.5
Aldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.1
beta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.9
delta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	*
Heptachlor epoxide	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 2.7
o,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Endosulfan I	mg/kg	3550C / 8081B	< 0.0002	ND	*
gamma-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
alpha-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
p,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Dieldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 1.5
o,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 25
o,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
p,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endosulfan II	mg/kg	3550C / 8081B	< 0.0002	ND	*
p,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
Endrin aldehyde	mg/kg	3550C / 8081B	< 0.0002	ND	*
Endosulfan sulfate	mg/kg	3550C / 8081B	< 0.0002	ND	*
Endrin ketone	mg/kg	3550C / 8081B	< 0.0002	ND	*

REFERENCE : USEPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)  
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3. <sup>1)</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	PTT Global Chemical PCL., Branch 6 (Refinery) REQUEST SERVICE No. : 1341/63		
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Hand Auger
SAMPLING DATE	18/08/2020	SAMPLING TIME	10.10-10.20
RECEIVED DATE	19/08/2020	ANALYTICAL DATE	19-22/08/2020
REPORT DATE	01/09/2020	SITE OPERATOR	Mr. Jirakon Limsila
SAMPLE CONDITION	Normal	FILE CODE	220010_Soil_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				MW-32	
pH	-	9045 D	-	8.74	*
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.051	*
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	*
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	11.14	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	5.01	≤ 750
Mercury (Hg)	mg/kg	7471B	< 0.05	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	6.34	≤ 41,000

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

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Technical Management Team

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  3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).
  4. Reference method : Operation Manual Chemical Analysis in Soil, Land Development Department.
  5. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	PTT Global Chemical PCL., Branch 6 (Refinery) REQUEST SERVICE No. : 1341/63		
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Hand Auger
SAMPLING DATE	18/08/2020	SAMPLING TIME	10.10-10.20
RECEIVED DATE	19/08/2020	ANALYTICAL DATE	20-22.31/08/2020
REPORT DATE	01/09/2020	SITE OPERATOR	Mr. Jirakon Limsila
SAMPLE CONDITION	Normal	FILE CODE	220010_Soil_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				MW-32	
Naphthalene	mg/kg	3540 C / 8270 D	< 0.005	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 C	< 0.00075	ND	≤ 210

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Natsiri L.*

(Miss Natsiri Leritrapipat)

Analyst

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Technical Management Team

REG. NO. 7-239-8-5863

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1341/63				
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Hand Auger		
SAMPLING DATE	18/08/2020	SAMPLING TIME	10.10-10.20		
RECEIVED DATE	19/08/2020	ANALYTICAL DATE	21-22/27-28/08/2020		
REPORT DATE	01/09/2020	SITE OPERATOR	Mr. Jirakon Limsila		
SAMPLE CONDITION	Normal	FILE CODE	220010_Soil_August		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-32	STANDARD <sup>1)</sup>
Total Petroleum Hydrocarbon					
-C <sub>3</sub> -C <sub>8</sub>	mg/kg	5035 A / 8260 C	< 0.003	ND	≤ 25
-C <sub>9</sub> -C <sub>10</sub>	mg/kg	3540 C / 8015 D	< 0.25	ND	≤ 25
-C <sub>11</sub> -C <sub>15</sub>	mg/kg	3540 C / 8015 D	< 1.85	ND	≤ 8

REFERENCE : U.S. EPA 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)

Analyst

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REG. NO. 7-239-8-5863

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

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3. <sup>1)</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1341/63				
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Hand Auger		
SAMPLING DATE	18/08/2020	SAMPLING TIME	10.10-10.20		
RECEIVED DATE	19/08/2020	ANALYTICAL DATE	22-24/08/2020		
REPORT DATE	01/09/2020	SITE OPERATOR	Mr. Jirakon Limsila		
SAMPLE CONDITION	Normal	FILE CODE	220010_Soil_August		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-32	STANDARD <sup>1)</sup>
alpha-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.3
gamma-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 29
Heptachlor	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 5.5
Aldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.1
beta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.9
delta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	*
Heptachlor epoxide	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 2.7
o,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Endosulfan I	mg/kg	3550C / 8081B	< 0.0002	ND	*
gamma-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
alpha-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
p,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Dieldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 1.5
o,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 25
o,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
p,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endosulfan II	mg/kg	3550C / 8081B	< 0.0002	ND	*
p,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
Endrin aldehyde	mg/kg	3550C / 8081B	< 0.0002	ND	*
Endosulfan sulfate	mg/kg	3550C / 8081B	< 0.0002	ND	*
Endrin ketone	mg/kg	3550C / 8081B	< 0.0002	ND	*

REFERENCE : U.S. EPA 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)

Analyst

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*A. T.*  
(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-8-5863

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3. <sup>1)</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.



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**SOIL SAMPLES ANALYSIS REPORT**

**CLIENT NAME** : PTT Global Chemical PCL, Branch 6 (Refinery) **REQUEST SERVICE No.** : 1341/63  
**SAMPLING BY** : SECOT Co., Ltd. **SAMPLING METHOD** : Hand Auger  
**SAMPLING DATE** : 18/08/2020 **SAMPLING TIME** : 10.40-10.50  
**RECEIVED DATE** : 19/08/2020 **ANALYTICAL DATE** : 19-22/08/2020  
**REPORT DATE** : 01/09/2020 **SITE OPERATOR** : Mr. Jirakon Limsila  
**SAMPLE CONDITION** : Normal **FILE CODE** : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-34	STANDARD <sup>1)</sup>
pH	-	9045 D	-	8.55	-
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.031	-
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	-
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	20.35	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	6.86	≤ 750
Mercury (Hg)	mg/kg	7471 B	< 0.05	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	3.81	≤ 41,000

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Khemchuda Insom*

(Miss Khemchuda Insom)

Analyst

REG. NO. 7-239-n-5976

*A. Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-5863

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  3. <sup>1)</sup> Notification of the Ministry of Industry, B.E.2559 (2016).
  4. Reference method : Operation Manual Chemical Analysis in Soil, Land Development Department.
  5. - Not available.



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**SOIL SAMPLES ANALYSIS REPORT**

**CLIENT NAME** : PTT Global Chemical PCL, Branch 6 (Refinery) **REQUEST SERVICE No.** : 1341/63  
**SAMPLING BY** : SECOT Co., Ltd. **SAMPLING METHOD** : Hand Auger  
**SAMPLING DATE** : 18/08/2020 **SAMPLING TIME** : 10.40-10.50  
**RECEIVED DATE** : 19/08/2020 **ANALYTICAL DATE** : 20-22,31/08/2020  
**REPORT DATE** : 01/09/2020 **SITE OPERATOR** : Mr. Jirakon Limsila  
**SAMPLE CONDITION** : Normal **FILE CODE** : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-34	STANDARD <sup>1)</sup>
Naphthalene	mg/kg	3540 C / 8270 D	< 0.005	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 C	< 0.00075	ND	≤ 210

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Naisiri L.*

(Miss Naisiri Leritarnipat)

Analyst

REG. NO. 7-239-n-6423

*A. Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-5863

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery)		REQUEST SERVICE No	1341/63	
SAMPLING BY	SECOT Co., Ltd.		SAMPLING METHOD	Hand Auger	
SAMPLING DATE	18/08/2020		SAMPLING TIME	10.40-10.50	
RECEIVED DATE	19/08/2020		ANALYTICAL DATE	21-22,27-28/08/2020	
REPORT DATE	01/09/2020		SITE OPERATOR	Mr. Jirakon Limsila	
SAMPLE CONDITION	Normal		FILE CODE	220010_Soil_August	

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				MW-34	
Total Petroleum Hydrocarbon					
- C <sub>5</sub> - C <sub>8</sub>	mg/kg	5035 A / 8260 C	< 0.003	ND	≤ 25
-C <sub>9</sub> - C <sub>16</sub>	mg/kg	3540 C / 8015 D	< 0.25	ND	≤ 25
-C <sub>17</sub> - C <sub>25</sub>	mg/kg	3540 C / 8015 D	< 1.35	ND	≤ 8

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)

Analyst

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*Araya Tipparuk*  
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Technical Management Team

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery)		REQUEST SERVICE No	1341/63	
SAMPLING BY	SECOT Co., Ltd.		SAMPLING METHOD	Hand Auger	
SAMPLING DATE	18/08/2020		SAMPLING TIME	10.40-10.50	
RECEIVED DATE	19/08/2020		ANALYTICAL DATE	22-24/08/2020	
REPORT DATE	01/09/2020		SITE OPERATOR	Mr. Jirakon Limsila	
SAMPLE CONDITION	Normal		FILE CODE	220010_Soil_August	

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD <sup>1</sup>
				MW-34		
alpha-BHC	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 0.3
gamma-BHC	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 29
Heptachlor	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 5.5
Aldrin	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 0.1
beta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 0.9
delta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND		-
Heptachlor epoxide	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 2.7
o,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 0.001
Endosulfan I	mg/kg	3550C / 8081B	< 0.0002	ND		-
gamma-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 110
alpha-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 110
p,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 0.001
Dieldrin	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 1.5
o,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 7
Endrin	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 25
o,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 120
p,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 7
Endosulfan II	mg/kg	3550C / 8081B	< 0.0002	ND		-
p,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND		≤ 120
Endrin aldehyde	mg/kg	3550C / 8081B	< 0.0002	ND		-
Endosulfan sulfate	mg/kg	3550C / 8081B	< 0.0002	ND		-
Endrin ketone	mg/kg	3550C / 8081B	< 0.0002	ND		-

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)

Analyst

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4. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1341/63
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 18/08/2020	SAMPLING TIME	: 11.10-11.20
RECEIVED DATE	: 19/08/2020	ANALYTICAL DATE	: 19-22/08/2020
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-35	STANDARD <sup>U</sup>
pH	-	9045 D	*	8.96	*
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	*	0.046	*
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	*	0.0	*
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	2.66	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	4.14	≤ 750
Mercury (Hg)	mg/kg	7471 B	< 0.05	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	1.74	≤ 41,000

REFERENCE: USE EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>RD</sup> ED., 2011

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

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  4. Reference method : Operation Manual Chemical Analysis in Soil, Land Development Department.
  5. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1341/63
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 18/08/2020	SAMPLING TIME	: 11.10-11.20
RECEIVED DATE	: 19/08/2020	ANALYTICAL DATE	: 20-22,31/08/2020
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-35	STANDARD <sup>U</sup>
Naphthalene	mg/kg	3540 C / 8270 D	< 0.005	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 C	< 0.00075	ND	≤ 210

REFERENCE: USE EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>RD</sup> ED., 2011

*Natsiri L.*

(Miss Natsiri Lerterapipat)

Analyst

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Technical Management Team

REG. NO. 7-239-n-5863

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**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME	: PTT Global Chemical PCL., Branch 6 (Refinery)	REQUEST SERVICE No.	: 1341/63
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 18/08/2020	SAMPLING TIME	: 11.10-11.20
RECEIVED DATE	: 19/08/2020	ANALYTICAL DATE	: 21-22,27-28/08/2020
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila
SAMPLE CONDITION	: Normal	FILE CODE	: 220010 Soil August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-35	STANDARD <sup>1)</sup>
Total Petroleum Hydrocarbon					
-C <sub>9</sub> -C <sub>16</sub>	mg/kg	5035 A / 8260 C	< 0.003	ND	≤ 25
-C <sub>9</sub> -C <sub>16</sub>	mg/kg	3540 C / 8015 D	< 0.25	ND	≤ 25
-C <sub>17</sub> -C <sub>35</sub>	mg/kg	3540 C / 8015 D	< 1.85	ND	≤ 8

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOIL WASTE, 3<sup>rd</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)

Analyst

REG. NO. 7-239-0-6424

*Araya Tipparuk*  
(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-0-5863

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**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery)		REQUEST SERVICE No.	1341/63	
SAMPLING BY	SECOT Co., Ltd.		SAMPLING METHOD	Hand Auger	
SAMPLING DATE	18/08/2020		SAMPLING TIME	11.10-11.20	
RECEIVED DATE	19/08/2020		ANALYTICAL DATE	22-24/08/2020	
REPORT DATE	01/09/2020		SITE OPERATOR	Mr. Jirakon Limsila	
SAMPLE CONDITION	Normal		FILE CODE	220010 Soil August	

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-35	STANDARD <sup>1)</sup>
alpha-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.3
gamma-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 29
Heptachlor	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 5.5
Aldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.1
beta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.9
delta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	•
Heptachlor epoxide	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 2.7
o,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Endosulfan I	mg/kg	3550C / 8081B	< 0.0002	ND	•
gamma-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
alpha-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
p,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Dieldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 1.5
o,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 25
o,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
p,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endosulfan II	mg/kg	3550C / 8081B	< 0.0002	ND	•
p,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
Endrin aldehyde	mg/kg	3550C / 8081B	< 0.0002	ND	•
Endosulfan sulfate	mg/kg	3550C / 8081B	< 0.0002	ND	•
Endrin ketone	mg/kg	3550C / 8081B	< 0.0002	ND	•

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOIL WASTE, 3<sup>rd</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)

Analyst

REG. NO. 7-239-0-6424

*Araya Tipparuk*  
(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-0-5863

- Remark :**
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  3. <sup>1)</sup> Notification of the Ministry of Industry, B.E.2559 (2016).
  4. - Not available.





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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1347/63
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 19/08/2020	SAMPLING TIME	: 10.20-10.30
RECEIVED DATE	: 20/08/2020	ANALYTICAL DATE	: 20-26/08/2020
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-36	STANDARD <sup>u</sup>
pH	*	9045 D	*	8.15	*
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	*	0.154	*
Safinity	ppt	EC25 (1:5) / Electrical Conductivity	*	0.0	*
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	55.74	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	1.19	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 5.00	12.48	≤ 750
Mercury (Hg)	mg/kg	7471 B	< 0.05	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	19.88	≤ 41,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 4<sup>th</sup> ED., 2014

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(Miss Khemchuda Insoori)

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REG. NO. 7-239-B-5976

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

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3. <sup>u</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. Reference method : Operation Manual Chemical Analysis in Soil, Land Development Department.

S<sub>p</sub> - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1347/63
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 19/08/2020	SAMPLING TIME	: 10.20-10.30
RECEIVED DATE	: 20/08/2020	ANALYTICAL DATE	: 20-22, 31/08/2020
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-36	STANDARD <sup>u</sup>
Naphthalene	mg/kg	3540 C / 8270 D	< 0.005	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 C	< 0.00075	ND	≤ 210

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 4<sup>th</sup> ED., 2014

*Naisiri L.*

(Miss Naisiri Lerttarpipat)

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3. <sup>u</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL. Branch 6 (Refinery) REQUEST SERVICE No. : 1347/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 19/08/2020 SAMPLING TIME : 10.20-10.30  
RECEIVED DATE : 20/08/2020 ANALYTICAL DATE : 21-23.27-28/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-36	STANDARD <sup>1)</sup>
Total Petroleum Hydrocarbon					
- C <sub>5</sub> -C <sub>8</sub>	mg/kg	5035 A / 8260 C	< 0.003	ND	≤ 25
- C <sub>9</sub> -C <sub>16</sub>	mg/kg	3540 C / 8015 D	< 0.25	ND	≤ 25
- C <sub>16</sub> -C <sub>19</sub>	mg/kg	3540 C / 8015 D	< 1.85	ND	≤ 8

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)

Analyst

REG. NO. 3-239-9-6424

*Araya Tipparuk*  
(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 3-239-9-5863

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3. <sup>1)</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL. Branch 6 (Refinery) REQUEST SERVICE No. : 1347/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 19/08/2020 SAMPLING TIME : 10.20-10.30  
RECEIVED DATE : 20/08/2020 ANALYTICAL DATE : 22-24/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-36	STANDARD <sup>1)</sup>
alpha-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.3
gamma-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 29
Heptachlor	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 5.5
Aldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.1
beta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.9
delta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	-
Heptachlor epoxide	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 2.7
o,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Endosulfan I	mg/kg	3550C / 8081B	< 0.0002	ND	-
gamma-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
alpha-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
p,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Dieldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 1.5
o,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 25
o,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
p,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endosulfan II	mg/kg	3550C / 8081B	< 0.0002	ND	-
p,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
Endrin aldehyde	mg/kg	3550C / 8081B	< 0.0002	ND	-
Endosulfan sulfate	mg/kg	3550C / 8081B	< 0.0002	ND	-
Endrin ketone	mg/kg	3550C / 8081B	< 0.0002	ND	-

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2014

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3. <sup>1)</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.



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**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1347/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 19/08/2020 SAMPLING TIME : 14.30-14.40  
RECEIVED DATE : 20/08/2020 ANALYTICAL DATE : 20-26/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION VCU (MW-41)	STANDARD <sup>1/</sup>
pH	-	9045 D	-	8.33	-
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.081	-
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	-
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	4.40	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	4.43	≤ 750
Mercury (Hg)	mg/kg	7471 B	< 0.05	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	5.37	≤ 41,000

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2014

*Khemchuda Insorn*

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  3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).
  4. Reference method : Operation Manual Chemical Analysis in Soil, Land Development Department.
  5. - Not available.



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**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1347/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 19/08/2020 SAMPLING TIME : 14.30-14.40  
RECEIVED DATE : 20/08/2020 ANALYTICAL DATE : 20-22,31/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION VCU (MW-41)	STANDARD <sup>1/</sup>
Naphthalene	mg/kg	3540 C / 8270 D	< 0.005	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 C	< 0.00075	ND	≤ 210

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2014

*Natsiri L.*

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Technical Management Team

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1347/63		
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 19/08/2020	SAMPLING TIME	: 14.30-14.40
RECEIVED DATE	: 20/08/2020	ANALYTICAL DATE	: 21-23, 27-28/08/2020
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION VCU (MW-41)	STANDARD <sup>1/</sup>
Total Petroleum Hydrocarbon					
-C <sub>8</sub> -C <sub>8</sub>	mg/kg	5035 A / 8260 C	< 0.003	ND	≤ 25
-C <sub>10</sub> -C <sub>10</sub>	mg/kg	3540 C / 8015 D	< 0.25	ND	≤ 25
-C <sub>18</sub> -C <sub>35</sub>	mg/kg	3540 C / 8015 D	< 1.85	ND	≤ 8

REFERENCE: US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Kesvarin Sinsueg*  
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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1347/63		
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 19/08/2020	SAMPLING TIME	: 14.30-14.40
RECEIVED DATE	: 20/08/2020	ANALYTICAL DATE	: 22-24/08/2020
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION VCU (MW-41)	STANDARD <sup>1/</sup>
alpha-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.3
gamma-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 29
Heptachlor	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 5.5
Aldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.1
beta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.9
delta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	-
Heptachlor epoxide	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 2.7
o,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Endosulfan I	mg/kg	3550C / 8081B	< 0.0002	ND	-
gamma-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
alpha-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
p,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Dieldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 1.5
o,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 25
o,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
p,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endosulfan II	mg/kg	3550C / 8081B	< 0.0002	ND	-
p,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
Endrin aldehyde	mg/kg	3550C / 8081B	< 0.0002	ND	-
Endosulfan sulfate	mg/kg	3550C / 8081B	< 0.0002	ND	-
Endrin ketone	mg/kg	3550C / 8081B	< 0.0002	ND	-

REFERENCE: US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)

Analyst

REG. NO. 7-239-0-6424

*A. T.*  
(Mrs. Araya Tippanak)

Technical Management Team

REG. NO. 7-239-0-5863

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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).  
4. - Not available.



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**SECOT CO., LTD.**

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**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1347/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 19/08/2020 SAMPLING TIME : 13.40-13.50  
RECEIVED DATE : 20/08/2020 ANALYTICAL DATE : 20-26/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION VCU (MW-42)	STANDARD <sup>1/</sup>
pH	-	9045 D	-	8.49	-
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.039	-
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	-
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	ND	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	3.43	≤ 750
Mercury (Hg)	mg/kg	7471 B	< 0.05	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 41,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-R-5976

*Arya Tipparak*

(Mrs. Arya Tipparak)

Technical Management Team

REG. NO. 7-239-R-5863

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

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

3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

4. Reference method : Operation Manual Chemical Analysis in Soil, Land Development Department.

5. - Not available.



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

**SOIL SAMPLES ANALYSIS REPORT**

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1347/63  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger  
SAMPLING DATE : 19/08/2020 SAMPLING TIME : 13.40-13.50  
RECEIVED DATE : 20/08/2020 ANALYTICAL DATE : 20-22,31/08/2020  
REPORT DATE : 01/09/2020 SITE OPERATOR : Mr. Jirakon Limsila  
SAMPLE CONDITION : Normal FILE CODE : 220010\_Soil\_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION VCU (MW-42)	STANDARD <sup>1/</sup>
Naphthalene	mg/kg	3540 C / 8270 D	< 0.005	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 C	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 C	< 0.00075	ND	≤ 210

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Natsiri L.*

(Miss Natsiri Lertrapiat)

Analyst

REG. NO. 7-239-R-6423

*Arya Tipparak*

(Mrs. Arya Tipparak)

Technical Management Team

REG. NO. 7-239-R-5863

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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)		REQUEST SERVICE No.	: 1347/63
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger	
SAMPLING DATE	: 19/08/2020	SAMPLING TIME	: 13:40-13:50	
RECEIVED DATE	: 20/08/2020	ANALYTICAL DATE	: 21-23/28/08/2020	
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila	
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August	

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION VCU (MW-42)	STANDARD <sup>1)</sup>
Total Petroleum Hydrocarbon					
-C <sub>8</sub> -C <sub>16</sub>	mg/kg	5035 A / 8260 C	< 0.003	ND	≤ 25
-C <sub>10</sub> -C <sub>16</sub>	mg/kg	3540 C / 8015 D	< 0.25	ND	≤ 25
-C <sub>10</sub> -C <sub>16</sub>	mg/kg	3540 C / 8015 D	< 1.85	ND	≤ 8

REFERENCE: US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)

Analyst

REG. NO. 1-239-0-6424

*Araya Tipparak*  
(Mrs. Araya Tipparak)

Technical Management Team

REG. NO. 1-239-0-5863

- 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 Ministry of Industry, B.E.2559 (2016).



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)		REQUEST SERVICE No.	: 1347/63
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger	
SAMPLING DATE	: 19/08/2020	SAMPLING TIME	: 13:40-13:50	
RECEIVED DATE	: 20/08/2020	ANALYTICAL DATE	: 22-24/08/2020	
REPORT DATE	: 01/09/2020	SITE OPERATOR	: Mr. Jirakon Limsila	
SAMPLE CONDITION	: Normal	FILE CODE	: 220010_Soil_August	

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION VCU (MW-42)	STANDARD <sup>1)</sup>
alpha-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.3
gamma-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 29
Heptachlor	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 5.5
Aldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.1
beta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.9
delta-BHC	mg/kg	3550C / 8081B	< 0.0002	ND	-
Heptachlor epoxide	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 2.7
o,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.061
Endosulfan I	mg/kg	3550C / 8081B	< 0.0002	ND	-
gamma-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
alpha-Chlordane	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 110
p,p'-DDE	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 0.001
Dieldrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 1.5
o,p'-DDD	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endrin	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 25
o,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
p,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 7
Endosulfan II	mg/kg	3550C / 8081B	< 0.0002	ND	-
p,p'-DDT	mg/kg	3550C / 8081B	< 0.0002	ND	≤ 120
Endrin aldehyde	mg/kg	3550C / 8081B	< 0.0002	ND	-
Endosulfan sulfate	mg/kg	3550C / 8081B	< 0.0002	ND	-
Endrin ketone	mg/kg	3550C / 8081B	< 0.0002	ND	-

REFERENCE: US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1<sup>st</sup> ED., 2014

*Kesvarin Sinsueg*  
(Miss Kesvarin Sinsueg)

Analyst

REG. NO. 1-239-0-6424

*Araya Tipparak*  
(Mrs. Araya Tipparak)

Technical Management Team

REG. NO. 1-239-0-5863

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3. " Notification of the Ministry of Industry, B.E.2559 (2016).  
4. - Not available.

## ระดับเสียงในพื้นที่ทำงาน

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## Noise Monitoring Result : Working Noise

### MTR-PTTGC-Refinery

Location : Air Compressor

Monitor Period : Apr 28, 2022

SLM Model : CASELLA CEL-246

Serial No : 3173336

Site Operator : Mr. Chanatip Singkasemsak

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 114.1/-0.1

Expire Date : Dec 23, 2022

Cal Sheet No.: CEL120/2-2022-041

Time	Equivalent Sound Pressure Level (dB(A))	
	Apr 28, 2022	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00		
09:00 - 10:00	82.6	
10:00 - 11:00	82.3	
11:00 - 12:00	83.0	
12:00 - 13:00	82.8	
13:00 - 14:00	82.2	
14:00 - 15:00	82.4	
15:00 - 16:00	82.9	
16:00 - 17:00	82.8	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	82.6	
Lmax **	87.2	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : \* Average time between 09:00-17:00

\*\* Maximum Sound Pressure Level between 09:00-17:00

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Sununta Sirawuttinanon)  
Technical Management Team



## Noise Monitoring Result : Working Noise

### MTR-PTTGC-Refinery

Location : Air Blower

Monitor Period : Apr 28, 2022

SLM Model : CASELLA CEL-246

Serial No : 3173324

Site Operator : Mr. Chanatip Singkasemsak

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

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

Expire Date : Dec 23, 2022

Cal Sheet No.: CEL120/2-2022-041

Time	Equivalent Sound Pressure Level (dB(A))	
	Apr 28, 2022	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00		
09:00 - 10:00	80.0	
10:00 - 11:00	80.2	
11:00 - 12:00	80.0	
12:00 - 13:00	79.9	
13:00 - 14:00	80.0	
14:00 - 15:00	80.1	
15:00 - 16:00	80.3	
16:00 - 17:00	80.1	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	80.1	
Lmax **	82.0	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : \* Average time between 09:00-17:00

\*\* Maximum Sound Pressure Level between 09:00-17:00

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Sununta Sirawuttinanon)  
Technical Management Team





## Noise Monitoring Result : Working Noise MTR-PTTGC-Refinery

Location : Fan (Below E-1791) Monitor Period : Apr 28, 2022  
SLM Model : CASELLA CEL-246 Serial No : 3173125  
Site Operator : Mr. Chanatip Singkasemsak

Calibrator Model : CASELLA CEL120/2 Serial No : 2839225  
Calibration Ref dB(A) : 114.0 Certified Date : Dec 24, 2021  
SLM Reading / Adjust dB(A) : 114.1/-0.1 Expire Date : Dec 23, 2022  
Cal Sheet No.: CEL120/2-2022-041

Time	Equivalent Sound Pressure Level (dB(A))	
	Apr 28, 2022	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00		
09:00 - 10:00	80.9	
10:00 - 11:00	80.9	
11:00 - 12:00	80.9	
12:00 - 13:00	81.1	
13:00 - 14:00	80.8	
14:00 - 15:00	80.8	
15:00 - 16:00	80.8	
16:00 - 17:00	81.0	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	80.9	
Lmax **	83.2	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : \* Average time between 09:00-17:00

\*\* Maximum Sound Pressure Level between 09:00-17:00

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Sununta Sirawuttinanon)  
Technical Management Team



## Noise Monitoring Result : Working Noise MTR-PTTGC-Refinery

Location : Generator Monitor Period : Apr 28, 2022  
SLM Model : CASELLA CEL-246 Serial No : 3173108  
Site Operator : Mr. Chanatip Singkasemsak

Calibrator Model : CASELLA CEL120/2 Serial No : 2839225  
Calibration Ref dB(A) : 114.0 Certified Date : Dec 24, 2021  
SLM Reading / Adjust dB(A) : 113.9/0.1 Expire Date : Dec 23, 2022  
Cal Sheet No.: CEL120/2-2022-041

Time	Equivalent Sound Pressure Level (dB(A))	
	Apr 28, 2022	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00		
09:00 - 10:00	79.5	
10:00 - 11:00	79.6	
11:00 - 12:00	79.5	
12:00 - 13:00	79.5	
13:00 - 14:00	79.4	
14:00 - 15:00	79.3	
15:00 - 16:00	79.5	
16:00 - 17:00	79.4	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	79.5	
Lmax **	80.6	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : \* Average time between 09:00-17:00

\*\* Maximum Sound Pressure Level between 09:00-17:00

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Sununta Sirawuttinanon)  
Technical Management Team



## Noise Monitoring Result : Working Noise

### MTR-PTTGC-Refinery

Location : Steam Turbine

Monitor Period : Apr 28, 2022

SLM Model : CASELLA CEL-246

Serial No : 3173156

Site Operator : Mr. Chanatip Singkasemsak

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 114.2/-0.2

Expire Date : Dec 23, 2022

Cal Sheet No.: CEL120/2-2022-041

Time	Equivalent Sound Pressure Level (dB(A))
	Apr 28, 2022
00:00 - 01:00	
01:00 - 02:00	
02:00 - 03:00	
03:00 - 04:00	
04:00 - 05:00	
05:00 - 06:00	
06:00 - 07:00	
07:00 - 08:00	
08:00 - 09:00	
09:00 - 10:00	83.7
10:00 - 11:00	83.8
11:00 - 12:00	83.7
12:00 - 13:00	83.8
13:00 - 14:00	83.6
14:00 - 15:00	83.6
15:00 - 16:00	83.8
16:00 - 17:00	83.7
17:00 - 18:00	
18:00 - 19:00	
19:00 - 20:00	
20:00 - 21:00	
21:00 - 22:00	
22:00 - 23:00	
23:00 - 24:00	
Leq(8)*	83.7
Lmax**	86.6
Standard-8Hr	90 dB(A)
Standard-Max	140 dB(A)

Remark : \* Average time between 09:00-17:00

\*\* Maximum Sound Pressure Level between 09:00-17:00

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Sununta Sirawuttinanon)  
Technical Management Team



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## NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: PTT Global Chemical Public Co., Ltd.	REFERENCE NO.	: PTTGC6 (Refinery)_222010_Cert-NsD/Apr22
	Branch 6 (Refinery)	INSTRUMENT	: Noise Dosimeter
MEASUREMENT BY	: SECOT Co., Ltd.	CALIBRATOR TYPE	: RC 110A
MEASUREMENT DATE	: 28/04/2022	SERIAL NO.	: 95167
MEASUREMENT LOCATION	: Process area	CALIBRATOR REF.	: 114 dB @1.000 Hz
SITE OPERATOR	: Mr. Chanatip Singkasemsak		

OPERATOR ID	RESPONSIBILITY/AREA	TIME	RESULTS		STANDARD*
			% DOSE	TWA (12 hr) (dBA)	
ID 26009116	Operator Panel 1	07.12-19.00	23.6	77.0	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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

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3. \*Notification of the Department of Labour Protection and Welfare, B.E.2561 (2018).

4. TWA means Time Weighted Average.




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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)\_222010\_Cert-NsD/Apr22  
Branch 6 (Refinery) INSTRUMENT : Noise Dosimeter  
MEASUREMENT BY : SECOT Co., Ltd. CALIBRATOR TYPE : RC 110A  
MEASUREMENT DATE : 28/04/2022 SERIAL NO. : 95167  
MEASUREMENT LOCATION : Process area CALIBRATOR REF. : 114 dB @1,000 Hz  
SITE OPERATOR : Mr. Chanatip Singkasemsak

OPERATOR ID	RESPONSIBILITY/AREA	TIME	RESULTS		STANDARD*
			% DOSE	TWA (12 hr) (dBA)	
ID 26009118	Operator Panel 2	07.15-19.00	32.4	78.4	83.0

  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

  
(Miss Sununta Sirawuttinanon)  
Technical Management Team

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

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)\_222010\_Cert-NsD/Apr22  
Branch 6 (Refinery) INSTRUMENT : Noise Dosimeter  
MEASUREMENT BY : SECOT Co., Ltd. CALIBRATOR TYPE : RC 110A  
MEASUREMENT DATE : 28/04/2022 SERIAL NO. : 95167  
MEASUREMENT LOCATION : Process area CALIBRATOR REF. : 114 dB @1,000 Hz  
SITE OPERATOR : Mr. Chanatip Singkasemsak

OPERATOR ID	RESPONSIBILITY/AREA	TIME	RESULTS		STANDARD*
			% DOSE	TWA (12 hr) (dBA)	
ID 26006584	Operator Panel 3	07.16-19.00	14.1	74.8	83.0

  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

  
(Miss Sununta Sirawuttinanon)  
Technical Management Team

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



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

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)\_222010\_Cert-NsD/Apr22  
Branch 6 (Refinery) INSTRUMENT : Noise Dosimeter  
MEASUREMENT BY : SECOT Co., Ltd. CALIBRATOR TYPE : RC 110A  
MEASUREMENT DATE : 28/04/2022 SERIAL NO. : 95167  
MEASUREMENT LOCATION : Process area CALIBRATOR REF. : 114 dB @1,000 Hz  
SITE OPERATOR : Mr. Chanatip Singkasemsak

OPERATOR ID	RESPONSIBILITY/AREA	TIME	RESULTS		STANDARD*
			% DOSE	TWA (12 hr) (dBA)	
ID 26006554	Operator Panel 4	07.17-19.00	24.0	77.1	83.0



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SECOT CO., LTD.

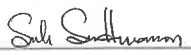
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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)\_222010\_Cert-NsD/Apr22  
Branch 6 (Refinery) INSTRUMENT : Noise Dosimeter  
MEASUREMENT BY : SECOT Co., Ltd. CALIBRATOR TYPE : RC 110A  
MEASUREMENT DATE : 28/04/2022 SERIAL NO. : 95167  
MEASUREMENT LOCATION : Process area CALIBRATOR REF. : 114 dB @1,000 Hz  
SITE OPERATOR : Mr. Chanatip Singkasemsak

OPERATOR ID	RESPONSIBILITY/AREA	TIME	RESULTS		STANDARD*
			% DOSE	TWA (12 hr) (dBA)	
ID 26005526	Operator Panel 5	07.16-19.00	62.2	81.2	83.0

  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

  
(Miss Sununta Sirawuttinanon)  
Technical Management Team

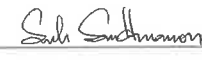
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3. \*Notification of the Department of Labour Protection and Welfare, B.E.2561 (2018).

4. TWA means Time Weighted Average.

  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

  
(Miss Sununta Sirawuttinanon)  
Technical Management Team

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3. \*Notification of the Department of Labour Protection and Welfare, B.E.2561 (2018).

4. TWA means Time Weighted Average.



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

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: PTT Global Chemical Public Co., Ltd.	REFERENCE NO.	: PTTGC6 (Refinery)_222010_Cert-NsD/Apr22
	Branch 6 (Refinery)	INSTRUMENT	: Noise Dosimeter
MEASUREMENT BY	: SECOT Co., Ltd.	CALIBRATOR TYPE	: RC 110A
MEASUREMENT DATE	: 28/04/2022	SERIAL NO.	: 95167
MEASUREMENT LOCATION	: Process area	CALIBRATOR REF.	: 114 dB @1,000 Hz
SITE OPERATOR	: Mr. Chanatip Singkasemsak		

OPERATOR ID	RESPONSIBILITY/AREA	TIME	RESULTS		STANDARD*
			% DOSE	TWA (8 hr) (dBA)	
ID 98003938	Operator Maintenance	08.10-16.00	31.5	80.0	85.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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  4. TWA means Time Weighted Average.

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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.	: 0558/65
For	: PTT Global Chemical Public Co., Ltd. Branch 6 (Refinery GC6)	Sampling Date	: 17/03/2022
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong, Rayong Province 21150	Received Date	: 18/03/2022
		Test Date	: 19/03/2022
Tel/Fax	: 0-3897-1000 / -	Report Date	: 25/03/2022

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
Panel 1 : Sour Water P-1108,P-1109, P-110,V-1106,V-1105 and V-1107	17/03/2022 09:37-13:43	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20
Panel 2 : Between P1052 A/B P1052,P1053,P1054	17/03/2022 09:26-13:32	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20
Panel 3 : Change ADIP filter S-2001 and S-2051	17/03/2022 11:38-15:42	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20
Panel 5 : Circulation pump P-2603	17/03/2022 10:46-14:51	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20

Analyst By : Phatchara Samanchan  
(Miss Phatchara Samanchan)

Approved By : Naris Poowasanpetch  
(Miss Narisa Poowasanpetch)  
Technical Management Team

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

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- Notification of the Department of Labour Protection and Welfare, B.E.2560 (2017).
- ND = non-detectable



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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.	: 0558/65
For	: PTT Global Chemical Public Co., Ltd. Branch 6 (Refinery GC6)	Sampling Date	: 17/03/2022
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong, Rayong Province 21150	Received Date	: 18/03/2022
		Test Date	: 18/03/2022
Tel/Fax	: 0-3897-1000 / -	Report Date	: 25/03/2022

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
Panel 1 : Short Residue & VBR Pumps pumps P-1201/02/03 A-B	17/03/2022 09:42-09:57	Total hydrocarbon	THC Analyzer / FID	< 0.10	2.81	-
Panel 2 : PLE feed filter S1501	17/03/2022 10:03-10:18	Total hydrocarbon	THC Analyzer / FID	< 0.10	3.72	*
Panel 4 : Naturle Gas V-3306	17/03/2022 10:24-10:39	Total hydrocarbon	THC Analyzer / FID	< 0.10	1.34	*
Panel 5 : T2602	17/03/2022 10:43-10:58	Total hydrocarbon	THC Analyzer / FID	< 0.10	2.15	*
Panel 6 : Mogas Drain Vessel V5245	17/03/2022 11:02-11:17	Total hydrocarbon	THC Analyzer / FID	< 0.10	10.70	*

Analyst By : Sudaporn Soonthorn  
(Miss Sudaporn Soonthorn)

Approved By : Naris Poowasanpetch  
(Miss Narisa Poowasanpetch)  
Technical Management Team

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

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- Chevron standard.
- ND = non-detectable



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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.	: 0558/65
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 17/03/2022
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 18/03/2022
Tel/Fax	: 0-3897-1000 / -	Test Date	: 19/03/2022
		Report Date	: 25/03/2022

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 1 : Short Residue & VBR Pumps pumps P-1201/02/03 A-B	17/03/2022 09:42-13:50	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1
Panel 2 : PLE feed filter S1501	17/03/2022 10:03-14:07	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1
Panel 3 : SW feed pump/ SW Stripper Reflux/Strippde Water Pump/ Hydrocarbon pump P2401/2402/2403/24	17/03/2022 10:22-14:25	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1
Panel 5 : Circulation pump P-2603	17/03/2022 10:46-14:51	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1
Panel 6 : Mogas Drain Vessel V5245	17/03/2022 11:02-15:05	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1
Panel 6 : สถานีขนถ่ายน้ำมันทางรถบรรทุก	17/03/2022 11:47-15:57	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1

Analyst By : Sudaporn Soonthorn  
( Miss Sudaporn Soonthorn )

Approved By : Narisa Poowasanpetch  
( Miss Narisa Poowasanpetch )  
Technical Management Team

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

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

4. ND = non-detectable



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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 0558/65
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 17/03/2022
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 18/03/2022
Tel/Fax	: 0-3897-1000 / -	Test Date	: 18/03/2022
		Report Date	: 25/03/2022

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 3 : Change ADIP filter S-2001 and S-2051	17/03/2022 11:22-11:37	NMHC	Flame Ionization detection /NMHC Analyzer	< 0.05	2.01	-

Analyst By : Sudaporn Soonthorn  
( Miss Sudaporn Soonthorn )

Approved By : Narisa Poowasanpetch  
( Miss Narisa Poowasanpetch )  
Technical Management Team

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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.	: 1328/65
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 17/06/2022
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 18/06/2022
		Test Date	: 20/06/2022
Tel/Fax	: 0-3897-1000 / -	Report Date	: 28/06/2022

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 ppm	RESULT ppm	STANDARD ppm
Panel 1 : Sour Water P-1108,P-1109,P-110,V-1106,V-1105 and V-1107	17/06/2022 09:00-13:00	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20
Panel 2 : Between P1052 A/B P1052,P1053,P1054	17/06/2022 09:15-13:15	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20
Panel 3 : Change ADIP filter S-2001 and S-2051	17/06/2022 09:20-13:20	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20
Panel 5 : Circulation pump P-2603	17/06/2022 10:10-14:10	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20

Analyst By : Phatchara Samanchan  
(Miss Phatchara Samanchan)

Approved By : Narisa Poowasanpetch  
(Miss Narisa Poowasanpetch)  
Technical Management Team

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

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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.	: 1328/65
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 17/06/2022
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 18/06/2022
		Test Date	: 18/06/2022
Tel/Fax	: 0-3897-1000 / -	Report Date	: 28/06/2022

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 1 : Short Residue & VBR Pumps pumps P-1201/02/03 A-B	17/06/2022 09:00-09:15	Total Hydrocarbon	THC Analyzer / FID	< 0.10	1.75	*
Panel 2 : PLP feed filter S1501	17/06/2022 09:20-09:35	Total Hydrocarbon	THC Analyzer / FID	< 0.10	2.62	*
Panel 4 : Natural Gas V-3306	17/06/2022 09:50-10:05	Total Hydrocarbon	THC Analyzer / FID	< 0.10	1.94	*
Panel 5 : T2602	17/06/2022 10:10-10:25	Total Hydrocarbon	THC Analyzer / FID	< 0.10	1.65	*
Panel 6 : Mogas Drain Vessel V5245	17/06/2022 10:30-10:45	Total Hydrocarbon	THC Analyzer / FID	< 0.10	1.70	*

Analyst By : Sudaporn Soonthorn  
(Miss Sudaporn Soonthorn)

Approved By : Narisa Poowasanpetch  
(Miss Narisa Poowasanpetch)  
Technical Management Team

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

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- ND = non-detectable.
- No Standard.



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**ANALYSIS/TEST REPORT**

<b>Customer</b>	: EED/SECOT Co., Ltd.	<b>Request Service No.</b>	: 1328/65
<b>For</b>	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	<b>Sampling Date</b>	: 17/06/2022
<b>Address</b>	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong, Rayong Province 21150	<b>Received Date</b>	: 18/06/2022
<b>Tel/Fax</b>	: 0-3897-1000 / -	<b>Test Date</b>	: 20/06/2022
		<b>Report Date</b>	: 28/06/2022

**SAMPLE DESCRIPTION / SAMPLING INFORMATION**

<b>Sample Designated As</b>	: Workplace Air	<b>Sampling Method</b>	: Passive Diffusion
<b>Sampling By</b>	: SECOT Co., Ltd.	<b>Sample Condition</b>	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 1: Short Residue & VBR Pumps pumps P-1201/02/03 A-B	17/06/2022 09:00-13:00	Benzene	OSHA 1005 / GC FID	< 0.04	ND	1
Panel 2: PLF feed filter S1501	17/06/2022 09:15-13:15	Benzene	OSHA 1005 / GC FID	< 0.04	ND	1
Panel 3: SW feed pump/SW Stripper Reflux/Strippde Water Pump/Hydrocarbon pump P2401/2402/2403/24	17/06/2022 09:20-13:20	Benzene	OSHA 1005 / GC FID	< 0.04	ND	1
Panel 5: Circulation pump P-2603	17/06/2022 10:10-14:20	Benzene	OSHA 1005 / GC FID	< 0.04	ND	1
Panel 6: Mogas Drain Vessel V5245	17/06/2022 10:30-14:30	Benzene	OSHA 1005 / GC FID	< 0.04	ND	1
Panel 6: สถานีจ่ายน้ำมันทางรอบบรรทุก	17/06/2022 11:05-15:05	Benzene	OSHA 1005 / GC FID	< 0.04	ND	1

Analyst By: Sudaporn Soonthorn  
(Miss Sudaporn Soonthorn)

Approved By: Narisa Poowasanpetch  
(Miss Narisa Poowasanpetch)  
Technical Management Team

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

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4. ND = non-detectable.



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

**ANALYSIS/TEST REPORT**

<b>Customer</b>	: EED/SECOT Co., Ltd.	<b>Request Service No.</b>	: 1328/65
<b>For</b>	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	<b>Sampling Date</b>	: 17/06/2022
<b>Address</b>	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong, Rayong Province 21150	<b>Received Date</b>	: 18/06/2022
<b>Tel/Fax</b>	: 0-3897-1000 / -	<b>Test Date</b>	: 18/06/2022
		<b>Report Date</b>	: 28/06/2022

**SAMPLE DESCRIPTION / SAMPLING INFORMATION**

<b>Sample Designated As</b>	: Workplace Air	<b>Sampling Method</b>	: Sampling Bag
<b>Sampling By</b>	: SECOT Co., Ltd.	<b>Sample Condition</b>	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 3: Change ADIP filter S-2001 and S-2051	17/06/2022 09:39-09:44	NMHC	Flame Ionization detection/ NMHC Analyzer	< 0.05	0.68	1

Analyst By: Sudaporn Soonthorn  
(Miss Sudaporn Soonthorn)

Approved By: Narisa Poowasanpetch  
(Miss Narisa Poowasanpetch)  
Technical Management Team

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

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4. - No Standard.