

ภาคผนวก ง

## ใบรับรองผลการตรวจวิเคราะห์คุณภาพสิ่งแวดล้อม

## ภาคผนวก ง.1

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### ใบรับรองผลการตรวจวิเคราะห์คุณภาพอากาศในบรรยากาศ



## Meteorological Monitoring Results : Wind Rose

### MTR-UNT&UUCP

Location : Wat Pluak Kate

Monitor period : 19-26 Jan 2024

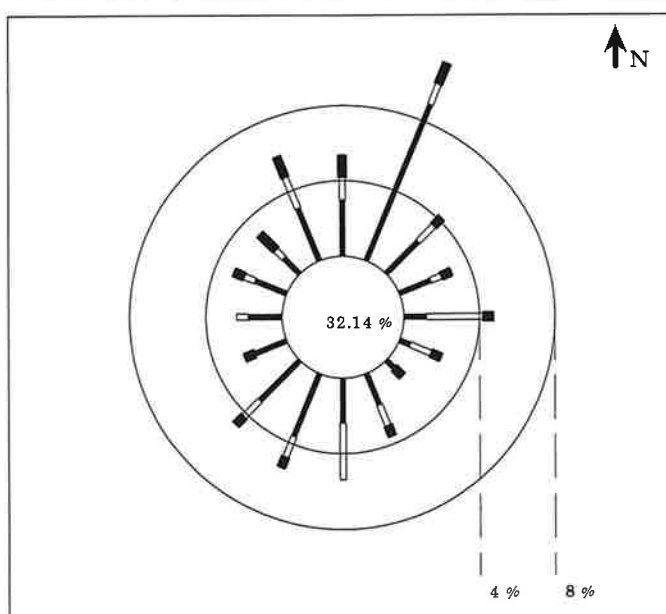
Wind Speed Model : NRG Symphonie

Serial No : A4907

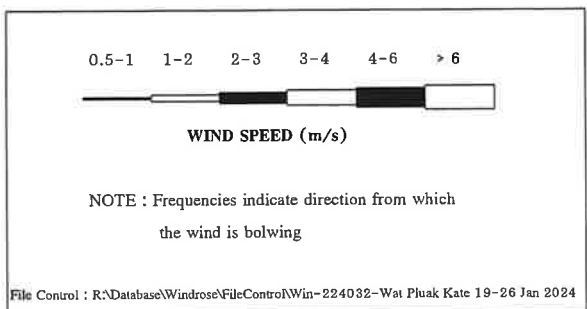
Wind Direction Model : NRG Symphonie

Serial No : A4907

| 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                                                                | 0.0119  | 0.0119  | 0.0000  | 0.0000  | 0.0000      | 0.0536 |
| NNE       | 0.0893                                                                | 0.0119  | 0.0119  | 0.0000  | 0.0000  | 0.0000      | 0.1131 |
| NE        | 0.0238                                                                | 0.0119  | 0.0060  | 0.0000  | 0.0000  | 0.0000      | 0.0417 |
| ENE       | 0.0179                                                                | 0.0060  | 0.0060  | 0.0000  | 0.0000  | 0.0000      | 0.0298 |
| E         | 0.0119                                                                | 0.0298  | 0.0060  | 0.0000  | 0.0000  | 0.0000      | 0.0476 |
| ESE       | 0.0060                                                                | 0.0119  | 0.0060  | 0.0000  | 0.0000  | 0.0000      | 0.0238 |
| SE        | 0.0060                                                                | 0.0000  | 0.0060  | 0.0000  | 0.0000  | 0.0000      | 0.0119 |
| SSE       | 0.0179                                                                | 0.0119  | 0.0060  | 0.0000  | 0.0000  | 0.0000      | 0.0357 |
| S         | 0.0238                                                                | 0.0298  | 0.0000  | 0.0000  | 0.0000  | 0.0000      | 0.0536 |
| SSW       | 0.0357                                                                | 0.0119  | 0.0060  | 0.0000  | 0.0000  | 0.0000      | 0.0536 |
| SW        | 0.0298                                                                | 0.0119  | 0.0060  | 0.0000  | 0.0000  | 0.0000      | 0.0476 |
| WSW       | 0.0179                                                                | 0.0000  | 0.0060  | 0.0000  | 0.0000  | 0.0000      | 0.0238 |
| W         | 0.0179                                                                | 0.0060  | 0.0000  | 0.0000  | 0.0000  | 0.0000      | 0.0238 |
| WNW       | 0.0179                                                                | 0.0060  | 0.0060  | 0.0000  | 0.0000  | 0.0000      | 0.0298 |
| NW        | 0.0119                                                                | 0.0060  | 0.0119  | 0.0000  | 0.0000  | 0.0000      | 0.0298 |
| NNW       | 0.0298                                                                | 0.0179  | 0.0119  | 0.0000  | 0.0000  | 0.0000      | 0.0595 |
| CALM      | 0.3214                                                                |         |         |         |         |             |        |



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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-UNT&UUCP

Location : Wat Pluak Kate

Monitor period : 19-26 Jan 2024

Wind Speed Model : NRG Symphonie

Serial No : A4907

Wind Direction Model : NRG Symphonie

Serial No : A4907

| Time          | 19-20 Jan 2024 |     | 20-21 Jan 2024 |     | 21-22 Jan 2024 |     | 22-23 Jan 2024 |     |
|---------------|----------------|-----|----------------|-----|----------------|-----|----------------|-----|
|               | WS(m/s)        | WD  | WS(m/s)        | WD  | WS(m/s)        | WD  | WS(m/s)        | WD  |
| 15:00 - 16:00 | 1.2            | W   | 0.5            | SW  | 0.2            | W   | 0.7            | SW  |
| 16:00 - 17:00 | 0.9            | WNW | 0.3            | WSW | 1.8            | NNW | 0.5            | WSW |
| 17:00 - 18:00 | 2.2            | WSW | 2.5            | NNW | 0.5            | WNW | 1.7            | NNW |
| 18:00 - 19:00 | 2.0            | NW  | 0.5            | NNW | 0.3            | NNW | 0.5            | NNW |
| 19:00 - 20:00 | 0.5            | N   | 1.7            | N   | 0.5            | NNW | 1.4            | NE  |
| 20:00 - 21:00 | 2.0            | N   | 2.5            | ESE | 0.4            | NNW | 0.4            | ENE |
| 21:00 - 22:00 | 0.4            | NE  | 0.5            | SE  | 0.2            | NNW | 0.3            | NNE |
| 22:00 - 23:00 | 2.3            | SE  | 0.6            | ESE | 0.6            | NNW | 0.6            | NNE |
| 23:00 - 24:00 | 0.6            | E   | 2.0            | NE  | 1.5            | SSE | 0.4            | NNE |
| 00:00 - 01:00 | 2.1            | SSW | 0.9            | WSW | 0.6            | SSE | 0.4            | NE  |
| 01:00 - 02:00 | 2.2            | ENE | 0.5            | SW  | 1.2            | SW  | 1.8            | E   |
| 02:00 - 03:00 | 0.6            | NE  | 0.5            | SSW | 0.2            | SSW | 2.0            | NNE |
| 03:00 - 04:00 | 0.3            | NNE | 0.6            | WSW | 1.5            | E   | 0.5            | NE  |
| 04:00 - 05:00 | 0.2            | N   | 1.9            | N   | 2.1            | E   | 0.6            | NNE |
| 05:00 - 06:00 | 0.6            | NNE | 2.1            | NNE | 0.6            | E   | 1.1            | S   |
| 06:00 - 07:00 | 0.2            | ENE | 0.5            | NNE | 0.6            | NE  | 0.3            | S   |
| 07:00 - 08:00 | 1.7            | E   | 0.5            | NNE | 0.2            | NE  | 0.9            | S   |
| 08:00 - 09:00 | 0.6            | W   | 2.2            | NNW | 0.5            | N   | 0.3            | E   |
| 09:00 - 10:00 | 0.4            | SSW | 0.5            | NW  | 0.6            | W   | 0.6            | S   |
| 10:00 - 11:00 | 1.0            | NW  | 1.9            | SSW | 1.1            | WNW | 0.4            | S   |
| 11:00 - 12:00 | 1.5            | SW  | 0.2            | WSW | 0.2            | WNW | 1.6            | S   |
| 12:00 - 13:00 | 0.4            | SSW | 2.4            | WNW | 0.9            | SW  | 0.3            | S   |
| 13:00 - 14:00 | 0.4            | SSW | 0.5            | WNW | 2.1            | NW  | 2.0            | SSE |
| 14:00 - 15:00 | 0.4            | SSW | 0.9            | SW  | 0.6            | NW  | 0.6            | S   |
| Wind Rose     |                |     |                |     |                |     |                |     |



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

File Control :R:\Database\Windrose\FileControl\NWin-224032-Wat Pluak Kate 19-26 Jan 2024

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-UNT&UUCP

Location : Wat Pluak Kate

Monitor period : 19-26 Jan 2024

Wind Speed Model : NRG Symphonie

Serial No : A4907

Wind Direction Model : NRG Symphonie

Serial No : A4907

| Time          | 23-24 Jan 2024 |     | 24-25 Jan 2024 |     | 25-26 Jan 2024 |     |  |
|---------------|----------------|-----|----------------|-----|----------------|-----|--|
|               | WS(m/s)        | WD  | WS(m/s)        | WD  | WS(m/s)        | WD  |  |
| 15:00 - 16:00 | 1.4            | SSW | 0.3            | NNE | 1.7            | NNW |  |
| 16:00 - 17:00 | 1.6            | S   | 0.4            | NNE | 0.9            | N   |  |
| 17:00 - 18:00 | 2.1            | SW  | 0.4            | NNE | 0.3            | NNE |  |
| 18:00 - 19:00 | 0.6            | SSW | 0.6            | NNE | 0.4            | NNE |  |
| 19:00 - 20:00 | 0.6            | SSW | 0.5            | NNE | 0.6            | NNE |  |
| 20:00 - 21:00 | 0.5            | SSW | 0.6            | NNE | 0.3            | NE  |  |
| 21:00 - 22:00 | 0.5            | SSW | 0.4            | NNE | 0.2            | NE  |  |
| 22:00 - 23:00 | 0.3            | SSW | 0.3            | NNE | 0.4            | NNE |  |
| 23:00 - 24:00 | 0.5            | SSW | 0.6            | N   | 0.5            | N   |  |
| 00:00 - 01:00 | 1.7            | NNE | 0.4            | NE  | 0.6            | NNE |  |
| 01:00 - 02:00 | 0.2            | NE  | 2.3            | N   | 0.5            | NNE |  |
| 02:00 - 03:00 | 1.3            | E   | 1.9            | NNE | 0.2            | NNE |  |
| 03:00 - 04:00 | 0.3            | ESE | 0.6            | NNE | 0.3            | NE  |  |
| 04:00 - 05:00 | 0.6            | SSE | 0.3            | NNE | 0.5            | NNE |  |
| 05:00 - 06:00 | 0.6            | SSE | 0.4            | NNE | 0.5            | NNE |  |
| 06:00 - 07:00 | 1.8            | ENE | 0.3            | ENE | 0.5            | NE  |  |
| 07:00 - 08:00 | 0.4            | ENE | 0.2            | ENE | 1.4            | SSE |  |
| 08:00 - 09:00 | 0.5            | NNE | 0.6            | ENE | 0.4            | E   |  |
| 09:00 - 10:00 | 0.3            | E   | 0.2            | ENE | 0.9            | ENE |  |
| 10:00 - 11:00 | 0.6            | ENE | 1.5            | E   | 1.3            | S   |  |
| 11:00 - 12:00 | 0.3            | NNE | 0.2            | SE  | 1.5            | ESE |  |
| 12:00 - 13:00 | 0.7            | NNW | 0.5            | S   | 0.6            | W   |  |
| 13:00 - 14:00 | 1.3            | NE  | 1.1            | S   | 1.2            | ESE |  |
| 14:00 - 15:00 | 0.2            | ENE | 0.3            | W   | 0.3            | SSE |  |
| Wind Rose     |                |     |                |     |                |     |  |



File Control :R:\Database\Windrose\FileControl\Win-224032-Wat Pluak Kate 19-26 Jan 2024

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-UNT&UUCP

Location : Ban Na Pun R.7

Monitor period : 19-26 Jan 2024

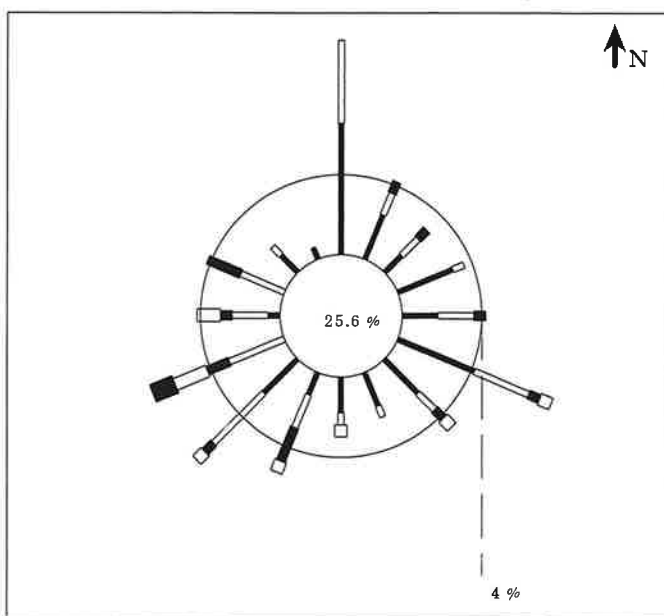
Wind Speed Model : NRG Symphonie

Serial No : A4905

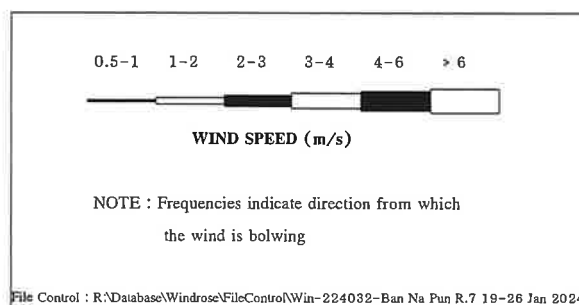
Wind Direction Model : NRG Symphonie

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         | 0.0655                                                                | 0.0417  | 0.0000  | 0.0000  | 0.0000  | 0.0000      | 0.1071 |
| NNE       | 0.0238                                                                | 0.0119  | 0.0060  | 0.0000  | 0.0000  | 0.0000      | 0.0417 |
| NE        | 0.0119                                                                | 0.0119  | 0.0060  | 0.0000  | 0.0000  | 0.0000      | 0.0298 |
| ENE       | 0.0298                                                                | 0.0060  | 0.0000  | 0.0000  | 0.0000  | 0.0000      | 0.0357 |
| E         | 0.0179                                                                | 0.0179  | 0.0060  | 0.0000  | 0.0000  | 0.0000      | 0.0417 |
| ESE       | 0.0417                                                                | 0.0298  | 0.0060  | 0.0060  | 0.0000  | 0.0000      | 0.0833 |
| SE        | 0.0238                                                                | 0.0119  | 0.0060  | 0.0060  | 0.0000  | 0.0000      | 0.0476 |
| SSE       | 0.0179                                                                | 0.0060  | 0.0000  | 0.0000  | 0.0000  | 0.0000      | 0.0238 |
| S         | 0.0179                                                                | 0.0060  | 0.0000  | 0.0060  | 0.0000  | 0.0000      | 0.0298 |
| SSW       | 0.0119                                                                | 0.0179  | 0.0179  | 0.0060  | 0.0000  | 0.0000      | 0.0536 |
| SW        | 0.0238                                                                | 0.0357  | 0.0060  | 0.0060  | 0.0000  | 0.0000      | 0.0714 |
| WSW       | 0.0000                                                                | 0.0298  | 0.0119  | 0.0179  | 0.0119  | 0.0000      | 0.0714 |
| W         | 0.0060                                                                | 0.0179  | 0.0060  | 0.0119  | 0.0000  | 0.0000      | 0.0417 |
| WNW       | 0.0000                                                                | 0.0238  | 0.0179  | 0.0000  | 0.0000  | 0.0000      | 0.0417 |
| NW        | 0.0119                                                                | 0.0060  | 0.0000  | 0.0000  | 0.0000  | 0.0000      | 0.0179 |
| NNW       | 0.0060                                                                | 0.0000  | 0.0000  | 0.0000  | 0.0000  | 0.0000      | 0.0060 |
| CALM      | 0.2560                                                                |         |         |         |         |             |        |



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

File Control : R:\Database\Windrose\FileControl\Win-224032-Ban Na Pun R.7 19-26 Jan 2024

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-UNT&UUCP

Location : Ban Na Pun R.7

Monitor period : 19-26 Jan 2024

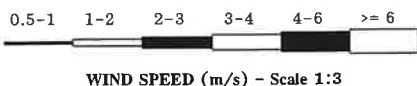
Wind Speed Model : NRG Symphonie

Serial No : A4905

Wind Direction Model : NRG Symphonie

Serial No : A4905

| Time          | 19-20 Jan 2024 |     | 20-21 Jan 2024 |     | 21-22 Jan 2024 |     | 22-23 Jan 2024 |     |
|---------------|----------------|-----|----------------|-----|----------------|-----|----------------|-----|
|               | WS(m/s)        | WD  | WS(m/s)        | WD  | WS(m/s)        | WD  | WS(m/s)        | WD  |
| 14:00 - 15:00 | 2.3            | WSW | 3.2            | S   | 3.3            | W   | 5.0            | WSW |
| 15:00 - 16:00 | 1.8            | WSW | 2.6            | W   | 0.7            | SSW | 1.0            | SW  |
| 16:00 - 17:00 | 2.4            | WNW | 1.5            | NW  | 1.6            | SW  | 3.0            | WSW |
| 17:00 - 18:00 | 1.3            | SW  | 1.3            | WNW | 1.0            | W   | 1.9            | WSW |
| 18:00 - 19:00 | 1.6            | W   | 0.6            | ESE | 1.0            | WSW | 1.4            | SW  |
| 19:00 - 20:00 | 0.3            | NE  | 1.0            | ESE | 0.5            | E   | 0.2            | S   |
| 20:00 - 21:00 | 0.4            | SSW | 0.5            | SW  | 0.3            | ESE | 0.5            | SE  |
| 21:00 - 22:00 | 0.3            | ESE | 0.5            | S   | 0.3            | SE  | 0.2            | NE  |
| 22:00 - 23:00 | 0.2            | SSW | 0.5            | ESE | 0.6            | SE  | 0.5            | SSE |
| 23:00 - 24:00 | 0.2            | SSE | 0.4            | ESE | 0.2            | S   | 0.6            | SW  |
| 00:00 - 01:00 | 0.6            | SSW | 1.8            | S   | 0.6            | ESE | 0.3            | ESE |
| 01:00 - 02:00 | 0.5            | ESE | 0.4            | SSW | 0.3            | SE  | 0.4            | SE  |
| 02:00 - 03:00 | 0.2            | E   | 1.1            | W   | 0.3            | ESE | 0.5            | SSE |
| 03:00 - 04:00 | 0.2            | ENE | 0.3            | WSW | 0.6            | SE  | 1.0            | E   |
| 04:00 - 05:00 | 0.2            | N   | 0.3            | E   | 0.4            | ESE | 0.2            | E   |
| 05:00 - 06:00 | 0.2            | N   | 0.4            | ESE | 0.6            | ESE | 0.6            | SSE |
| 06:00 - 07:00 | 0.3            | ESE | 0.3            | NNE | 0.4            | NE  | 1.1            | ESE |
| 07:00 - 08:00 | 0.6            | ESE | 0.3            | E   | 0.5            | E   | 1.1            | SE  |
| 08:00 - 09:00 | 1.0            | WNW | 0.3            | SSE | 1.8            | SSE | 1.3            | ESE |
| 09:00 - 10:00 | 3.9            | SSW | 1.6            | WSW | 3.0            | WSW | 0.7            | S   |
| 10:00 - 11:00 | 2.0            | SSW | 1.4            | SSW | 2.7            | WSW | 1.9            | SW  |
| 11:00 - 12:00 | 0.9            | W   | 2.2            | WNW | 3.4            | WSW | 0.6            | SE  |
| 12:00 - 13:00 | 2.2            | SW  | 3.8            | W   | 4.2            | WSW | 0.3            | WSW |
| 13:00 - 14:00 | 1.1            | WNW | 1.9            | WSW | 3.4            | SW  | 1.6            | SE  |
| Wind Rose     |                |     |                |     |                |     |                |     |



File Control :R:\Database\Windrose\FileControl\NWin-224032-Ban Na Pun R.7 19-26 Jan 2024

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-UNT&UUCP

Location : Ban Na Pun R.7

Monitor period : 19-26 Jan 2024

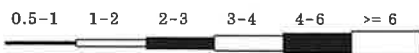
Wind Speed Model : NRG Symphonie

Serial No : A4905

Wind Direction Model : NRG Symphonie

Serial No : A4905

| Time          | 23-24 Jan 2024 |     | 24-25 Jan 2024 |     | 25-26 Jan 2024 |     |  |
|---------------|----------------|-----|----------------|-----|----------------|-----|--|
|               | WS(m/s)        | WD  | WS(m/s)        | WD  | WS(m/s)        | WD  |  |
| 14:00 - 15:00 | 1.6            | SSW | 0.9            | N   | 1.2            | WNW |  |
| 15:00 - 16:00 | 2.1            | SSW | 0.4            | NNW | 2.3            | WNW |  |
| 16:00 - 17:00 | 1.0            | SSW | 0.5            | NNE | 0.9            | NNE |  |
| 17:00 - 18:00 | 0.6            | S   | 0.5            | NNE | 0.4            | NNW |  |
| 18:00 - 19:00 | 0.8            | ESE | 0.2            | NNE | 0.9            | N   |  |
| 19:00 - 20:00 | 0.4            | ESE | 0.7            | NW  | 0.2            | SSE |  |
| 20:00 - 21:00 | 0.2            | E   | 0.6            | N   | 0.5            | SW  |  |
| 21:00 - 22:00 | 0.4            | E   | 0.5            | N   | 0.3            | NE  |  |
| 22:00 - 23:00 | 0.5            | SW  | 0.5            | N   | 0.7            | N   |  |
| 23:00 - 24:00 | 0.6            | ENE | 1.4            | NE  | 2.0            | NNE |  |
| 00:00 - 01:00 | 0.9            | N   | 0.3            | NE  | 1.7            | N   |  |
| 01:00 - 02:00 | 0.5            | NE  | 0.6            | N   | 1.4            | NNE |  |
| 02:00 - 03:00 | 3.0            | ESE | 1.6            | N   | 0.4            | NNW |  |
| 03:00 - 04:00 | 0.9            | ENE | 1.4            | N   | 0.7            | NNW |  |
| 04:00 - 05:00 | 0.5            | ENE | 1.2            | N   | 0.8            | N   |  |
| 05:00 - 06:00 | 0.8            | ENE | 1.5            | ESE | 0.5            | ENE |  |
| 06:00 - 07:00 | 1.1            | NNE | 1.0            | NE  | 0.7            | N   |  |
| 07:00 - 08:00 | 0.9            | N   | 1.8            | E   | 1.5            | ENE |  |
| 08:00 - 09:00 | 0.6            | NE  | 0.4            | E   | 0.5            | E   |  |
| 09:00 - 10:00 | 0.3            | NNE | 1.1            | E   | 2.8            | NE  |  |
| 10:00 - 11:00 | 1.2            | N   | 2.2            | SE  | 2.8            | E   |  |
| 11:00 - 12:00 | 1.6            | N   | 3.1            | SE  | 0.5            | NNE |  |
| 12:00 - 13:00 | 1.2            | N   | 2.9            | SSW | 2.1            | ESE |  |
| 13:00 - 14:00 | 0.5            | NW  | 1.6            | ESE | 1.1            | SW  |  |
| Wind Rose     |                |     |                |     |                |     |  |



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

File Control :R:\Database\Windrose\FileControl\Win-224032-Ban Na Pun R.7 19-26 Jan 2024

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

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

### AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : UBE Chemicals (Asia) Public Co., Ltd. REF. NO. : 223032 Amb-TSP (Jan 24)  
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 19-26/01/2024  
RECEIVED DATE : 30/01/2024 ANALYTICAL DATE : 01-02/02/2024  
REPORT DATE : 05/02/2024 SAMPLE CONDITION : Normal  
SITE OPERATOR : Mr. Siwanon Kulawong  
STATION DESCRIPTION : 1. Wat Pluak Kate  
2. Ban Na Pun R.7

| PARAMETER   | SAMPLING<br>DATE | UNITS             | RESULTS |       | STANDARD* | REFERENCE<br>METHODS                             |
|-------------|------------------|-------------------|---------|-------|-----------|--------------------------------------------------|
|             |                  |                   | 1       | 2     |           |                                                  |
| TSP (24 hr) | 19-20/01/2024    | mg/m <sup>3</sup> | 0.101   | 0.088 | 0.330     | High Volume Air<br>Sampler/Gravimetric<br>Method |
|             | 20-21/01/2024    | mg/m <sup>3</sup> | 0.082   | 0.065 |           |                                                  |
|             | 21-22/01/2024    | mg/m <sup>3</sup> | 0.064   | 0.066 |           |                                                  |
|             | 22-23/01/2024    | mg/m <sup>3</sup> | 0.087   | 0.069 |           |                                                  |
|             | 23-24/01/2024    | mg/m <sup>3</sup> | 0.104   | 0.099 |           |                                                  |
|             | 24-25/01/2024    | mg/m <sup>3</sup> | 0.128   | 0.120 |           |                                                  |
|             | 25-26/01/2024    | mg/m <sup>3</sup> | 0.114   | 0.100 |           |                                                  |

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

Narisa Poowasanpet

(Miss Narisa Poowasanpet)

Technical Management Team

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

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

3. \* Notification of the National Environment Board, No.24, B.E.2547.



## Ambient Air Monitoring Results : Sulfur dioxide MTR-UNT&UUCP

Location : Wat Pluak Kate

Monitor Period : 19-26 Jan 2024

Analyzer Model : API 100A

Station No : Shelter 19

Serial No : 1715

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D. : EB0108319

Certified Date : 05 Jan 2024

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

Expire Date : 04 Jan 2025

| Time          | SO2 Concentration (ppm) |                |                |                |                |                |                |
|---------------|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
|               | 19-20 Jan 2024          | 20-21 Jan 2024 | 21-22 Jan 2024 | 22-23 Jan 2024 | 23-24 Jan 2024 | 24-25 Jan 2024 | 25-26 Jan 2024 |
| 15:00 - 16:00 | 0.0030                  | 0.0035         | 0.0022         | 0.0017         | 0.0018         | 0.0014         | 0.0039         |
| 16:00 - 17:00 | 0.0022                  | 0.0041         | 0.0035         | 0.0033         | 0.0018         | 0.0032         | 0.0033         |
| 17:00 - 18:00 | 0.0027                  | 0.0045         | 0.0025         | 0.0023         | 0.0016         | 0.0028         | 0.0018         |
| 18:00 - 19:00 | 0.0021                  | 0.0034         | 0.0031         | 0.0018         | 0.0026         | 0.0024         | 0.0024         |
| 19:00 - 20:00 | 0.0021                  | 0.0029         | 0.0019         | 0.0034         | 0.0034         | 0.0018         | 0.0038         |
| 20:00 - 21:00 | 0.0042                  | 0.0028         | 0.0032         | 0.0024         | 0.0019         | 0.0033         | 0.0034         |
| 21:00 - 22:00 | 0.0042                  | 0.0037         | 0.0024         | 0.0037         | 0.0025         | 0.0030         | 0.0009         |
| 22:00 - 23:00 | 0.0037                  | 0.0027         | 0.0027         | 0.0025         | 0.0030         | 0.0034         | 0.0029         |
| 23:00 - 00:00 | 0.0028                  | 0.0009         | 0.0019         | 0.0029         | 0.0023         | 0.0020         | 0.0035         |
| 00:00 - 01:00 | 0.0030                  | 0.0029         | 0.0034         | 0.0033         | 0.0026         | 0.0037         | 0.0031         |
| 01:00 - 02:00 | 0.0022                  | 0.0029         | 0.0041         | 0.0024         | 0.0030         | 0.0032         | 0.0019         |
| 02:00 - 03:00 | 0.0033                  | 0.0019         | 0.0016         | 0.0029         | 0.0023         | 0.0022         | 0.0028         |
| 03:00 - 04:00 | 0.0034                  | 0.0016         | 0.0034         | 0.0027         | 0.0032         | 0.0015         | 0.0032         |
| 04:00 - 05:00 | 0.0035                  | 0.0029         | 0.0043         | 0.0027         | 0.0032         | 0.0022         | 0.0031         |
| 05:00 - 06:00 | 0.0020                  | 0.0029         | 0.0027         | 0.0029         | 0.0023         | 0.0029         | 0.0031         |
| 06:00 - 07:00 | 0.0038                  | 0.0042         | 0.0026         | 0.0014         | 0.0022         | 0.0029         | 0.0044         |
| 07:00 - 08:00 | 0.0031                  | 0.0027         | 0.0026         | 0.0030         | 0.0033         | 0.0025         | 0.0039         |
| 08:00 - 09:00 | 0.0032                  | 0.0034         | 0.0032         | 0.0031         | 0.0033         | 0.0023         | 0.0032         |
| 09:00 - 10:00 | 0.0036                  | 0.0038         | 0.0024         | 0.0041         | 0.0036         | 0.0022         | 0.0042         |
| 10:00 - 11:00 | 0.0024                  | 0.0013         | 0.0023         | 0.0018         | 0.0037         | 0.0032         | 0.0031         |
| 11:00 - 12:00 | 0.0032                  | 0.0013         | 0.0033         | 0.0024         | 0.0021         | 0.0038         | 0.0024         |
| 12:00 - 13:00 | 0.0026                  | 0.0021         | 0.0027         | 0.0028         | 0.0038         | 0.0022         | 0.0026         |
| 13:00 - 14:00 | 0.0026                  | 0.0032         | 0.0040         | 0.0023         | 0.0018         | 0.0042         | 0.0023         |
| 14:00 - 15:00 | 0.0025                  | 0.0034         | 0.0029         | 0.0021         | 0.0030         | 0.0035         | 0.0037         |
| Average-24Hr* | 0.0030                  | 0.0029         | 0.0029         | 0.0027         | 0.0027         | 0.0027         | 0.0030         |
| Max-1Hr       | 0.0042                  | 0.0045         | 0.0043         | 0.0041         | 0.0038         | 0.0042         | 0.0044         |
| Min-1Hr       | 0.0020                  | 0.0009         | 0.0016         | 0.0014         | 0.0016         | 0.0014         | 0.0009         |
| Standard-1Hr  | 0.30 ppm(780 ug/cu.m)   |                |                |                |                |                |                |
| Standard-24Hr | 0.12 ppm(300 ug/cu.m)   |                |                |                |                |                |                |

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Ambient Air Monitoring Results : Sulfur dioxide

### MTR-UNT&UUCP

Location : Ban Na Pun R.7

Monitor Period : 19-26 Jan 2024

Analyzer Model : API 100A

Station No : SCT-16

Serial No : 376

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D. : EB0108319

Certified Date : 04 Jan 2024

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

Expire Date : 03 Jan 2025

| Time          | SO2 Concentration (ppm) |                |                |                |                |                |                |
|---------------|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
|               | 19-20 Jan 2024          | 20-21 Jan 2024 | 21-22 Jan 2024 | 22-23 Jan 2024 | 23-24 Jan 2024 | 24-25 Jan 2024 | 25-26 Jan 2024 |
| 14:00 - 15:00 | 0.0034                  | 0.0040         | 0.0034         | 0.0022         | 0.0044         | 0.0017         | 0.0047         |
| 15:00 - 16:00 | 0.0032                  | 0.0052         | 0.0046         | 0.0054         | 0.0030         | 0.0029         | 0.0043         |
| 16:00 - 17:00 | 0.0057                  | 0.0064         | 0.0046         | 0.0038         | 0.0038         | 0.0034         | 0.0025         |
| 17:00 - 18:00 | 0.0050                  | 0.0024         | 0.0064         | 0.0042         | 0.0058         | 0.0024         | 0.0034         |
| 18:00 - 19:00 | 0.0063                  | 0.0030         | 0.0051         | 0.0053         | 0.0041         | 0.0032         | 0.0051         |
| 19:00 - 20:00 | 0.0037                  | 0.0056         | 0.0046         | 0.0045         | 0.0047         | 0.0030         | 0.0046         |
| 20:00 - 21:00 | 0.0046                  | 0.0067         | 0.0042         | 0.0036         | 0.0034         | 0.0023         | 0.0032         |
| 21:00 - 22:00 | 0.0064                  | 0.0040         | 0.0036         | 0.0038         | 0.0044         | 0.0036         | 0.0066         |
| 22:00 - 23:00 | 0.0043                  | 0.0024         | 0.0028         | 0.0034         | 0.0034         | 0.0043         | 0.0042         |
| 23:00 - 00:00 | 0.0048                  | 0.0023         | 0.0042         | 0.0039         | 0.0052         | 0.0027         | 0.0045         |
| 00:00 - 01:00 | 0.0034                  | 0.0046         | 0.0059         | 0.0036         | 0.0067         | 0.0046         | 0.0044         |
| 01:00 - 02:00 | 0.0055                  | 0.0035         | 0.0052         | 0.0021         | 0.0040         | 0.0032         | 0.0043         |
| 02:00 - 03:00 | 0.0057                  | 0.0039         | 0.0059         | 0.0031         | 0.0046         | 0.0032         | 0.0045         |
| 03:00 - 04:00 | 0.0052                  | 0.0038         | 0.0038         | 0.0059         | 0.0052         | 0.0047         | 0.0055         |
| 04:00 - 05:00 | 0.0051                  | 0.0067         | 0.0021         | 0.0048         | 0.0043         | 0.0056         | 0.0048         |
| 05:00 - 06:00 | 0.0043                  | 0.0042         | 0.0046         | 0.0031         | 0.0050         | 0.0042         | 0.0048         |
| 06:00 - 07:00 | 0.0040                  | 0.0047         | 0.0047         | 0.0047         | 0.0058         | 0.0048         | 0.0031         |
| 07:00 - 08:00 | 0.0040                  | 0.0029         | 0.0035         | 0.0053         | 0.0047         | 0.0024         | 0.0036         |
| 08:00 - 09:00 | 0.0040                  | 0.0053         | 0.0043         | 0.0051         | 0.0044         | 0.0048         | 0.0056         |
| 09:00 - 10:00 | 0.0041                  | 0.0040         | 0.0039         | 0.0026         | 0.0045         | 0.0048         | 0.0049         |
| 10:00 - 11:00 | 0.0028                  | 0.0022         | 0.0037         | 0.0030         | 0.0025         | 0.0053         | 0.0053         |
| 11:00 - 12:00 | 0.0047                  | 0.0033         | 0.0042         | 0.0051         | 0.0046         | 0.0063         | 0.0053         |
| 12:00 - 13:00 | 0.0039                  | 0.0051         | 0.0049         | 0.0046         | 0.0056         | 0.0053         | 0.0058         |
| 13:00 - 14:00 | 0.0058                  | 0.0053         | 0.0032         | 0.0046         | 0.0043         | 0.0041         | 0.0061         |
| Average-24Hr* | 0.0046                  | 0.0042         | 0.0043         | 0.0041         | 0.0045         | 0.0039         | 0.0046         |
| Max-1Hr       | 0.0064                  | 0.0067         | 0.0064         | 0.0059         | 0.0067         | 0.0063         | 0.0066         |
| Min-1Hr       | 0.0028                  | 0.0022         | 0.0021         | 0.0021         | 0.0025         | 0.0017         | 0.0025         |
| Standard-1Hr  | 0.30 ppm(780 ug/cu.m)   |                |                |                |                |                |                |
| Standard-24Hr | 0.12 ppm(300 ug/cu.m)   |                |                |                |                |                |                |

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Ambient Air Monitoring Results : Nitrogen dioxide

### MTR-UNT&UUCP

Location : Wat Pluak Kate

Monitor Period : 19-26 Jan 2024

Analyzer Model : API 200A

Station No : Shelter 19

Serial No : 1505

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D. : EB0108319

Certified Date : 05 Jan 2024

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

Expire Date : 04 Jan 2025

| Time          | NO2 Concentration (ppm) |                |                |                |                |                |                |
|---------------|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
|               | 19-20 Jan 2024          | 20-21 Jan 2024 | 21-22 Jan 2024 | 22-23 Jan 2024 | 23-24 Jan 2024 | 24-25 Jan 2024 | 25-26 Jan 2024 |
| 15:00 - 16:00 | 0.0074                  | 0.0056         | 0.0065         | 0.0098         | 0.0067         | 0.0087         | 0.0078         |
| 16:00 - 17:00 | 0.0113                  | 0.0050         | 0.0054         | 0.0098         | 0.0064         | 0.0088         | 0.0033         |
| 17:00 - 18:00 | 0.0111                  | 0.0060         | 0.0067         | 0.0095         | 0.0122         | 0.0056         | 0.0099         |
| 18:00 - 19:00 | 0.0112                  | 0.0089         | 0.0085         | 0.0100         | 0.0027         | 0.0094         | 0.0108         |
| 19:00 - 20:00 | 0.0119                  | 0.0100         | 0.0100         | 0.0026         | 0.0106         | 0.0086         | 0.0085         |
| 20:00 - 21:00 | 0.0135                  | 0.0103         | 0.0034         | 0.0095         | 0.0068         | 0.0055         | 0.0081         |
| 21:00 - 22:00 | 0.0077                  | 0.0016         | 0.0084         | 0.0076         | 0.0090         | 0.0062         | 0.0089         |
| 22:00 - 23:00 | 0.0014                  | 0.0107         | 0.0069         | 0.0073         | 0.0076         | 0.0056         | 0.0086         |
| 23:00 - 00:00 | 0.0139                  | 0.0117         | 0.0094         | 0.0090         | 0.0054         | 0.0073         | 0.0069         |
| 00:00 - 01:00 | 0.0058                  | 0.0035         | 0.0092         | 0.0095         | 0.0081         | 0.0056         | 0.0051         |
| 01:00 - 02:00 | 0.0004                  | 0.0012         | 0.0004         | 0.0014         | 0.0030         | 0.0036         | 0.0058         |
| 02:00 - 03:00 | 0.0082                  | 0.0046         | 0.0071         | 0.0036         | 0.0028         | 0.0029         | 0.0059         |
| 03:00 - 04:00 | 0.0032                  | 0.0044         | 0.0056         | 0.0042         | 0.0037         | 0.0053         | 0.0062         |
| 04:00 - 05:00 | 0.0026                  | 0.0029         | 0.0038         | 0.0056         | 0.0051         | 0.0033         | 0.0057         |
| 05:00 - 06:00 | 0.0042                  | 0.0071         | 0.0066         | 0.0046         | 0.0036         | 0.0065         | 0.0041         |
| 06:00 - 07:00 | 0.0054                  | 0.0047         | 0.0084         | 0.0090         | 0.0037         | 0.0042         | 0.0075         |
| 07:00 - 08:00 | 0.0084                  | 0.0048         | 0.0075         | 0.0101         | 0.0057         | 0.0066         | 0.0056         |
| 08:00 - 09:00 | 0.0072                  | 0.0076         | 0.0117         | 0.0095         | 0.0056         | 0.0080         | 0.0091         |
| 09:00 - 10:00 | 0.0097                  | 0.0049         | 0.0069         | 0.0106         | 0.0072         | 0.0076         | 0.0096         |
| 10:00 - 11:00 | 0.0047                  | 0.0041         | 0.0068         | 0.0091         | 0.0056         | 0.0062         | 0.0090         |
| 11:00 - 12:00 | 0.0050                  | 0.0023         | 0.0091         | 0.0056         | 0.0065         | 0.0061         | 0.0066         |
| 12:00 - 13:00 | 0.0042                  | 0.0033         | 0.0079         | 0.0048         | 0.0057         | 0.0082         | 0.0063         |
| 13:00 - 14:00 | 0.0067                  | 0.0054         | 0.0093         | 0.0045         | 0.0101         | 0.0086         | 0.0077         |
| 14:00 - 15:00 | 0.0070                  | 0.0045         | 0.0082         | 0.0047         | 0.0102         | 0.0069         | 0.0087         |
| Average-24Hr* | 0.0072                  | 0.0056         | 0.0072         | 0.0072         | 0.0064         | 0.0065         | 0.0073         |
| Max-1Hr       | 0.0139                  | 0.0117         | 0.0117         | 0.0106         | 0.0122         | 0.0094         | 0.0108         |
| Min-1Hr       | 0.0004                  | 0.0012         | 0.0004         | 0.0014         | 0.0027         | 0.0029         | 0.0033         |
| Standard-1Hr  | 0.17 ppm(320 ug/cu.m)   |                |                |                |                |                |                |
| Standard-24Hr | -                       |                |                |                |                |                |                |

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Ambient Air Monitoring Results : Nitrogen dioxide

### MTR-UNT&UUCP

Location : Ban Na Pun R.7

Monitor Period : 19-26 Jan 2024

Analyzer Model : API 200A

Station No : SCT-16

Serial No : 1528

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D. : EB0108319

Certified Date : 05 Jan 2024

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

Expire Date : 04 Jan 2025

| Time          | NO2 Concentration (ppm) |                |                |                |                |                |                |
|---------------|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
|               | 19-20 Jan 2024          | 20-21 Jan 2024 | 21-22 Jan 2024 | 22-23 Jan 2024 | 23-24 Jan 2024 | 24-25 Jan 2024 | 25-26 Jan 2024 |
| 14:00 - 15:00 | 0.0060                  | 0.0074         | 0.0044         | 0.0073         | 0.0069         | 0.0094         | 0.0104         |
| 15:00 - 16:00 | 0.0099                  | 0.0049         | 0.0083         | 0.0093         | 0.0078         | 0.0100         | 0.0112         |
| 16:00 - 17:00 | 0.0092                  | 0.0075         | 0.0081         | 0.0097         | 0.0110         | 0.0094         | 0.0042         |
| 17:00 - 18:00 | 0.0131                  | 0.0076         | 0.0107         | 0.0120         | 0.0133         | 0.0048         | 0.0116         |
| 18:00 - 19:00 | 0.0132                  | 0.0096         | 0.0090         | 0.0120         | 0.0051         | 0.0090         | 0.0098         |
| 19:00 - 20:00 | 0.0106                  | 0.0119         | 0.0089         | 0.0036         | 0.0090         | 0.0085         | 0.0089         |
| 20:00 - 21:00 | 0.0151                  | 0.0110         | 0.0046         | 0.0137         | 0.0070         | 0.0098         | 0.0107         |
| 21:00 - 22:00 | 0.0105                  | 0.0032         | 0.0117         | 0.0094         | 0.0104         | 0.0071         | 0.0082         |
| 22:00 - 23:00 | 0.0013                  | 0.0116         | 0.0090         | 0.0092         | 0.0087         | 0.0062         | 0.0092         |
| 23:00 - 00:00 | 0.0128                  | 0.0127         | 0.0096         | 0.0084         | 0.0088         | 0.0076         | 0.0042         |
| 00:00 - 01:00 | 0.0078                  | 0.0079         | 0.0085         | 0.0085         | 0.0071         | 0.0065         | 0.0082         |
| 01:00 - 02:00 | 0.0027                  | 0.0016         | 0.0041         | 0.0020         | 0.0033         | 0.0066         | 0.0042         |
| 02:00 - 03:00 | 0.0076                  | 0.0069         | 0.0069         | 0.0052         | 0.0069         | 0.0047         | 0.0069         |
| 03:00 - 04:00 | 0.0057                  | 0.0085         | 0.0079         | 0.0027         | 0.0065         | 0.0035         | 0.0069         |
| 04:00 - 05:00 | 0.0060                  | 0.0052         | 0.0067         | 0.0045         | 0.0035         | 0.0035         | 0.0041         |
| 05:00 - 06:00 | 0.0072                  | 0.0081         | 0.0053         | 0.0047         | 0.0040         | 0.0073         | 0.0062         |
| 06:00 - 07:00 | 0.0054                  | 0.0075         | 0.0092         | 0.0087         | 0.0069         | 0.0088         | 0.0083         |
| 07:00 - 08:00 | 0.0071                  | 0.0070         | 0.0111         | 0.0101         | 0.0084         | 0.0095         | 0.0083         |
| 08:00 - 09:00 | 0.0059                  | 0.0107         | 0.0101         | 0.0111         | 0.0076         | 0.0091         | 0.0079         |
| 09:00 - 10:00 | 0.0090                  | 0.0084         | 0.0109         | 0.0091         | 0.0069         | 0.0107         | 0.0088         |
| 10:00 - 11:00 | 0.0069                  | 0.0070         | 0.0098         | 0.0066         | 0.0090         | 0.0073         | 0.0090         |
| 11:00 - 12:00 | 0.0053                  | 0.0050         | 0.0105         | 0.0069         | 0.0094         | 0.0093         | 0.0100         |
| 12:00 - 13:00 | 0.0051                  | 0.0045         | 0.0077         | 0.0054         | 0.0069         | 0.0075         | 0.0101         |
| 13:00 - 14:00 | 0.0054                  | 0.0054         | 0.0092         | 0.0056         | 0.0112         | 0.0113         | 0.0085         |
| Average-24Hr* | 0.0079                  | 0.0075         | 0.0084         | 0.0077         | 0.0077         | 0.0078         | 0.0082         |
| Max-1Hr       | 0.0151                  | 0.0127         | 0.0117         | 0.0137         | 0.0133         | 0.0113         | 0.0116         |
| Min-1Hr       | 0.0013                  | 0.0016         | 0.0041         | 0.0020         | 0.0033         | 0.0035         | 0.0041         |
| Standard-1Hr  | 0.17 ppm(320 ug/cu.m)   |                |                |                |                |                |                |
| Standard-24Hr | -                       |                |                |                |                |                |                |

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team

## ภาคผนวก ง.2

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ใบรับรองผลการตรวจวิเคราะห์  
คุณภาพอากาศจากปล่องระบายอากาศ



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

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

## STACK EMISSION ANALYSIS REPORT

|                    |                                         |                  |                                                 |
|--------------------|-----------------------------------------|------------------|-------------------------------------------------|
| CLIENT NAME        | : UBE Chemicals (Asia) Public Co., Ltd. | REF. NO.         | : 223032 Cert-Stk/Hot Oil_NO <sub>x</sub> (Jan) |
| SAMPLING BY        | : SECOT Co., Ltd.                       | SAMPLING DATE    | : 25/01/2024                                    |
| RECEIVED DATE      | : 26/01/2024                            | ANALYTICAL DATE  | : 30/01/2024                                    |
| REPORT DATE        | : 02/02/2024                            | SAMPLE CONDITION | : Normal                                        |
| STACK LOCATION     | : Hot Oil Heater                        | OPERATOR         | : Mr. Kittipong Thakoengsuk                     |
| SOURCE DESCRIPTION | : Combustion                            | FUEL TYPE        | : Natural Gas                                   |

### STACK DESCRIPTION

|             |         |    |               |        |           |
|-------------|---------|----|---------------|--------|-----------|
| Height      | : 20.0  | m  | Gas Velocity  | : 3.3  | m/s       |
| Diameter    | : 0.45  | m  | Flow Rate*    | : 19.4 | Ncu.m/min |
| Temperature | : 148.8 | °C | Excess Oxygen | : 6.6  | %         |

| PARAMETER         | UNITS | RESULTS*           |                  | STANDARD                            | REFERENCE METHOD |
|-------------------|-------|--------------------|------------------|-------------------------------------|------------------|
|                   |       | 6.6%O <sub>2</sub> | 7%O <sub>2</sub> |                                     |                  |
| Oxide of Nitrogen | ppm   | 51.7               | 50.3             | 200 <sup>1/</sup> /95 <sup>2/</sup> | US.EPA Method 7  |



(Miss Pornnapa Budthum)

Analyst

REG.NO.จ-239-จ-0018



(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ค-0010

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

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

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

4. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2549 (2006) and the Ministry of Natural Resources and Environment, B.E.2549 (2006) @ 7%O<sub>2</sub>.

5. <sup>2/</sup> Emission standard @ 7%O<sub>2</sub> according to EIA report.

### ภาคผนวก ง.3

## ใบรับรองผลการตรวจวิเคราะห์คุณภาพน้ำ



## Analysis / Test Report

TESTING  
No.0042

**Client :** UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
**P/O :** 4500153369  
**Project Name :** Environmental Monitoring  
**Project Location :** Nylon Plant

**Lot ID: 23138832**

Date Received : Jan 10, 2024  
Date Reported : Jan 24, 2024  
Report Number : 2848912-1

Page 1 of 1

**Sample Number** 23138832-1  
**Sampled Date** Jan 10, 2024 10:50 AM  
**Sample Description** Wastewater  
**Location** S-32-111  
**Date Analysis Commenced** Jan 10, 2024  
**Condition of Sample** Contained in one amber glass bottle, two glass vials and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte                                          | Unit | LOD | LOQ (LOR) | Result | Method                                                                                                                           | Testing Location |
|--------------------------------------------------|------|-----|-----------|--------|----------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                             |      |     |           |        |                                                                                                                                  |                  |
| BOD (5 days at 20 Degree C)                      | mg/L | -   | 2.0       | 65.3   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G     | Rayong           |
| COD                                              | mg/L | 1.5 | 25        | 1295   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D                      | Rayong           |
| Oil & Grease                                     | mg/L | -   | 3         | <3     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B                      | Rayong           |
| pH at 25 degree C                                |      | -   | -         | 7.7    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)                | Rayong           |
| Total Dissolved Solids Dried at 180 degree C     | mg/L | -   | 5         | 302    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C                      | Rayong           |
| Total Kjeldahl Nitrogen as N                     | mg/L | -   | 1.0       | 59.8   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D) | Rayong           |
| Total Suspended Solids Dried at 103-105 degree C | mg/L | -   | 5         | 23     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D                      | Rayong           |

**Sampling By :** Narunat thammasaro ทะเบียนเลขที่ ว-323-จ-9477 , Panupong Manit ทะเบียนเลขที่ ว-204-จ-8600

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**Technical Management**

*N. Banchookit*

Narumon Banchookit  
Supervisor  
ทะเบียนเลขที่ ว-323-จ-9445

**Approved by**

*D. Changchon*

Dej Changchon  
Senior Manager  
ทะเบียนเลขที่ ว-323-ค-9442

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## Analysis / Test Report

**Client :** UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
**P/O :** 4500153369  
**Project Name :** Environmental Monitoring  
**Project Location :** Nylon Plant

**Lot ID: 23138832**

Date Received : Jan 10, 2024  
Date Reported : Jan 24, 2024  
Report Number : 2848912-2

Page 1 of 1

**Sample Number** 23138832-1  
**Sampled Date** Jan 10, 2024 10:50 AM  
**Sample Description** Wastewater  
**Location** S-32-111  
**Date Analysis Commenced** Jan 10, 2024  
**Condition of Sample** Contained in one amber glass bottle, two glass vials and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte              | Unit   | LOD  | LOQ (LOR) | Result | Method                                                                                                      | Testing Location |
|----------------------|--------|------|-----------|--------|-------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b> |        |      |           |        |                                                                                                             |                  |
| Flow rate            | m3/day |      |           | 406    | Flow meter                                                                                                  | Rayong           |
| Total Organic Carbon | mg/L   | 0.01 | 0.1       | 363    | Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5310 B | Bangkok          |

**Sampling By :** Narunat thammassaro , Panupong Mani

**Remark :**

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*N. Banchongkit*

Narumon Banchongkit  
Supervisor

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## Analysis / Test Report

TESTING  
No.0042

**Client :** UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
**P/O :** 4500153369  
**Project Name :** Environmental Monitoring  
**Project Location :** Nylon Plant

**Lot ID: 243447**

Date Received : Feb 07, 2024  
Date Reported : Feb 15, 2024  
Report Number : 2882504-1

Page 1 of 1

**Sample Number** 243447-1  
**Sampled Date** Feb 07, 2024 11:10 AM  
**Sample Description** Wastewater  
**Location** S-32-111  
**Date Analysis Commenced** Feb 07, 2024  
**Condition of Sample** Contained in two glass vials, one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte                                          | Unit | LOD | LOQ (LOR) | Result | Method                                                                                                                           | Testing Location |
|--------------------------------------------------|------|-----|-----------|--------|----------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                             |      |     |           |        |                                                                                                                                  |                  |
| BOD (5 days at 20 Degree C)                      | mg/L | -   | 2.0       | 160    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G     | Rayong           |
| COD                                              | mg/L | 1.5 | 25        | 1025   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D                      | Rayong           |
| Oil & Grease                                     | mg/L | -   | 3         | 5      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B                      | Rayong           |
| pH at 25 degree C                                |      | -   | -         | 8.2    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)                | Rayong           |
| Total Dissolved Solids Dried at 180 degree C     | mg/L | -   | 5         | 306    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C                      | Rayong           |
| Total Kjeldahl Nitrogen as N                     | mg/L | -   | 1.0       | 51.6   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D) | Rayong           |
| Total Suspended Solids Dried at 103-105 degree C | mg/L | -   | 5         | 17     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D                      | Rayong           |

**Sampling By :** Tanasit Wongsachai ทะเบียนเลขที่ ว-323-จ-9460 , Samart Khumphlee ทะเบียนเลขที่ ว-204-จ-7830

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**Technical Management**

*N. Banongkit*

Narumon Banchongkit  
Supervisor  
ทะเบียนเลขที่ ว-323-จ-9445

**Approved by**

*D. Changchon*

Dej Changchon  
Senior Manager  
ทะเบียนเลขที่ ว-323-จ-9442

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**Client** : UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
**P/O** : 4500153369  
**Project Name** : Environmental Monitoring  
**Project Location** : Nylon Plant

**Lot ID: 243447**

Date Received : Feb 07, 2024  
Date Reported : Feb 15, 2024  
Report Number : 2882504-2

Page 1 of 1

|                                |                                                                                                                                                                 |  |  |  |  |  |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| <b>Sample Number</b>           | 243447-1                                                                                                                                                        |  |  |  |  |  |
| <b>Sampled Date</b>            | Feb 07, 2024 11:10 AM                                                                                                                                           |  |  |  |  |  |
| <b>Sample Description</b>      | Wastewater                                                                                                                                                      |  |  |  |  |  |
| <b>Location</b>                | S-32-111                                                                                                                                                        |  |  |  |  |  |
| <b>Date Analysis Commenced</b> | Feb 07, 2024                                                                                                                                                    |  |  |  |  |  |
| <b>Condition of Sample</b>     | Contained in two glass vials, one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |  |  |  |  |  |

| Analyte              | Unit   | LOD  | LOQ (LOR) | Result | Method                                                                                                      | Testing Location |
|----------------------|--------|------|-----------|--------|-------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b> |        |      |           |        |                                                                                                             |                  |
| Flow rate            | m3/day | -    | -         | 358    | Flow meter                                                                                                  | Rayong           |
| Total Organic Carbon | mg/L   | 0.01 | 0.1       | 341    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5310 B | Bangkok          |

**Sampling By** : Tanasit Wongsachai , Samart Khumphlee

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Narumon Banchongkit  
Supervisor

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## Analysis / Test Report

TESTING  
No.0042

**Client :** UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
**P/O :** 4500153369  
**Project Name :** Environmental Monitoring  
**Project Location :** Nylon Plant

**Lot ID: 2415431**

Date Received : Mar 06, 2024  
Date Reported : Mar 14, 2024  
Report Number : 2906088-1

Page 1 of 1

**Sample Number** 2415431-1  
**Sampled Date** Mar 06, 2024 10:50 AM  
**Sample Description** Wastewater  
**Location** S-32-111  
**Date Analysis Commenced** Mar 06, 2024  
**Condition of Sample** Contained in one amber glass bottle, two glass vials and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte                                          | Unit | LOD | LOQ (LOR) | Result | Method                                                                                                                           | Testing Location |
|--------------------------------------------------|------|-----|-----------|--------|----------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                             |      |     |           |        |                                                                                                                                  |                  |
| BOD (5 days at 20 Degree C)                      | mg/L | -   | 2.0       | 169    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G     | Rayong           |
| COD                                              | mg/L | 1.5 | 25        | 1037   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D                      | Rayong           |
| Oil & Grease                                     | mg/L | -   | 3         | <3     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B                      | Rayong           |
| pH at 25 degree C                                |      | -   | -         | 7.4    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)                | Rayong           |
| Total Dissolved Solids Dried at 180 degree C     | mg/L | -   | 5         | 242    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C                      | Rayong           |
| Total Kjeldahl Nitrogen as N                     | mg/L | -   | 1.0       | 57.6   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D) | Rayong           |
| Total Suspended Solids Dried at 103-105 degree C | mg/L | -   | 5         | 8      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D                      | Rayong           |

**Sampling By :** Surawit Narapong ทะเบียนเลขที่ ว-323-จ-0011 , Samart Khumphlee ทะเบียนเลขที่ ว-204-จ-0084

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**Technical Management**

*N. Banongkit*

Narumon Banchongkit  
Supervisor  
ทะเบียนเลขที่ ว-323-จ-9445

**Approved by**

*D. Changchon*

Dej Changchon  
Senior Manager  
ทะเบียนเลขที่ ว-323-จ-9442

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## Analysis / Test Report

**Client :** UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
**P/O :** 4500153369  
**Project Name :** Environmental Monitoring  
**Project Location :** Nylon Plant

**Lot ID: 2415431**

Date Received : Mar 06, 2024  
Date Reported : Mar 14, 2024  
Report Number : 2906088-2

Page 1 of 1

**Sample Number** 2415431-1  
**Sampled Date** Mar 06, 2024 10:50 AM  
**Sample Description** Wastewater  
**Location** S-32-111  
**Date Analysis Commenced** Mar 06, 2024  
**Condition of Sample** Contained in one amber glass bottle, two glass vials and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte              | Unit   | LOD  | LOQ (LOR) | Result | Method                                                                                                      | Testing Location |
|----------------------|--------|------|-----------|--------|-------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b> |        |      |           |        |                                                                                                             |                  |
| Flow rate            | m3/day | -    | -         | 512    | Flow meter                                                                                                  | Rayong           |
| Total Organic Carbon | mg/L   | 0.01 | 0.1       | 374    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5310 B | Bangkok          |

**Sampling By :** Surawit Narapong , Samart Khumphlee

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*N. Banchongkit*

Narumon Banchongkit  
Supervisor

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## Analysis / Test Report

TESTING  
No.0042

**Client :** UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
**P/O :** 4500164421  
**Project Name :** Environmental Monitoring  
**Project Location :** Nylon Plant

**Lot ID: 2429860**

Date Received : Apr 03, 2024  
Date Reported : Jun 18, 2024  
Report Number : 3028783-1

Page 1 of 1

**Sample Number** 2429860-1  
**Sampled Date** Apr 03, 2024 10:21 AM  
**Sample Description** Wastewater  
**Location** S-32-111  
**Date Analysis Commenced** Apr 04, 2024  
**Condition of Sample** Contained in two plastic bottles, two vials, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte                      | Unit | LOD | LOQ (LOR) | Result | Method                                                                                                                           | Testing Location |
|------------------------------|------|-----|-----------|--------|----------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>         |      |     |           |        |                                                                                                                                  |                  |
| BOD (5 days at 20 Degree C)  | mg/L | -   | 2.0       | 219    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G     | Rayong           |
| COD                          | mg/L | 1.5 | 25        | 932    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D                      | Rayong           |
| Total Kjeldahl Nitrogen as N | mg/L | -   | 1.0       | 37.3   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D) | Rayong           |

**Note :** This Analysis test report is reissued to supersede report No.2950495-1, Date Reported : Apr 11, 2024 due to revise analytical information.

**Sampling By :** Nattawut Athomprommarat ทะเบียนเลขที่ ว-323-จ-0006 , Samart Khumphlee ทะเบียนเลขที่ ว-204-จ-0084

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Technical Management

**Photchana S.**

Photchana Seeda  
Scientist (4)

ทะเบียนเลขที่ ว-323-จ-9446

Approved by

**D. Chumson.**

Dej Changchon  
Senior Manager

ทะเบียนเลขที่ ว-323-ค-9442

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## Analysis / Test Report

**Client :** UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
**P/O :** 4500164421  
**Project Name :** Environmental Monitoring  
**Project Location :** Nylon Plant

**Lot ID: 2429860**

Date Received : Apr 03, 2024  
Date Reported : Jun 19, 2024  
Report Number : 3028783-2

Page 1 of 1

**Sample Number** 2429860-1  
**Sampled Date** Apr 03, 2024 10:21 AM  
**Sample Description** Wastewater  
**Location** S-32-111  
**Date Analysis Commenced** Apr 03, 2024  
**Condition of Sample** Contained in two plastic bottles, two vials, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte              | Unit   | LOD  | LOQ (LOR) | Result | Method                                                                                                      | Testing Location |
|----------------------|--------|------|-----------|--------|-------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b> |        |      |           |        |                                                                                                             |                  |
| Flow rate            | m3/day | -    | -         | 467    | Flow meter                                                                                                  | Rayong           |
| Total Organic Carbon | mg/L   | 0.01 | 0.1       | 277    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5310 B | Bangkok          |

**Note :** This Analysis test report is reissued to supersede report No.2950495-2, Date Reported : Apr 11, 2024 due to revise analytical information.

**Sampling By :** Nattawut Athomprommarat , Samart Khumphlee

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Approved by

Siriluk P.

Siriluk Bunnak  
Section Head

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## Analysis / Test Report

TESTING  
No.0042

**Client :** UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
**P/O :** 4500164421  
**Project Name :** Environmental Monitoring  
**Project Location :** Nylon Plant

**Lot ID: 2439339**

**Date Received :** May 09, 2024  
**Date Reported :** Jun 18, 2024  
**Report Number :** 3028781-1

Page 1 of 1

|                                |                                                                                                                                      |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sample Number</b>           | 2439339-1                                                                                                                            |
| <b>Sampled Date</b>            | May 09, 2024 10:56 AM                                                                                                                |
| <b>Sample Description</b>      | Wastewater                                                                                                                           |
| <b>Location</b>                | S-32-111                                                                                                                             |
| <b>Date Analysis Commenced</b> | May 10, 2024                                                                                                                         |
| <b>Condition of Sample</b>     | Contained in one BOD bottle and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                      | Unit | LOD | LOQ (LOR) | Result | Method                                                                                                                           | Testing Location |
|------------------------------|------|-----|-----------|--------|----------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>         |      |     |           |        |                                                                                                                                  |                  |
| BOD (5 days at 20 Degree C)  | mg/L | -   | 2.0       | 845    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G     | Rayong           |
| COD                          | mg/L | 1.5 | 25        | 1608   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D                      | Rayong           |
| Total Kjeldahl Nitrogen as N | mg/L | -   | 1.0       | 91.7   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D) | Rayong           |

**Note :** This Analysis test report is reissued to supersede report No.2958120-1, Date Reported : May 17, 2024 due to revise analytical information.

**Sampling By :** Tanasit Wongsachai ทะเบียนเลขที่ ว-323-จ-9460 , Samart Khumphlee ทะเบียนเลขที่ ว-204-จ-0084

**Remark :**

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

Technical Management

**Photchana S.**

Photchana Seeda

Scientist (4)

ทะเบียนเลขที่ ว-323-จ-9446

Approved by

**D. Changchon.**

Dej Changchon

Senior Manager

ทะเบียนเลขที่ ว-323-ค-9442

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## Analysis / Test Report

**Client :** UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
**P/O :** 4500164421  
**Project Name :** Environmental Monitoring  
**Project Location :** Nylon Plant

**Lot ID: 2439339**

Date Received : May 09, 2024  
Date Reported : Jun 19, 2024  
Report Number : 3028781-2

Page 1 of 1

**Sample Number** 2439339-1  
**Sampled Date** May 09, 2024 10:56 AM  
**Sample Description** Wastewater  
**Location** S-32-111  
**Date Analysis Commenced** May 09, 2024  
**Condition of Sample** Contained in one BOD bottle and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte              | Unit   | LOD  | LOQ (LOR) | Result | Method                                                                                                      | Testing Location |
|----------------------|--------|------|-----------|--------|-------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b> |        |      |           |        |                                                                                                             |                  |
| Flow rate            | m3/day |      |           | 368    | Flow meter                                                                                                  | Rayong           |
| Total Organic Carbon | mg/L   | 0.01 | 0.1       | 451    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5310 B | Bangkok          |

**Note :** This Analysis test report is reissued to supersede report No.2958120-2, Date Reported : May 17, 2024 due to revise analytical information.

**Sampling By :** Tanasit Wongsachai , Samart Khumphlee

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Approved by

Siriluk P.

Siriluk Bunnak  
Section Head

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## Analysis / Test Report

TESTING  
No.0042

**Client :** UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
**P/O :** 4500164421  
**Project Name :** Environmental Monitoring  
**Project Location :** Nylon Plant

**Lot ID: 2462525**

Date Received : Jun 05, 2024  
Date Reported : Jun 19, 2024  
Report Number : 3028774-1

Page 1 of 1

|                                |                                                                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sample Number</b>           | 2462525-1                                                                                                                             |
| <b>Sampled Date</b>            | Jun 05, 2024 10:55 AM                                                                                                                 |
| <b>Sample Description</b>      | Wastewater                                                                                                                            |
| <b>Location</b>                | S-32-111                                                                                                                              |
| <b>Date Analysis Commenced</b> | Jun 06, 2024                                                                                                                          |
| <b>Condition of Sample</b>     | Contained in two glass vials and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                      | Unit | LOD | LOQ (LOR) | Result | Method                                                                                                                           | Testing Location |
|------------------------------|------|-----|-----------|--------|----------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>         |      |     |           |        |                                                                                                                                  |                  |
| BOD (5 days at 20 Degree C)  | mg/L | -   | 2.0       | 170    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G     | Rayong           |
| COD                          | mg/L | 1.5 | 25        | 1330   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D                      | Rayong           |
| Total Kjeldahl Nitrogen as N | mg/L | -   | 1.0       | 55.0   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D) | Rayong           |

**Note :** This Analysis test report is reissued to supersede report No.3009952-1, Date Reported : Jun 13, 2024 due to revise analytical information.

**Sampling By :** Sansoen Khuiyoksui ทะเบียนเลขที่ ว-323-จ-0005 , Samart Khumphlee ทะเบียนเลขที่ ว-204-จ-0084

**Remark :**

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

Technical Management

**Photchana S.**

Photchana Seeda  
Scientist (4)  
ทะเบียนเลขที่ ว-323-จ-9446

Approved by

**D. Chumson.**

Dej Changchon  
Senior Manager  
ทะเบียนเลขที่ ว-323-ค-9442

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## Analysis / Test Report

**Client :** UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
**P/O :** 4500164421  
**Project Name :** Environmental Monitoring  
**Project Location :** Nylon Plant

**Lot ID: 2462525**

Date Received : Jun 05, 2024  
Date Reported : Jun 19, 2024  
Report Number : 3028774-2

Page 1 of 1

**Sample Number** 2462525-1  
**Sampled Date** Jun 05, 2024 10:55 AM  
**Sample Description** Wastewater  
**Location** S-32-111  
**Date Analysis Commenced** Jun 05, 2024  
**Condition of Sample** Contained in two glass vials and two plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte              | Unit   | LOD  | LOQ (LOR) | Result | Method                                                                                                      | Testing Location |
|----------------------|--------|------|-----------|--------|-------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b> |        |      |           |        |                                                                                                             |                  |
| Flow rate            | m3/day | -    | -         | 460    | Flow meter                                                                                                  | Rayong           |
| Total Organic Carbon | mg/L   | 0.01 | 0.1       | 370    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5310 B | Bangkok          |

**Note :** This Analysis test report is reissued to supersede report No.3009952-2, Date Reported : Jun 13, 2024 due to revise analytical information.

**Sampling By :** Sansoen Khuiyoksui , Samart Khumphlee

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Photchana Seeda  
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## Analysis / Test Report

**Client** : UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
**P/O** : 4500153369  
**Project Name** : Environmental Monitoring  
**Project Location** : Nylon Plant

**Lot ID: 2415432**

Date Received : Mar 06, 2024  
Date Reported : Mar 11, 2024  
Report Number : 2932345-1

Page 1 of 1

|                                |                                                                                                                                             |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sample Number</b>           | 2415432-1                                                                                                                                   |
| <b>Sampled Date</b>            | Mar 06, 2024 11:06 AM                                                                                                                       |
| <b>Sample Description</b>      | Cooling Water                                                                                                                               |
| <b>Location</b>                | พลทสอเย็น                                                                                                                                   |
| <b>Date Analysis Commenced</b> | Mar 06, 2024                                                                                                                                |
| <b>Condition of Sample</b>     | Contained in one amber glass bottle and one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA) |

| Analyte                                      | Unit     | LOD | LOQ (LOR) | Result | Method                                                                                                            | Testing Location |
|----------------------------------------------|----------|-----|-----------|--------|-------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                         |          |     |           |        |                                                                                                                   |                  |
| Oil & Grease                                 | mg/L     | -   | 3         | <3     | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B       | Rayong           |
| pH at 25 degree C                            |          | -   | -         | 8.3    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B) | Rayong           |
| Temperature                                  | Degree C | -   | -         | 33.2   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B       | Rayong           |
| Total Dissolved Solids Dried at 180 degree C | mg/L     | -   | 5         | 580    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C       | Rayong           |

**Sampling By** : Surawit Narapong

Remark :

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*N. Banchongkit*

Narumon Banchongkit  
Supervisor

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**Client :** UBE Chemicals (Asia) Public Company Limited  
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000  
**P/O :** 4500164421  
**Project Name :** Environmental Monitoring  
**Project Location :** Nylon Plant

**Lot ID: 2462526**

Date Received : Jun 05, 2024  
Date Reported : Jun 10, 2024  
Report Number : 3018847-1

Page 1 of 1

**Sample Number** 2462526-1  
**Sampled Date** Jun 05, 2024 11:05 AM  
**Sample Description** Cooling Water  
**Location** นนทสโณเอน  
**Date Analysis Commenced** Jun 05, 2024  
**Condition of Sample** Contained in one amber glass bottle and one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

| Analyte                                      | Unit     | LOD | LOQ (LOR) | Result | Method                                                                                                            | Testing Location |
|----------------------------------------------|----------|-----|-----------|--------|-------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Water Testing</b>                         |          |     |           |        |                                                                                                                   |                  |
| Oil & Grease                                 | mg/L     | -   | 3         | 4      | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B       | Rayong           |
| pH at 25 degree C                            |          | -   | -         | 8.2    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B) | Rayong           |
| Temperature                                  | Degree C | -   | -         | 35.1   | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B       | Rayong           |
| Total Dissolved Solids Dried at 180 degree C | mg/L     | -   | 5         | 512    | Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C       | Rayong           |

**Sampling By :** Sansoen Khuiyoksui

Remark :

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**Photchana S.**

Photchana Seeda  
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## ภาคผนวก ง.4

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### ใบรับรองผลการตรวจวัดระดับเสียง



## Noise Monitoring Result : Community Noise MTR-UNT&UUCP

Location : Wat Pluak Kate

Monitor Period : 19-20 Jan 2024

SLM Model : Cirrus CR162B

Serial No : G300846

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 93.0/0.7

Expire Date : 03 Sep 2024

Cal Sheet No. : CR-515-2024-018

| Time          | Equivalent Sound Pressure Level (dB(A)) |
|---------------|-----------------------------------------|
|               | 19-20 Jan 2024                          |
| 15:00 - 16:00 | 59.8                                    |
| 16:00 - 17:00 | 61.2                                    |
| 17:00 - 18:00 | 61.9                                    |
| 18:00 - 19:00 | 62.1                                    |
| 19:00 - 20:00 | 61.1                                    |
| 20:00 - 21:00 | 60.4                                    |
| 21:00 - 22:00 | 59.0                                    |
| 22:00 - 23:00 | 57.7                                    |
| 23:00 - 00:00 | 56.4                                    |
| 00:00 - 01:00 | 55.1                                    |
| 01:00 - 02:00 | 54.6                                    |
| 02:00 - 03:00 | 54.2                                    |
| 03:00 - 04:00 | 54.0                                    |
| 04:00 - 05:00 | 54.8                                    |
| 05:00 - 06:00 | 57.7                                    |
| 06:00 - 07:00 | 59.4                                    |
| 07:00 - 08:00 | 61.5                                    |
| 08:00 - 09:00 | 61.0                                    |
| 09:00 - 10:00 | 60.1                                    |
| 10:00 - 11:00 | 59.0                                    |
| 11:00 - 12:00 | 58.9                                    |
| 12:00 - 13:00 | 58.5                                    |
| 13:00 - 14:00 | 58.5                                    |
| 14:00 - 15:00 | 59.0                                    |
| Leq(24)*      | 59.2                                    |
| Ldn           | 63.6                                    |
| Lmax **       | 81.0                                    |
| Standard-24Hr | 70 dB(A)                                |
| Standard-Max  | 115 dB(A)                               |

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

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Background Noise

### MTR-UNT&UUCP

Location : Wat Phrak Kate  
SLM Model : Cirrus CR162B  
Site Operator : Mr. Siwanon Kulawong

Monitor Period : 19-20 Jan 2024  
Serial No : G300846

Calibrator Model : Cirrus CR515  
Calibration Ref dB(A) : 94.0  
SLM Reading / Adjust dB(A) : 93.0/0.7  
Cal Sheet No. : CR-515-2024-018

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

| Time          | L90 (dB(A))    |
|---------------|----------------|
|               | 19-20 Jan 2024 |
| 15:00 - 16:00 | 56.7           |
| 16:00 - 17:00 | 57.4           |
| 17:00 - 18:00 | 59.0           |
| 18:00 - 19:00 | 57.6           |
| 19:00 - 20:00 | 56.2           |
| 20:00 - 21:00 | 56.1           |
| 21:00 - 22:00 | 53.7           |
| 22:00 - 23:00 | 52.2           |
| 23:00 - 00:00 | 51.3           |
| 00:00 - 01:00 | 50.9           |
| 01:00 - 02:00 | 49.4           |
| 02:00 - 03:00 | 48.4           |
| 03:00 - 04:00 | 46.0           |
| 04:00 - 05:00 | 47.6           |
| 05:00 - 06:00 | 51.8           |
| 06:00 - 07:00 | 54.7           |
| 07:00 - 08:00 | 56.5           |
| 08:00 - 09:00 | 55.7           |
| 09:00 - 10:00 | 55.6           |
| 10:00 - 11:00 | 54.8           |
| 11:00 - 12:00 | 55.0           |
| 12:00 - 13:00 | 54.7           |
| 13:00 - 14:00 | 54.8           |
| 14:00 - 15:00 | 54.9           |
| L90(avg)*     | 54.8           |

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Community Noise MTR-UNT&UUCP

Location : Ban Na Pun R.7

Monitor Period : 19-20 Jan 2024

SLM Model : Cirrus CR162B

Serial No : G300990

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

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


Expire Date : 03 Sep 2024

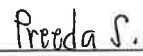
Cal Sheet No. : CR-515-2024-018

| Time          | Equivalent Sound Pressure Level (dB(A)) |
|---------------|-----------------------------------------|
|               | 19-20 Jan 2024                          |
| 14:00 - 15:00 | 53.4                                    |
| 15:00 - 16:00 | 50.7                                    |
| 16:00 - 17:00 | 49.6                                    |
| 17:00 - 18:00 | 52.6                                    |
| 18:00 - 19:00 | 52.8                                    |
| 19:00 - 20:00 | 50.8                                    |
| 20:00 - 21:00 | 52.1                                    |
| 21:00 - 22:00 | 50.8                                    |
| 22:00 - 23:00 | 50.2                                    |
| 23:00 - 00:00 | 49.8                                    |
| 00:00 - 01:00 | 51.7                                    |
| 01:00 - 02:00 | 52.0                                    |
| 02:00 - 03:00 | 51.6                                    |
| 03:00 - 04:00 | 49.9                                    |
| 04:00 - 05:00 | 49.1                                    |
| 05:00 - 06:00 | 50.2                                    |
| 06:00 - 07:00 | 53.0                                    |
| 07:00 - 08:00 | 52.1                                    |
| 08:00 - 09:00 | 54.6                                    |
| 09:00 - 10:00 | 50.0                                    |
| 10:00 - 11:00 | 49.8                                    |
| 11:00 - 12:00 | 48.8                                    |
| 12:00 - 13:00 | 48.0                                    |
| 13:00 - 14:00 | 48.7                                    |
| Leq(24)*      | 51.2                                    |
| Ldn           | 57.5                                    |
| Lmax **       | 77.4                                    |
| Standard-24Hr | 70 dB(A)                                |
| Standard-Max  | 115 dB(A)                               |

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

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

  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

  
(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Background Noise

### MTR-UNT&UUCP

Location : Ban Na Pun R.7  
SLM Model : Cirrus CR162B  
Site Operator : Mr. Siwanon Kulawong

Monitor Period : 19-20 Jan 2024  
Serial No : G300990

Calibrator Model : Cirrus CR:515  
Calibration Ref dB(A) : 94.0  
SLM Reading / Adjust dB(A) : 92.2/1.5  
Cal Sheet No. : CR-515-2024-018

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

| Time          | L90 (dB(A))    |
|---------------|----------------|
|               | 19-20 Jan 2024 |
| 14:00 - 15:00 | 47.4           |
| 15:00 - 16:00 | 47.3           |
| 16:00 - 17:00 | 48.2           |
| 17:00 - 18:00 | 48.9           |
| 18:00 - 19:00 | 50.0           |
| 19:00 - 20:00 | 49.9           |
| 20:00 - 21:00 | 49.9           |
| 21:00 - 22:00 | 49.6           |
| 22:00 - 23:00 | 49.1           |
| 23:00 - 00:00 | 49.0           |
| 00:00 - 01:00 | 50.0           |
| 01:00 - 02:00 | 51.3           |
| 02:00 - 03:00 | 49.8           |
| 03:00 - 04:00 | 48.0           |
| 04:00 - 05:00 | 48.1           |
| 05:00 - 06:00 | 48.7           |
| 06:00 - 07:00 | 49.5           |
| 07:00 - 08:00 | 48.5           |
| 08:00 - 09:00 | 47.4           |
| 09:00 - 10:00 | 46.3           |
| 10:00 - 11:00 | 46.3           |
| 11:00 - 12:00 | 46.6           |
| 12:00 - 13:00 | 46.4           |
| 13:00 - 14:00 | 46.6           |
| L90(avg)*     | 48.7           |

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Community Noise MTR-UNT&UUCP

Location : North Fence of Project Site

Monitor Period : 19-20 Jan 2024

SLM Model : Cirrus CR162B

Serial No : G300892

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

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

Expire Date : 03 Sep 2024

Cal Sheet No. : CR-515-2024-018

| Time          | Equivalent Sound Pressure Level (dB(A)) |  |
|---------------|-----------------------------------------|--|
|               | 19-20 Jan 2024                          |  |
| 16:00 - 17:00 | 56.6                                    |  |
| 17:00 - 18:00 | 56.6                                    |  |
| 18:00 - 19:00 | 57.2                                    |  |
| 19:00 - 20:00 | 56.4                                    |  |
| 20:00 - 21:00 | 56.5                                    |  |
| 21:00 - 22:00 | 55.7                                    |  |
| 22:00 - 23:00 | 55.5                                    |  |
| 23:00 - 00:00 | 55.4                                    |  |
| 00:00 - 01:00 | 56.2                                    |  |
| 01:00 - 02:00 | 56.0                                    |  |
| 02:00 - 03:00 | 56.4                                    |  |
| 03:00 - 04:00 | 56.2                                    |  |
| 04:00 - 05:00 | 56.5                                    |  |
| 05:00 - 06:00 | 56.5                                    |  |
| 06:00 - 07:00 | 56.6                                    |  |
| 07:00 - 08:00 | 55.7                                    |  |
| 08:00 - 09:00 | 57.9                                    |  |
| 09:00 - 10:00 | 56.4                                    |  |
| 10:00 - 11:00 | 56.4                                    |  |
| 11:00 - 12:00 | 56.3                                    |  |
| 12:00 - 13:00 | 55.8                                    |  |
| 13:00 - 14:00 | 55.6                                    |  |
| 14:00 - 15:00 | 56.0                                    |  |
| 15:00 - 16:00 | 56.7                                    |  |
| Leq(24)*      | 56.3                                    |  |
| Ldn           | 62.6                                    |  |
| Lmax **       | 77.5                                    |  |
| Standard-24Hr | 70 dB(A)                                |  |
| Standard-Max  | 115 dB(A)                               |  |

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

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Background Noise MTR-UNT&UUCP

Location : North Fence of Project Site

Monitor Period : 19-20 Jan 2024

SLM Model : Cirrus CR162B

Serial No : G300892

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

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

Expire Date : 03 Sep 2024

Cal Sheet No. : CR-515-2024-018

| Time          | L90 (dB(A))    |
|---------------|----------------|
|               | 19-20 Jan 2024 |
| 16:00 - 17:00 | 56.2           |
| 17:00 - 18:00 | 56.2           |
| 18:00 - 19:00 | 56.5           |
| 19:00 - 20:00 | 56.1           |
| 20:00 - 21:00 | 56.0           |
| 21:00 - 22:00 | 55.3           |
| 22:00 - 23:00 | 55.1           |
| 23:00 - 00:00 | 55.1           |
| 00:00 - 01:00 | 55.5           |
| 01:00 - 02:00 | 55.7           |
| 02:00 - 03:00 | 56.0           |
| 03:00 - 04:00 | 56.0           |
| 04:00 - 05:00 | 56.2           |
| 05:00 - 06:00 | 56.2           |
| 06:00 - 07:00 | 56.1           |
| 07:00 - 08:00 | 55.2           |
| 08:00 - 09:00 | 54.8           |
| 09:00 - 10:00 | 55.6           |
| 10:00 - 11:00 | 55.8           |
| 11:00 - 12:00 | 55.7           |
| 12:00 - 13:00 | 55.5           |
| 13:00 - 14:00 | 55.3           |
| 14:00 - 15:00 | 55.5           |
| 15:00 - 16:00 | 55.8           |
| L90(avg)*     | 55.7           |

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Working Noise MTR-UNT

Location : (Drying Section)-Nylon 1

Monitor Period : Jan 18, 2024

SLM Model : SCARLET ST-21D

Serial No : 820725

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

Expire Date : Sep 03, 2024

Cal Sheet No. : CR-515-2024-010

| Time          | Equivalent Sound Pressure Level (dB(A)) |  |
|---------------|-----------------------------------------|--|
|               | Jan 18, 2024                            |  |
| 00:00 - 01:00 |                                         |  |
| 01:00 - 02:00 |                                         |  |
| 02:00 - 03:00 |                                         |  |
| 03:00 - 04:00 |                                         |  |
| 04:00 - 05:00 |                                         |  |
| 05:00 - 06:00 |                                         |  |
| 06:00 - 07:00 |                                         |  |
| 07:00 - 08:00 |                                         |  |
| 08:00 - 09:00 |                                         |  |
| 09:00 - 10:00 | 84.5                                    |  |
| 10:00 - 11:00 | 83.7                                    |  |
| 11:00 - 12:00 | 76.5                                    |  |
| 12:00 - 13:00 | 76.3                                    |  |
| 13:00 - 14:00 | 76.2                                    |  |
| 14:00 - 15:00 | 79.8                                    |  |
| 15:00 - 16:00 | 81.1                                    |  |
| 16:00 - 17:00 | 78.8                                    |  |
| 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)*       | 80.7                                    |  |
| Lmax **       | 102.0                                   |  |
| 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-UNT

**Location :** (Chemical Preparation Section)-Nylon 1  
**SLM Model :** SCARLET ST-21D  
**Site Operator :** Miss Salisa Ainree

**Monitor Period :** Jan 18, 2024  
**Serial No :** 820726

**Calibrator Model :** Cirrus CR:515  
**Calibration Ref dB(A) :** 94.0  
**SLM Reading / Adjust dB(A) :** 93.8/0.0  
**Cal Sheet No. :** CR-515-2024-010

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

| Time                | Equivalent Sound Pressure Level (dB(A)) |
|---------------------|-----------------------------------------|
|                     | Jan 18, 2024                            |
| 00:00 - 01:00       |                                         |
| 01:00 - 02:00       |                                         |
| 02:00 - 03:00       |                                         |
| 03:00 - 04:00       |                                         |
| 04:00 - 05:00       |                                         |
| 05:00 - 06:00       |                                         |
| 06:00 - 07:00       |                                         |
| 07:00 - 08:00       |                                         |
| 08:00 - 09:00       |                                         |
| 09:00 - 10:00       | 70.3                                    |
| 10:00 - 11:00       | 69.5                                    |
| 11:00 - 12:00       | 62.7                                    |
| 12:00 - 13:00       | 62.8                                    |
| 13:00 - 14:00       | 64.1                                    |
| 14:00 - 15:00       | 65.9                                    |
| 15:00 - 16:00       | 67.2                                    |
| 16:00 - 17:00       | 67.1                                    |
| 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       |                                         |
| <b>Leq(8)*</b>      | <b>67.0</b>                             |
| <b>Lmax **</b>      | <b>91.1</b>                             |
| <b>Standard-8Hr</b> | <b>90 dB(A)</b>                         |
| <b>Standard-Max</b> | <b>140 dB(A)</b>                        |

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-UNT

Location : (Under Strand Granulator)-Nylon 1

Monitor Period : Jan 18, 2024

SLM Model : SCARLET ST-21D

Serial No : 820731

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

Expire Date : Sep 03, 2024

Cal Sheet No. : CR-515-2024-010

| Time          | Equivalent Sound Pressure Level (dB(A)) |  |
|---------------|-----------------------------------------|--|
|               | Jan 18, 2024                            |  |
| 00:00 - 01:00 |                                         |  |
| 01:00 - 02:00 |                                         |  |
| 02:00 - 03:00 |                                         |  |
| 03:00 - 04:00 |                                         |  |
| 04:00 - 05:00 |                                         |  |
| 05:00 - 06:00 |                                         |  |
| 06:00 - 07:00 |                                         |  |
| 07:00 - 08:00 |                                         |  |
| 08:00 - 09:00 |                                         |  |
| 09:00 - 10:00 | 83.4                                    |  |
| 10:00 - 11:00 | 83.6                                    |  |
| 11:00 - 12:00 | 82.2                                    |  |
| 12:00 - 13:00 | 82.3                                    |  |
| 13:00 - 14:00 | 82.1                                    |  |
| 14:00 - 15:00 | 82.0                                    |  |
| 15:00 - 16:00 | 82.0                                    |  |
| 16:00 - 17:00 | 82.2                                    |  |
| 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)*       | 82.5                                    |  |
| Lmax **       | 103.1                                   |  |
| 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-UNT

Location : (Extraction Column)-Nylon 1

Monitor Period : Jan 18, 2024

SLM Model : SCARLET ST-21D

Serial No : 820729

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

Expire Date : Sep 03, 2024

Cal Sheet No. : CR-515-2024-010

| Time          | Equivalent Sound Pressure Level (dB(A)) |
|---------------|-----------------------------------------|
|               | Jan 18, 2024                            |
| 00:00 - 01:00 |                                         |
| 01:00 - 02:00 |                                         |
| 02:00 - 03:00 |                                         |
| 03:00 - 04:00 |                                         |
| 04:00 - 05:00 |                                         |
| 05:00 - 06:00 |                                         |
| 06:00 - 07:00 |                                         |
| 07:00 - 08:00 |                                         |
| 08:00 - 09:00 |                                         |
| 09:00 - 10:00 | 84.5                                    |
| 10:00 - 11:00 | 83.4                                    |
| 11:00 - 12:00 | 77.9                                    |
| 12:00 - 13:00 | 78.0                                    |
| 13:00 - 14:00 | 81.4                                    |
| 14:00 - 15:00 | 82.7                                    |
| 15:00 - 16:00 | 82.7                                    |
| 16:00 - 17:00 | 83.6                                    |
| 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)*       | 82.3                                    |
| Lmax **       | 102.7                                   |
| 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-UUCP

Location : (Drying Section)-Nylon 2

Monitor Period : Jan 18, 2024

SLM Model : SCARLET ST-21D

Serial No : 820727

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

Expire Date : Sep 03, 2024

Cal Sheet No. : CR-515-2024-011

| Time          | Equivalent Sound Pressure Level (dB(A)) |  |
|---------------|-----------------------------------------|--|
|               | Jan 18, 2024                            |  |
| 00:00 - 01:00 |                                         |  |
| 01:00 - 02:00 |                                         |  |
| 02:00 - 03:00 |                                         |  |
| 03:00 - 04:00 |                                         |  |
| 04:00 - 05:00 |                                         |  |
| 05:00 - 06:00 |                                         |  |
| 06:00 - 07:00 |                                         |  |
| 07:00 - 08:00 |                                         |  |
| 08:00 - 09:00 |                                         |  |
| 09:00 - 10:00 | 87.0                                    |  |
| 10:00 - 11:00 | 87.2                                    |  |
| 11:00 - 12:00 | 89.3                                    |  |
| 12:00 - 13:00 | 87.6                                    |  |
| 13:00 - 14:00 | 87.8                                    |  |
| 14:00 - 15:00 | 87.6                                    |  |
| 15:00 - 16:00 | 86.7                                    |  |
| 16:00 - 17:00 | 86.8                                    |  |
| 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)*       | 87.6                                    |  |
| Lmax **       | 106.6                                   |  |
| 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-UUCP

Location : (Chemical Preparation Section)-Nylon 2

Monitor Period : Jan 18, 2024

SLM Model : Cirrus CR162B

Serial No : G300709

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

Expire Date : Sep 03, 2024

Cal Sheet No. : CR-515-2024-012

| Time          | Equivalent Sound Pressure Level (dB(A)) |
|---------------|-----------------------------------------|
|               | Jan 18, 2024                            |
| 00:00 - 01:00 |                                         |
| 01:00 - 02:00 |                                         |
| 02:00 - 03:00 |                                         |
| 03:00 - 04:00 |                                         |
| 04:00 - 05:00 |                                         |
| 05:00 - 06:00 |                                         |
| 06:00 - 07:00 |                                         |
| 07:00 - 08:00 |                                         |
| 08:00 - 09:00 |                                         |
| 09:00 - 10:00 | 81.9                                    |
| 10:00 - 11:00 | 81.4                                    |
| 11:00 - 12:00 | 76.4                                    |
| 12:00 - 13:00 | 74.1                                    |
| 13:00 - 14:00 | 74.2                                    |
| 14:00 - 15:00 | 74.8                                    |
| 15:00 - 16:00 | 75.0                                    |
| 16:00 - 17:00 | 74.3                                    |
| 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)*       | 77.8                                    |
| Lmax **       | 95.9                                    |
| 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-UUCP

Location : (Under Water Granulator)-Nylon 2

Monitor Period : Jan 18, 2024

SLM Model : SCARLET ST-21D

Serial No : 820728

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

Expire Date : Sep 03, 2024

Cal Sheet No. : CR-515-2024-011

| Time          | Equivalent Sound Pressure Level (dB(A)) |  |
|---------------|-----------------------------------------|--|
|               | Jan 18, 2024                            |  |
| 00:00 - 01:00 |                                         |  |
| 01:00 - 02:00 |                                         |  |
| 02:00 - 03:00 |                                         |  |
| 03:00 - 04:00 |                                         |  |
| 04:00 - 05:00 |                                         |  |
| 05:00 - 06:00 |                                         |  |
| 06:00 - 07:00 |                                         |  |
| 07:00 - 08:00 |                                         |  |
| 08:00 - 09:00 |                                         |  |
| 09:00 - 10:00 | 86.4                                    |  |
| 10:00 - 11:00 | 86.7                                    |  |
| 11:00 - 12:00 | 86.8                                    |  |
| 12:00 - 13:00 | 86.8                                    |  |
| 13:00 - 14:00 | 87.1                                    |  |
| 14:00 - 15:00 | 86.8                                    |  |
| 15:00 - 16:00 | 86.6                                    |  |
| 16:00 - 17:00 | 86.6                                    |  |
| 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)*       | 86.7                                    |  |
| Lmax **       | 107.7                                   |  |
| 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-UUCP

Location : (Extraction Column)-Nylon 2

Monitor Period : Jan 18, 2024

SLM Model : SCARLET ST-21D

Serial No : 820723

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

Expire Date : Sep 03, 2024

Cal Sheet No. : CR-515-2024-011

| Time          | Equivalent Sound Pressure Level (dB(A)) |
|---------------|-----------------------------------------|
|               | Jan 18, 2024                            |
| 00:00 - 01:00 |                                         |
| 01:00 - 02:00 |                                         |
| 02:00 - 03:00 |                                         |
| 03:00 - 04:00 |                                         |
| 04:00 - 05:00 |                                         |
| 05:00 - 06:00 |                                         |
| 06:00 - 07:00 |                                         |
| 07:00 - 08:00 |                                         |
| 08:00 - 09:00 |                                         |
| 09:00 - 10:00 | 84.8                                    |
| 10:00 - 11:00 | 84.8                                    |
| 11:00 - 12:00 | 85.7                                    |
| 12:00 - 13:00 | 85.3                                    |
| 13:00 - 14:00 | 85.6                                    |
| 14:00 - 15:00 | 85.5                                    |
| 15:00 - 16:00 | 84.9                                    |
| 16:00 - 17:00 | 84.7                                    |
| 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)*       | 85.2                                    |
| Lmax **       | 105.3                                   |
| 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-UNT

Location : (Drying Section)-Nylon 1

Monitor Period : Apr 08, 2024

SLM Model : SCARLET ST-21D

Serial No : 820723

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

Expire Date : Sep 03, 2024

Cal Sheet No. : CR-515-2024-084

| Time          | Equivalent Sound Pressure Level (dB(A)) |  |
|---------------|-----------------------------------------|--|
|               | Apr 08, 2024                            |  |
| 00:00 - 01:00 |                                         |  |
| 01:00 - 02:00 |                                         |  |
| 02:00 - 03:00 |                                         |  |
| 03:00 - 04:00 |                                         |  |
| 04:00 - 05:00 |                                         |  |
| 05:00 - 06:00 |                                         |  |
| 06:00 - 07:00 |                                         |  |
| 07:00 - 08:00 |                                         |  |
| 08:00 - 09:00 |                                         |  |
| 09:00 - 10:00 | 79.9                                    |  |
| 10:00 - 11:00 | 78.9                                    |  |
| 11:00 - 12:00 | 80.1                                    |  |
| 12:00 - 13:00 | 80.1                                    |  |
| 13:00 - 14:00 | 76.9                                    |  |
| 14:00 - 15:00 | 80.6                                    |  |
| 15:00 - 16:00 | 83.9                                    |  |
| 16:00 - 17:00 | 81.1                                    |  |
| 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)*       | 80.6                                    |  |
| Lmax **       | 93.1                                    |  |
| 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-UNT

**Location :** (Chemical Preparation)-Nylon 1  
**Section SLM Model :** SCARLET ST-21D  
**Site Operator :** Miss Salisa Ainree

**Monitor Period :** Apr 08, 2024  
**Serial No :** 820725

**Calibrator Model :** Cirrus CR:515  
**Calibration Ref dB(A) :** 94.0  
**SLM Reading / Adjust dB(A) :** 93.7/0.1  
**Cal Sheet No. :** CR-515-2024-084

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

| Time                | Equivalent Sound Pressure Level (dB(A)) |
|---------------------|-----------------------------------------|
|                     | Apr 08, 2024                            |
| 00:00 - 01:00       |                                         |
| 01:00 - 02:00       |                                         |
| 02:00 - 03:00       |                                         |
| 03:00 - 04:00       |                                         |
| 04:00 - 05:00       |                                         |
| 05:00 - 06:00       |                                         |
| 06:00 - 07:00       |                                         |
| 07:00 - 08:00       |                                         |
| 08:00 - 09:00       |                                         |
| 09:00 - 10:00       | 70.1                                    |
| 10:00 - 11:00       | 64.7                                    |
| 11:00 - 12:00       | 65.6                                    |
| 12:00 - 13:00       | 65.5                                    |
| 13:00 - 14:00       | 62.0                                    |
| 14:00 - 15:00       | 67.7                                    |
| 15:00 - 16:00       | 70.4                                    |
| 16:00 - 17:00       | 68.8                                    |
| 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       |                                         |
| <b>Leq(8)*</b>      | 67.6                                    |
| <b>Lmax **</b>      | 93.2                                    |
| <b>Standard-8Hr</b> | 90 dB(A)                                |
| <b>Standard-Max</b> | 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-UNT

Location : (Under Strand Granulator)-Nylon 1

Monitor Period : Apr 08, 2024

SLM Model : SCARLET ST-21D Site

Serial No : 820722

Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

Expire Date : Sep 03, 2024

Cal Sheet No. : CR-515-2024-084

| Time          | Equivalent Sound Pressure Level (dB(A)) |  |
|---------------|-----------------------------------------|--|
|               | Apr 08, 2024                            |  |
| 00:00 - 01:00 |                                         |  |
| 01:00 - 02:00 |                                         |  |
| 02:00 - 03:00 |                                         |  |
| 03:00 - 04:00 |                                         |  |
| 04:00 - 05:00 |                                         |  |
| 05:00 - 06:00 |                                         |  |
| 06:00 - 07:00 |                                         |  |
| 07:00 - 08:00 |                                         |  |
| 08:00 - 09:00 |                                         |  |
| 09:00 - 10:00 | 82.6                                    |  |
| 10:00 - 11:00 | 83.2                                    |  |
| 11:00 - 12:00 | 83.2                                    |  |
| 12:00 - 13:00 | 83.3                                    |  |
| 13:00 - 14:00 | 83.2                                    |  |
| 14:00 - 15:00 | 83.3                                    |  |
| 15:00 - 16:00 | 83.6                                    |  |
| 16:00 - 17:00 | 83.2                                    |  |
| 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)*       | 83.2                                    |  |
| Lmax **       | 96.1                                    |  |
| 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-UNT

Location : (Extraction Column)-Nylon 1

Monitor Period : Apr 08, 2024

SLM Model : SCARLET ST-21D Site

Serial No : 820727

Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

Expire Date : Sep 03, 2024

Cal Sheet No. : CR-515-2024-084

| Time          | Equivalent Sound Pressure Level (dB(A)) |  |
|---------------|-----------------------------------------|--|
|               | Apr 08, 2024                            |  |
| 00:00 - 01:00 |                                         |  |
| 01:00 - 02:00 |                                         |  |
| 02:00 - 03:00 |                                         |  |
| 03:00 - 04:00 |                                         |  |
| 04:00 - 05:00 |                                         |  |
| 05:00 - 06:00 |                                         |  |
| 06:00 - 07:00 |                                         |  |
| 07:00 - 08:00 |                                         |  |
| 08:00 - 09:00 |                                         |  |
| 09:00 - 10:00 | 82.8                                    |  |
| 10:00 - 11:00 | 82.5                                    |  |
| 11:00 - 12:00 | 82.6                                    |  |
| 12:00 - 13:00 | 82.2                                    |  |
| 13:00 - 14:00 | 82.3                                    |  |
| 14:00 - 15:00 | 82.5                                    |  |
| 15:00 - 16:00 | 82.4                                    |  |
| 16:00 - 17:00 | 82.5                                    |  |
| 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)*       | 82.5                                    |  |
| Lmax **       | 91.2                                    |  |
| 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-UUCP

Location : (Drying Section)-Nylon 2

Monitor Period : Apr 08, 2024

SLM Model : SCARLET ST-21D

Serial No : 820731

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

Expire Date : Sep 03, 2024

Cal Sheet No. : CR-515-2024-085

| Time          | Equivalent Sound Pressure Level (dB(A)) |  |
|---------------|-----------------------------------------|--|
|               | Apr 08, 2024                            |  |
| 00:00 - 01:00 |                                         |  |
| 01:00 - 02:00 |                                         |  |
| 02:00 - 03:00 |                                         |  |
| 03:00 - 04:00 |                                         |  |
| 04:00 - 05:00 |                                         |  |
| 05:00 - 06:00 |                                         |  |
| 06:00 - 07:00 |                                         |  |
| 07:00 - 08:00 |                                         |  |
| 08:00 - 09:00 |                                         |  |
| 09:00 - 10:00 | 87.7                                    |  |
| 10:00 - 11:00 | 87.9                                    |  |
| 11:00 - 12:00 | 87.9                                    |  |
| 12:00 - 13:00 | 87.9                                    |  |
| 13:00 - 14:00 | 87.9                                    |  |
| 14:00 - 15:00 | 87.9                                    |  |
| 15:00 - 16:00 | 87.9                                    |  |
| 16:00 - 17:00 | 87.9                                    |  |
| 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)*       | 87.9                                    |  |
| Lmax **       | 95.3                                    |  |
| 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-UUCP

**Location :** (Chemical Preparation Section)-Nylon 2  
**SLM Model :** SCARLET ST-21D  
**Site Operator :** Miss Salisa Ainree

**Monitor Period :** Apr 08, 2024  
**Serial No :** 820728

**Calibrator Model :** Cirrus CR:515  
**Calibration Ref dB(A) :** 94.0  
**SLM Reading / Adjust dB(A) :** 93.8/0.0  
**Cal Sheet No. :** CR-515-2024-085

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

| Time                | Equivalent Sound Pressure Level (dB(A)) |
|---------------------|-----------------------------------------|
|                     | Apr 08, 2024                            |
| 00:00 - 01:00       |                                         |
| 01:00 - 02:00       |                                         |
| 02:00 - 03:00       |                                         |
| 03:00 - 04:00       |                                         |
| 04:00 - 05:00       |                                         |
| 05:00 - 06:00       |                                         |
| 06:00 - 07:00       |                                         |
| 07:00 - 08:00       |                                         |
| 08:00 - 09:00       |                                         |
| 09:00 - 10:00       | 83.0                                    |
| 10:00 - 11:00       | 82.7                                    |
| 11:00 - 12:00       | 82.8                                    |
| 12:00 - 13:00       | 82.8                                    |
| 13:00 - 14:00       | 82.7                                    |
| 14:00 - 15:00       | 82.6                                    |
| 15:00 - 16:00       | 83.1                                    |
| 16:00 - 17:00       | 82.7                                    |
| 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       |                                         |
| <b>Leq(8)*</b>      | 82.8                                    |
| <b>Lmax **</b>      | 97.8                                    |
| <b>Standard-8Hr</b> | 90 dB(A)                                |
| <b>Standard-Max</b> | 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-UUCP

Location : (Under Water Granulator)-Nylon 2

Monitor Period : Apr 08, 2024

SLM Model : SCARLET ST-21D

Serial No : 820729

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

Expire Date : Sep 03, 2024

Cal Sheet No. : CR-515-2024-085

| Time          | Equivalent Sound Pressure Level (dB(A)) |  |
|---------------|-----------------------------------------|--|
|               | Apr 08, 2024                            |  |
| 00:00 - 01:00 |                                         |  |
| 01:00 - 02:00 |                                         |  |
| 02:00 - 03:00 |                                         |  |
| 03:00 - 04:00 |                                         |  |
| 04:00 - 05:00 |                                         |  |
| 05:00 - 06:00 |                                         |  |
| 06:00 - 07:00 |                                         |  |
| 07:00 - 08:00 |                                         |  |
| 08:00 - 09:00 |                                         |  |
| 09:00 - 10:00 | 85.8                                    |  |
| 10:00 - 11:00 | 86.0                                    |  |
| 11:00 - 12:00 | 86.8                                    |  |
| 12:00 - 13:00 | 87.0                                    |  |
| 13:00 - 14:00 | 87.1                                    |  |
| 14:00 - 15:00 | 86.9                                    |  |
| 15:00 - 16:00 | 87.2                                    |  |
| 16:00 - 17:00 | 87.0                                    |  |
| 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)*       | 86.8                                    |  |
| Lmax **       | 94.3                                    |  |
| 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-UUCP

Location : (Extraction Column)-Nylon 2

Monitor Period : Apr 08, 2024

SLM Model : SCARLET ST-21D

Serial No : 820726

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

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

Expire Date : Sep 03, 2024

Cal Sheet No. : CR-515-2024-085

| Time          | Equivalent Sound Pressure Level (dB(A)) |
|---------------|-----------------------------------------|
|               | Apr 08, 2024                            |
| 00:00 - 01:00 |                                         |
| 01:00 - 02:00 |                                         |
| 02:00 - 03:00 |                                         |
| 03:00 - 04:00 |                                         |
| 04:00 - 05:00 |                                         |
| 05:00 - 06:00 |                                         |
| 06:00 - 07:00 |                                         |
| 07:00 - 08:00 |                                         |
| 08:00 - 09:00 |                                         |
| 09:00 - 10:00 | 84.9                                    |
| 10:00 - 11:00 | 84.7                                    |
| 11:00 - 12:00 | 84.8                                    |
| 12:00 - 13:00 | 83.4                                    |
| 13:00 - 14:00 | 83.7                                    |
| 14:00 - 15:00 | 82.5                                    |
| 15:00 - 16:00 | 84.6                                    |
| 16:00 - 17:00 | 83.8                                    |
| 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)*       | 84.1                                    |
| Lmax **       | 96.4                                    |
| 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

## ภาคผนวก ง.5

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### ใบรับรองผลการตรวจวัดระดับความร้อนในพื้นที่ทำงาน



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

HEAT STRESS MEASUREMENT REPORT

|                      |                                         |                 |                                   |            |            |
|----------------------|-----------------------------------------|-----------------|-----------------------------------|------------|------------|
| CLIENT NAME          | : UBE Chemicals (Asia) Public Co., Ltd. | REFERENCE NO. : | 223032 Cert-Heat_UNT (Jan 24) (1) |            |            |
| MEASUREMENT BY       | : SECOT Co., Ltd.                       | INSTRUMENT      | : WBGT Meter                      |            |            |
| MEASUREMENT DATE     | : 18/01/2024                            | MODEL NO.       | : JT2011-E2A                      | SERIAL NO. | 3522210172 |
| MEASUREMENT LOCATION | : UNT                                   | SITE OPERATOR   | : Miss Salisa Ainree              |            |            |

| LOCATION       | TIME        | MEASURED TEMPERATURE (°C) |      |      |                    |             | STANDARD (°C) * |
|----------------|-------------|---------------------------|------|------|--------------------|-------------|-----------------|
|                |             | NWB                       | DB   | GT   | WBGT <sub>in</sub> | WBGT (Avg.) | WBGT            |
| Drying Section | 10.25-10.55 | 26.0                      | 33.2 | 33.9 | 28.4               | 28.6        | 34.0            |
| (Nylon 1)      | 10.55-11.25 | 25.9                      | 34.1 | 34.7 | 28.5               |             |                 |
|                | 11.25-11.55 | 26.0                      | 34.1 | 34.5 | 28.6               |             |                 |
|                | 11.55-12.25 | 26.2                      | 34.4 | 35.0 | 28.8               |             |                 |

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

- Remark :**
1. Reported analysis refers to submitted sample only.
  2. This report shall not be reproduced, except in full, without official approval.
  3. \* WBGT Standard was notified by the Ministerial Regulation of Labour, B.E.2559 (2016).
  4. NWB = Natural Wet Bulb Temperature  
DB = Dry Bulb Temperature  
GT = Globe Temperature  
WBGT = Wet Bulb Globe Temperature
  5. Work Load : Light work load = 34.0 °C, Moderate work load = 32.0 °C and Heavy work load = 30.0 °C



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HEAT STRESS MEASUREMENT REPORT

|                      |                                         |                 |                                   |            |            |
|----------------------|-----------------------------------------|-----------------|-----------------------------------|------------|------------|
| CLIENT NAME          | : UBE Chemicals (Asia) Public Co., Ltd. | REFERENCE NO. : | 223032 Cert-Heat_UNT (Jan 24) (2) |            |            |
| MEASUREMENT BY       | : SECOT Co., Ltd.                       | INSTRUMENT      | : WBGT Meter                      |            |            |
| MEASUREMENT DATE     | : 18/01/2024                            | MODEL NO.       | : JT2011-E2A                      | SERIAL NO. | 3522210176 |
| MEASUREMENT LOCATION | : UNT                                   | SITE OPERATOR   | : Miss Salisa Ainree              |            |            |

| LOCATION                     | TIME        | MEASURED TEMPERATURE (°C) |      |      |                    |             | STANDARD (°C) * |
|------------------------------|-------------|---------------------------|------|------|--------------------|-------------|-----------------|
|                              |             | NWB                       | DB   | GT   | WBGT <sub>in</sub> | WBGT (Avg.) | WBGT            |
| Chemical Preparation Section | 10.30-11.00 | 19.4                      | 25.1 | 25.1 | 21.1               | 21.0        | 34.0            |
| (Nylon 1)                    | 11.00-11.30 | 19.1                      | 25.2 | 25.2 | 20.9               |             |                 |
|                              | 11.30-12.00 | 18.9                      | 25.3 | 25.4 | 20.9               |             |                 |
|                              | 12.00-12.30 | 19.0                      | 25.5 | 25.7 | 21.0               |             |                 |

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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  4. NWB = Natural Wet Bulb Temperature  
DB = Dry Bulb Temperature  
GT = Globe Temperature  
WBGT = Wet Bulb Globe Temperature
  5. Work Load : Light work load = 34.0 °C, Moderate work load = 32.0 °C and Heavy work load = 30.0 °C



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HEAT STRESS MEASUREMENT REPORT

|                      |                                         |                 |                                   |            |            |
|----------------------|-----------------------------------------|-----------------|-----------------------------------|------------|------------|
| CLIENT NAME          | : UBE Chemicals (Asia) Public Co., Ltd. | REFERENCE NO. : | 223032 Cert-Heat_UNT (Jan 24) (3) |            |            |
| MEASUREMENT BY       | : SECOT Co., Ltd.                       | INSTRUMENT      | : WBGT Meter                      |            |            |
| MEASUREMENT DATE     | : 18/01/2024                            | MODEL NO.       | : JT2011-E2A                      | SERIAL NO. | 3522210179 |
| MEASUREMENT LOCATION | : UNT                                   | SITE OPERATOR   | Miss Salisa Ainree                |            |            |

| LOCATION    | TIME        | MEASURED TEMPERATURE (°C) |      |      |                    |             | STANDARD (°C) * |
|-------------|-------------|---------------------------|------|------|--------------------|-------------|-----------------|
|             |             | NWB                       | DB   | GT   | WBGT <sub>in</sub> | WBGT (Avg.) | WBGT            |
| Polymerizer | 10.33-11.03 | 26.8                      | 34.3 | 35.2 | 29.3               | 28.6        | 34.0            |
| (Nylon 1)   | 11.03-11.33 | 25.8                      | 33.6 | 34.7 | 28.5               |             |                 |
|             | 11.33-12.03 | 25.7                      | 33.7 | 34.7 | 28.4               |             |                 |
|             | 12.03-12.33 | 25.4                      | 33.4 | 34.4 | 28.1               |             |                 |

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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  4. NWB = Natural Wet Bulb Temperature  
DB = Dry Bulb Temperature  
GT = Globe Temperature  
WBGT = Wet Bulb Globe Temperature
  5. Work Load : Light work load = 34.0 °C, Moderate work load = 32.0 °C and Heavy work load = 30.0 °C



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HEAT STRESS MEASUREMENT REPORT

|                      |                                         |                 |                                    |            |            |
|----------------------|-----------------------------------------|-----------------|------------------------------------|------------|------------|
| CLIENT NAME          | : UBE Chemicals (Asia) Public Co., Ltd. | REFERENCE NO. : | 223032 Cert-Heat_UUCP (Jan 24) (1) |            |            |
| MEASUREMENT BY       | : SECOT Co., Ltd.                       | INSTRUMENT      | : WBGT Meter                       |            |            |
| MEASUREMENT DATE     | : 18/01/2024                            | MODEL NO.       | : JT2011-E2A                       | SERIAL NO. | 3522210174 |
| MEASUREMENT LOCATION | : UUCP                                  | SITE OPERATOR   | : Miss Salisa Ainree               |            |            |

| LOCATION       | TIME        | MEASURED TEMPERATURE (°C) |      |      |                    |             | STANDARD (°C) * |
|----------------|-------------|---------------------------|------|------|--------------------|-------------|-----------------|
|                |             | NWB                       | DB   | GT   | WBGT <sub>in</sub> | WBGT (Avg.) | WBGT            |
| Drying Section | 10.20-10.50 | 25.1                      | 32.9 | 33.3 | 27.6               | 28.0        | 34.0            |
| (Nylon 2)      | 10.50-11.20 | 25.8                      | 34.1 | 34.4 | 28.4               |             |                 |
|                | 11.20-11.50 | 25.6                      | 33.3 | 33.5 | 28.0               |             |                 |
|                | 11.50-12.20 | 25.6                      | 33.4 | 33.7 | 28.0               |             |                 |

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

- Remark :**
1. Reported analysis refers to submitted sample only.
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  4. NWB = Natural Wet Bulb Temperature  
DB = Dry Bulb Temperature  
GT = Globe Temperature  
WBGT = Wet Bulb Globe Temperature
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### HEAT STRESS MEASUREMENT REPORT

|                      |                                         |                 |                                    |            |            |
|----------------------|-----------------------------------------|-----------------|------------------------------------|------------|------------|
| CLIENT NAME          | : UBE Chemicals (Asia) Public Co., Ltd. | REFERENCE NO. : | 223032 Cert-Heat_UUCP (Jan 24) (2) |            |            |
| MEASUREMENT BY       | : SECOT Co., Ltd.                       | INSTRUMENT      | : WBGT Meter                       |            |            |
| MEASUREMENT DATE     | : 18/01/2024                            | MODEL NO.       | : JT2011-E2A                       | SERIAL NO. | 3522210173 |
| MEASUREMENT LOCATION | : UUCP                                  | SITE OPERATOR   | Miss Salisa Ainree                 |            |            |

| LOCATION                     | TIME        | MEASURED TEMPERATURE (°C) |      |      |                    |             | STANDARD (°C) * |
|------------------------------|-------------|---------------------------|------|------|--------------------|-------------|-----------------|
|                              |             | NWB                       | DB   | GT   | WBGT <sub>in</sub> | WBGT (Avg.) | WBGT            |
| Chemical Preparation Section | 10.44-11.14 | 26.6                      | 36.7 | 37.1 | 29.8               | 28.9        | 34.0            |
| (Nylon 2)                    | 11.14-11.44 | 26.6                      | 34.0 | 34.3 | 28.9               |             |                 |
|                              | 11.44-12.14 | 26.3                      | 33.5 | 33.8 | 28.6               |             |                 |
|                              | 12.14-12.44 | 26.4                      | 33.0 | 33.2 | 28.4               |             |                 |

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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### HEAT STRESS MEASUREMENT REPORT

|                      |                                         |                 |                                    |            |            |
|----------------------|-----------------------------------------|-----------------|------------------------------------|------------|------------|
| CLIENT NAME          | : UBE Chemicals (Asia) Public Co., Ltd. | REFERENCE NO. : | 223032 Cert-Heat_UUCP (Jan 24) (3) |            |            |
| MEASUREMENT BY       | : SECOT Co., Ltd.                       | INSTRUMENT      | : WBGT Meter                       |            |            |
| MEASUREMENT DATE     | : 18/01/2024                            | MODEL NO.       | : JT2011-E2A                       | SERIAL NO. | 3522210177 |
| MEASUREMENT LOCATION | : UUCP                                  | SITE OPERATOR   | Miss Salisa Ainree                 |            |            |

| LOCATION    | TIME        | MEASURED TEMPERATURE (°C) |      |      |                    |             | STANDARD (°C) * |
|-------------|-------------|---------------------------|------|------|--------------------|-------------|-----------------|
|             |             | NWB                       | DB   | GT   | WBGT <sub>in</sub> | WBGT (Avg.) | WBGT            |
| Polymerizer | 14.30-15.00 | 28.8                      | 38.8 | 39.5 | 32.0               | 32.3        | 34.0            |
| (Nylon 2)   | 15.00-15.30 | 29.6                      | 39.0 | 39.7 | 32.6               |             |                 |
|             | 15.30-16.00 | 29.4                      | 38.5 | 39.2 | 32.3               |             |                 |
|             | 16.00-16.30 | 29.2                      | 38.1 | 38.9 | 32.1               |             |                 |

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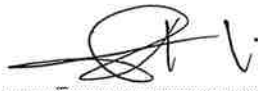
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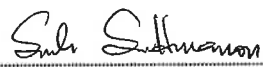
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HEAT STRESS MEASUREMENT REPORT

|                      |                                         |               |                                     |            |            |
|----------------------|-----------------------------------------|---------------|-------------------------------------|------------|------------|
| CLIENT NAME          | : UBE Chemicals (Asia) Public Co., Ltd. | REFERENCE NO. | : 224032 Cert-Heat_UNT (Apr 24) (1) |            |            |
| MEASUREMENT BY       | : SECOT Co., Ltd.                       | INSTRUMENT    | : WBGT Meter                        |            |            |
| MEASUREMENT DATE     | : 08/04/2024                            | MODEL NO.     | : JT2011-E2A                        | SERIAL NO. | 3522210176 |
| MEASUREMENT LOCATION | : UNT                                   | SITE OPERATOR | : Miss Salisa Ainree                |            |            |

| LOCATION       | TIME        | MEASURED TEMPERATURE (°C) |      |      |                    |             | STANDARD (°C) * |
|----------------|-------------|---------------------------|------|------|--------------------|-------------|-----------------|
|                |             | NWB                       | DB   | GT   | WBGT <sub>in</sub> | WBGT (Avg.) | WBGT            |
| Drying Section | 10.08-10.38 | 28.8                      | 36.7 | 36.7 | 31.2               | 31.8        | 34.0            |
| (Nylon 1)      | 10.38-11.08 | 29.2                      | 37.2 | 37.3 | 31.6               |             |                 |
|                | 11.08-11.38 | 29.4                      | 37.8 | 37.9 | 32.0               |             |                 |
|                | 11.38-12.08 | 29.7                      | 38.1 | 38.2 | 32.3               |             |                 |

  
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Environmental Scientist

  
(Miss Sununta Sirawuttinanon)  
Technical Management Team

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HEAT STRESS MEASUREMENT REPORT

|                      |                                         |                 |                                   |            |            |
|----------------------|-----------------------------------------|-----------------|-----------------------------------|------------|------------|
| CLIENT NAME          | : UBE Chemicals (Asia) Public Co., Ltd. | REFERENCE NO. : | 224032 Cert-Heat_UNT (Apr 24) (2) |            |            |
| MEASUREMENT BY       | : SECOT Co., Ltd.                       | INSTRUMENT      | : WBGT Meter                      |            |            |
| MEASUREMENT DATE     | : 08/04/2024                            | MODEL NO.       | : JT2011-E2A                      | SERIAL NO. | 3522210173 |
| MEASUREMENT LOCATION | : UNT                                   | SITE OPERATOR   | : Miss Salisa Ainree              |            |            |

| LOCATION                     | TIME        | MEASURED TEMPERATURE (°C) |      |      |                    |             | STANDARD (°C) * |
|------------------------------|-------------|---------------------------|------|------|--------------------|-------------|-----------------|
|                              |             | NWB                       | DB   | GT   | WBGT <sub>in</sub> | WBGT (Avg.) | WBGT            |
| Chemical Preparation Section | 10.10-10.40 | 23.5                      | 29.6 | 31.5 | 25.9               | 24.9        | 34.0            |
| (Nylon 1)                    | 10.40-11.10 | 23.1                      | 29.3 | 29.8 | 25.1               |             |                 |
|                              | 11.10-11.40 | 22.2                      | 29.2 | 29.5 | 24.4               |             |                 |
|                              | 11.40-12.10 | 22.0                      | 29.2 | 29.4 | 24.2               |             |                 |

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### HEAT STRESS MEASUREMENT REPORT

|                      |                                         |                 |                                   |            |            |
|----------------------|-----------------------------------------|-----------------|-----------------------------------|------------|------------|
| CLIENT NAME          | : UBE Chemicals (Asia) Public Co., Ltd. | REFERENCE NO. : | 224032 Cert-Heat_UNT (Apr 24) (3) |            |            |
| MEASUREMENT BY       | : SECOT Co., Ltd.                       | INSTRUMENT      | : WBGT Meter                      |            |            |
| MEASUREMENT DATE     | : 08/04/2024                            | MODEL NO.       | : JT2011-E2A                      | SERIAL NO. | 3522210181 |
| MEASUREMENT LOCATION | : UNT                                   | SITE OPERATOR   | : Miss Salisa Ainree              |            |            |

| LOCATION    | TIME        | MEASURED TEMPERATURE (°C) |      |      |                    |             | STANDARD (°C) * |
|-------------|-------------|---------------------------|------|------|--------------------|-------------|-----------------|
|             |             | NWB                       | DB   | GT   | WBGT <sub>in</sub> | WBGT (Avg.) | WBGT            |
| Polymerizer | 10.18-10.48 | 28.9                      | 35.4 | 36.3 | 31.1               | 31.9        | 34.0            |
| (Nylon 1)   | 10.48-11.18 | 30.1                      | 36.7 | 37.3 | 32.3               |             |                 |
|             | 11.18-11.48 | 29.9                      | 36.3 | 36.8 | 32.0               |             |                 |
|             | 11.48-12.18 | 30.1                      | 36.9 | 37.5 | 32.3               |             |                 |

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### HEAT STRESS MEASUREMENT REPORT

|                      |                                         |                 |                                    |            |            |
|----------------------|-----------------------------------------|-----------------|------------------------------------|------------|------------|
| CLIENT NAME          | : UBE Chemicals (Asia) Public Co., Ltd. | REFERENCE NO. : | 224032 Cert-Heat_UUCP (Apr 24) (1) |            |            |
| MEASUREMENT BY       | : SECOT Co., Ltd.                       | INSTRUMENT      | : WBGT Meter                       |            |            |
| MEASUREMENT DATE     | : 08/04/2024                            | MODEL NO.       | : JT2011-E2A                       | SERIAL NO. | 3522210179 |
| MEASUREMENT LOCATION | : UUCP                                  | SITE OPERATOR   | : Miss Salisa Ainree               |            |            |

| LOCATION       | TIME        | MEASURED TEMPERATURE (°C) |      |      |                    |             | STANDARD (°C) * |
|----------------|-------------|---------------------------|------|------|--------------------|-------------|-----------------|
|                |             | NWB                       | DB   | GT   | WBGT <sub>in</sub> | WBGT (Avg.) | WBGT            |
| Drying Section | 10.20-10.50 | 28.5                      | 34.9 | 35.4 | 30.6               | 30.9        | 34.0            |
| (Nylon 2)      | 10.50-11.20 | 28.8                      | 35.3 | 35.7 | 30.9               |             |                 |
|                | 11.20-11.50 | 29.0                      | 35.5 | 35.8 | 31.0               |             |                 |
|                | 11.50-12.20 | 28.8                      | 35.6 | 35.9 | 30.9               |             |                 |

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HEAT STRESS MEASUREMENT REPORT

CLIENT NAME : UBE Chemicals (Asia) Public Co., Ltd. REFERENCE NO. : 224032 Cert-Heat\_UUCP (Apr 24) (2)  
MEASUREMENT BY : SECOT Co., Ltd. INSTRUMENT : WBGT Meter  
MEASUREMENT DATE : 08/04/2024 MODEL NO. : JT2011-E2A SERIAL NO. : 3522210174  
MEASUREMENT LOCATION : UUCP SITE OPERATOR : Miss Salisa Ainree

| LOCATION                     | TIME        | MEASURED TEMPERATURE (°C) |      |      |                    |             | STANDARD (°C) * |
|------------------------------|-------------|---------------------------|------|------|--------------------|-------------|-----------------|
|                              |             | NWB                       | DB   | GT   | WBGT <sub>in</sub> | WBGT (Avg.) | WBGT            |
| Chemical Preparation Section | 10.30-11.00 | 30.2                      | 40.6 | 42.0 | 33.7               | 33.9        | 34.0            |
| (Nylon 2)                    | 11.00-11.30 | 30.4                      | 40.8 | 42.0 | 33.9               |             |                 |
|                              | 11.30-12.00 | 30.5                      | 41.0 | 42.1 | 34.0               |             |                 |
|                              | 12.00-12.30 | 30.6                      | 40.8 | 42.0 | 34.0               |             |                 |

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HEAT STRESS MEASUREMENT REPORT

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|----------------------|-----------------------------------------|---------------|--------------------------------------|------------|--------------|
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| MEASUREMENT BY       | : SECOT Co., Ltd.                       | INSTRUMENT    | : WBGT Meter                         |            |              |
| MEASUREMENT DATE     | : 08/04/2024                            | MODEL NO.     | : JT2011-E2A                         | SERIAL NO. | : 3522210177 |
| MEASUREMENT LOCATION | : UUCP                                  | SITE OPERATOR | : Miss Salisa Ainree                 |            |              |

| LOCATION    | TIME        | MEASURED TEMPERATURE (°C) |      |      |                    |             | STANDARD (°C) * |
|-------------|-------------|---------------------------|------|------|--------------------|-------------|-----------------|
|             |             | NWB                       | DB   | GT   | WBGT <sub>in</sub> | WBGT (Avg.) | WBGT            |
| Polymerizer | 10.25-10.55 | 30.2                      | 40.6 | 41.6 | 33.6               | 34.0        | 34.0            |
| (Nylon 2)   | 10.55-11.25 | 30.5                      | 41.3 | 42.6 | 34.1               |             |                 |
|             | 11.25-11.55 | 30.5                      | 41.0 | 42.5 | 34.1               |             |                 |
|             | 11.55-12.25 | 30.7                      | 41.0 | 42.3 | 34.2               |             |                 |

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## ภาคผนวก ง.6

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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. | : 0109/67    |
| For      | : UBE Chemicals (Asia) Public Company Limited                               | Sampling Date       | : 18/01/2024 |
| Address  | : 140/8 Moo 4, Ta-Phong Sub-District, Muang District, Rayong Province 21000 | Received Date       | : 20/01/2024 |
|          |                                                                             | Test Date           | : 22/01/2024 |
| Tel/Fax  | : 0-3892-8700 / 0-3892-8965                                                 | Report Date         | : 29/01/2024 |

SAMPLE DESCRIPTION / SAMPLING INFORMATION

|                      |                   |                  |              |
|----------------------|-------------------|------------------|--------------|
| Sample Designated As | : Workplace Air   | Sampling Method  | : Filtration |
| Sampling By          | : SECOT Co., Ltd. | Sample Condition | : Normal     |

| Sampling Location              | Sampling    | Compound   | Analytical               | ND                | RESULT            | STANDARD          |
|--------------------------------|-------------|------------|--------------------------|-------------------|-------------------|-------------------|
|                                | Date/Time   |            |                          | mg/m <sup>3</sup> | mg/m <sup>3</sup> | mg/m <sup>3</sup> |
| โรงงานโอบุจัน (UNT)-Nylon 1    |             |            |                          |                   |                   |                   |
| บริเวณเตรียมสารเคมี            | 18/01/2024  | Total dust | NIOSH 0500 /Microbalance | < 0.25            | ND                | 15                |
| (Chemical Preparation Section) | 09:30-11:30 |            |                          |                   |                   |                   |

Analyst By : Phatchara Samanchan  
( Miss Phatchara Samanchan )

Approved By : Narisa Poowasanpetch  
( Miss Narisa Poowasanpetch )  
Technical Management Team

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3. Notification of the Occupational Safety and Health Administration (OSHA), B.E. 2555 (2012).

4. ND = non-detectable.



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ANALYSIS/TEST REPORT

|          |                                                                                   |                     |              |
|----------|-----------------------------------------------------------------------------------|---------------------|--------------|
| Customer | : EED/SECOT Co., Ltd.                                                             | Request Service No. | : 0109/67    |
| For      | : UBE Chemicals (Asia) Public Company Limited                                     | Sampling Date       | : 18/01/2024 |
| Address  | : 140/8 Moo 4 , Ta-Phong Sub-District , Muang District ,<br>Rayong Province 21000 | Received Date       | : 20/01/2024 |
|          |                                                                                   | Test Date           | : 24/01/2024 |
| Tel/Fax  | : 0-3892-8700 / 0-3892-8965                                                       | Report Date         | : 29/01/2024 |

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

| Sampling Location                | Sampling    | Compound    | Analytical        | ND     | RESULT | STANDARD |
|----------------------------------|-------------|-------------|-------------------|--------|--------|----------|
|                                  | Date/Time   |             |                   | Method | ppm    | ppm      |
| โรงงานป้องกัน (UNT)-Nylon 1      |             |             |                   |        |        |          |
| กระบวนการอบแห้ง (Drying Section) | 18/01/2024  | Caprolactam | OSHA PV 2012/HPLC | < 0.02 | ND     |          |
|                                  | 09:27-11:07 |             |                   |        |        |          |

Analyst By : Supawadee Buakaew  
(Miss Supawadee Buakaew)

Approved By : Narisa Poowasanpetch  
(Miss Narisa Poowasanpetch)  
Technical Management Team

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

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3. ND = non-detectable.

4. - No Standard.



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239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

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

ANALYSIS/TEST REPORT

|          |                                                                             |                     |              |
|----------|-----------------------------------------------------------------------------|---------------------|--------------|
| Customer | : EED/SECOT Co., Ltd.                                                       | Request Service No. | : 0109/67    |
| For      | : UBE Chemicals (Asia) Public Company Limited                               | Sampling Date       | : 18/01/2024 |
| Address  | : 140/8 Moo 4, Ta-Phong Sub-District, Muang District, Rayong Province 21000 | Received Date       | : 20/01/2024 |
|          |                                                                             | Test Date           | : 22/01/2024 |
| Tel/Fax  | : 0-3892-8700 / 0-3892-8965                                                 | Report Date         | : 29/01/2024 |

SAMPLE DESCRIPTION / SAMPLING INFORMATION

|                      |                   |                  |              |
|----------------------|-------------------|------------------|--------------|
| Sample Designated As | : Workplace Air   | Sampling Method  | : Filtration |
| Sampling By          | : SECOT Co., Ltd. | Sample Condition | : Normal     |

| Sampling Location                      | Sampling    | Compound   | Analytical               | ND                | RESULT            | STANDARD          |
|----------------------------------------|-------------|------------|--------------------------|-------------------|-------------------|-------------------|
|                                        | Date/Time   |            |                          | mg/m <sup>3</sup> | mg/m <sup>3</sup> | mg/m <sup>3</sup> |
| โรงงานเพิ่มกำลังการผลิต (UUCP)-Nylon 2 |             |            |                          |                   |                   |                   |
| บริเวณเตรียมสารเคมี                    | 18/01/2024  | Total dust | NIOSH 0500 /Microbalance | < 0.25            | ND                | 15                |
| (Chemical Preparation Section)         | 10:19-12:19 |            |                          |                   |                   |                   |

Analyst By : Phatchara Samanchan  
(Miss Phatchara Samanchan)

Approved By : Narisa Poowasanpetch  
(Miss Narisa Poowasanpetch)  
Technical Management Team

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ANALYSIS/TEST REPORT

|          |                                                                             |                     |              |
|----------|-----------------------------------------------------------------------------|---------------------|--------------|
| Customer | : EED/SECOT Co., Ltd.                                                       | Request Service No. | : 0109/67    |
| For      | : UBE Chemicals (Asia) Public Company Limited                               | Sampling Date       | : 18/01/2024 |
| Address  | : 140/8 Moo 4, Ta-Phong Sub-District, Muang District, Rayong Province 21000 | Received Date       | : 20/01/2024 |
| Tel/Fax  | : 0-3892-8700 / 0-3892-8965                                                 | Test Date           | : 24/01/2024 |
|          |                                                                             | Report Date         | : 29/01/2024 |

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

| Sampling Location                                 | Sampling    | Compound    | Analytical        | ND     | RESULT | STANDARD |
|---------------------------------------------------|-------------|-------------|-------------------|--------|--------|----------|
|                                                   | Date/Time   |             |                   | Method | ppm    | ppm      |
| โรงงานเพิ่มกำลังการผลิต (UUCP)-Nylon 2            |             |             |                   |        |        |          |
| กระบวนการอบแห้ง (Drying Section)                  | 18/01/2024  | Caprolactam | OSHA PV 2012/HPLC | < 0.02 | ND     |          |
|                                                   | 09:58-11:38 |             |                   |        |        |          |
| บริเวณหน่วยตัดเม็ดใต้น้ำ (Under Water Granulator) | 18/01/2024  | Caprolactam | OSHA PV 2012/HPLC | < 0.02 | 0.02   |          |
|                                                   | 09:52-11:32 |             |                   |        |        |          |

Analyst By : Supawadee Buakaew  
(Miss Supawadee Buakaew)

Approved By : Narisa Poowasanpet  
(Miss Narisa Poowasanpet)  
Technical Management Team

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4. - No Standard.



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ANALYSIS/TEST REPORT

|          |                                                                                |                     |              |
|----------|--------------------------------------------------------------------------------|---------------------|--------------|
| Customer | : EED/SECOT Co., Ltd.                                                          | Request Service No. | : 0715/67    |
| For      | : UBE Chemicals (Asia) Public Company Limited                                  | Sampling Date       | : 08/04/2024 |
| Address  | : 140/8 Moo 4, Ta-Phong Sub-District, Muang District,<br>Rayong Province 21000 | Received Date       | : 10/04/2024 |
|          |                                                                                | Test Date           | : 11/04/2024 |
| Tel/Fax  | : 0-3892-8700 / 0-3892-8965                                                    | Report Date         | : 19/04/2024 |

SAMPLE DESCRIPTION / SAMPLING INFORMATION

|                      |                   |                  |              |
|----------------------|-------------------|------------------|--------------|
| Sample Designated As | : Workplace Air   | Sampling Method  | : Filtration |
| Sampling By          | : SECOT Co., Ltd. | Sample Condition | : Normal     |

| Sampling Location                    | Sampling<br>Date/Time | Compound   | Analytical<br>Method     | ND<br>mg/m <sup>3</sup> | RESULT<br>mg/m <sup>3</sup> | STANDARD<br>mg/m <sup>3</sup> |
|--------------------------------------|-----------------------|------------|--------------------------|-------------------------|-----------------------------|-------------------------------|
| <u>โรงงานปิโตรเคมี (UNT)-Nylon 1</u> |                       |            |                          |                         |                             |                               |
| บริเวณเตรียมสารเคมี                  | 08/04/2024            | Total dust | NIOSH 0500 /Microbalance | < 0.25                  | ND                          | 15                            |
| (Chemical Preparation Section)       | 09:48-11:48           |            |                          |                         |                             |                               |

Analyst By :

Pornnapa Budthum  
(Miss Pornnapa Budthum)

Approved By :

Narisa Poowasanpetch  
( Miss Narisa Poowasanpetch )

Technical Management Team

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ANALYSIS/TEST REPORT

|          |                                                                                   |                     |              |
|----------|-----------------------------------------------------------------------------------|---------------------|--------------|
| Customer | : EED/SECOT Co., Ltd.                                                             | Request Service No. | : 0715/67    |
| For      | : UBE Chemicals (Asia) Public Company Limited                                     | Sampling Date       | : 08/04/2024 |
| Address  | : 140/8 Moo 4 , Ta-Phong Sub-District , Muang District ,<br>Rayong Province 21000 | Received Date       | : 10/04/2024 |
|          |                                                                                   | Test Date           | : 11/04/2024 |
| Tel/Fax  | : 0-3892-8700 / 0-3892-8965                                                       | Report Date         | : 19/04/2024 |

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

| Sampling Location                | Sampling<br>Date/Time     | Compound    | Analytical<br>Method | ND<br>ppm | RESULT<br>ppm | STANDARD<br>ppm |
|----------------------------------|---------------------------|-------------|----------------------|-----------|---------------|-----------------|
| <u>โรงงานโชนัน (UNT)-Nylon 1</u> |                           |             |                      |           |               |                 |
| กระบวนการอบแห้ง (Drying Section) | 08/04/2024<br>09:46-11:26 | Caprolactam | OSHA PV 2012/HPLC    | < 0.02    | ND            |                 |

Analyst By :

Supawadee Buakaew

( Miss Supawadee Buakaew )

Approved By :

Narisa Poowasanpetch

( Miss Narisa Poowasanpetch )

Technical Management Team

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ANALYSIS/TEST REPORT

|          |                                                                                   |                     |              |
|----------|-----------------------------------------------------------------------------------|---------------------|--------------|
| Customer | : EED/SECOT Co., Ltd.                                                             | Request Service No. | : 0715/67    |
| For      | : UBE Chemicals (Asia) Public Company Limited                                     | Sampling Date       | : 08/04/2024 |
| Address  | : 140/8 Moo 4 , Ta-Phong Sub-District , Muang District ,<br>Rayong Province 21000 | Received Date       | : 10/04/2024 |
| Tel/Fax  | : 0-3892-8700 / 0-3892-8965                                                       | Test Date           | : 11/04/2024 |
|          |                                                                                   | Report Date         | : 19/04/2024 |

SAMPLE DESCRIPTION / SAMPLING INFORMATION

|                      |                   |                  |              |
|----------------------|-------------------|------------------|--------------|
| Sample Designated As | : Workplace Air   | Sampling Method  | : Filtration |
| Sampling By          | : SECOT Co., Ltd. | Sample Condition | : Normal     |

| Sampling Location                      | Sampling    | Compound   | Analytical               | ND     | RESULT            | STANDARD          |
|----------------------------------------|-------------|------------|--------------------------|--------|-------------------|-------------------|
|                                        | Date/Time   |            |                          | Method | mg/m <sup>3</sup> | mg/m <sup>3</sup> |
| โรงงานเพิ่มกำลังการผลิต (UUCP)-Nylon 2 |             |            |                          |        |                   |                   |
| บริเวณเตรียมสารเคมี                    | 08/04/2024  | Total dust | NIOSH 0500 /Microbalance | < 0.25 | ND                | 15                |
| (Chemical Preparation Section)         | 10:08-12:08 |            |                          |        |                   |                   |

Analyst By :

  
( Miss Pornnapa Budthum )

Approved By :

  
( Miss Narisa Poowasanpetch )

Technical Management Team

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ANALYSIS/TEST REPORT

|          |                                                                                   |                     |              |
|----------|-----------------------------------------------------------------------------------|---------------------|--------------|
| Customer | : EED/SECOT Co., Ltd.                                                             | Request Service No. | : 0715/67    |
| For      | : UBE Chemicals (Asia) Public Company Limited                                     | Sampling Date       | : 08/04/2024 |
| Address  | : 140/8 Moo 4 , Ta-Phong Sub-District , Muang District ,<br>Rayong Province 21000 | Received Date       | : 10/04/2024 |
| Tel/Fax  | : 0-3892-8700 / 0-3892-8965                                                       | Test Date           | : 11/04/2024 |
|          |                                                                                   | Report Date         | : 19/04/2024 |

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

| Sampling Location                                | Sampling    | Compound    | Analytical        | ND     | RESULT | STANDARD |
|--------------------------------------------------|-------------|-------------|-------------------|--------|--------|----------|
|                                                  | Date/Time   |             |                   | Method | ppm    | ppm      |
| โรงงานเพิ่มกำลังการผลิต (UUCP)-Nylon 2           |             |             |                   |        |        |          |
| กระบวนการอบแห้ง (Drying Section)                 | 08/04/2024  | Caprolactam | OSHA PV 2012/HPLC | < 0.02 | ND     |          |
|                                                  | 09:56-11:36 |             |                   |        |        |          |
| บริเวณหน่วยคัดเม็ดไดน้ำ (Under Water Granulator) | 08/04/2024  | Caprolactam | OSHA PV 2012/HPLC | < 0.02 | ND     |          |
|                                                  | 09:54-11:34 |             |                   |        |        |          |

Analyst By : Supawadee Buakaew  
(Miss Supawadee Buakaew)

Approved By : Narisa Poowasanpetch  
(Miss Narisa Poowasanpetch )  
Technical Management Team

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ภาคผนวก จ

ใบแสดงการตรวจเทียบเครื่องมือ



## High Volume TSP & PM-10 Calibration Data Sheet

Calibration Location : SECOT Co.,Ltd. Calibration Date : Jan 6, 2024

Hi-Vol Pump No. : BH-003 Indicator No. : CM-01

Amb. Temp (°C) : 30 Press (mmHg) : 761

Calibration by : Mr.Suphanut I.

| Plate | Indicate (X)<br>( cm. ) | True H <sub>2</sub> O<br>( in. ) | Actual Flow (Y)<br>(cfm) | XY       | X <sup>2</sup> | Remark |
|-------|-------------------------|----------------------------------|--------------------------|----------|----------------|--------|
| 18    | 18.40                   | 11.30                            | 56.01                    | 1,030.58 | 338.56         |        |
| 13    | 14.80                   | 9.00                             | 50.29                    | 744.29   | 219.04         |        |
| 10    | 12.00                   | 6.90                             | 44.19                    | 530.28   | 144.00         |        |
| 7     | 7.80                    | 4.80                             | 37.07                    | 289.15   | 60.84          |        |
| 5     | 4.80                    | 2.70                             | 28.12                    | 134.98   | 23.04          |        |
| Sum   | 57.80                   | 34.70                            | 215.68                   | 2,729.28 | 785.48         |        |

Calibrated by : Suphanut I. Approved by : Wittaya K.



## High Volume TSP & PM-10 Calibration Data Sheet

Calibration Location : SECOT Co.,Ltd. Calibration Date : Jan 6, 2024

Hi-Vol Pump No. : BH-007 Indicator No. : CM-01

Amb. Temp (°C) : 33 Press (mmHg) : 761

Calibration by : Mr.Suphanut I.

| Plate | Indicate (X)<br>( cm. ) | True H <sub>2</sub> O<br>( in. ) | Actual Flow (Y)<br>(cfm) | XY       | X <sup>2</sup> | Remark |
|-------|-------------------------|----------------------------------|--------------------------|----------|----------------|--------|
| 18    | 15.80                   | 13.10                            | 60.21                    | 951.32   | 249.64         |        |
| 13    | 13.20                   | 10.20                            | 53.45                    | 705.54   | 174.24         |        |
| 10    | 10.40                   | 7.80                             | 46.90                    | 487.76   | 108.16         |        |
| 7     | 7.40                    | 5.10                             | 38.17                    | 282.46   | 54.76          |        |
| 5     | 4.80                    | 3.00                             | 29.58                    | 141.98   | 23.04          |        |
| Sum   | 51.60                   | 39.20                            | 228.31                   | 2,569.06 | 609.84         |        |

Calibrated by : Suphanut I. Approved by : Wittayan K.



# SO2 Analyzer Performance Test

Date : 9 Jan 23

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

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

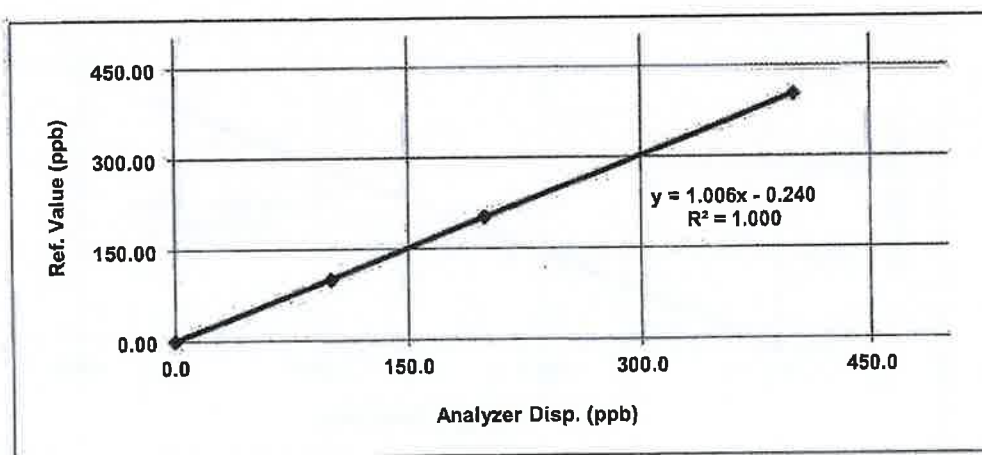
|            |                     |
|------------|---------------------|
| Dilutor :  | Teledyne T 700 1367 |
| Zero Air : | M701 S/N 1039       |
| STD GAS :  | EB0108319           |

## Single Point Calibration

| Supply Gas | Ref Value | Analyzer Disp. | Zero-Span Error % | Slope - Offset |
|------------|-----------|----------------|-------------------|----------------|
| Zero       | 0.00      | 0.20           | -                 | -              |
| Span       | 450.00    | 449.90         | -                 | 1.006          |

## MultiPoint Calibration

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



Calibrated by :

Approved by :



# SO2 Analyzer Performance Test

Date: 9 Jan 23

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

|                 |      |
|-----------------|------|
| Analyzer Type : | SO2  |
| Brand :         | API  |
| Model :         | 100A |
| S/N :           | 376  |

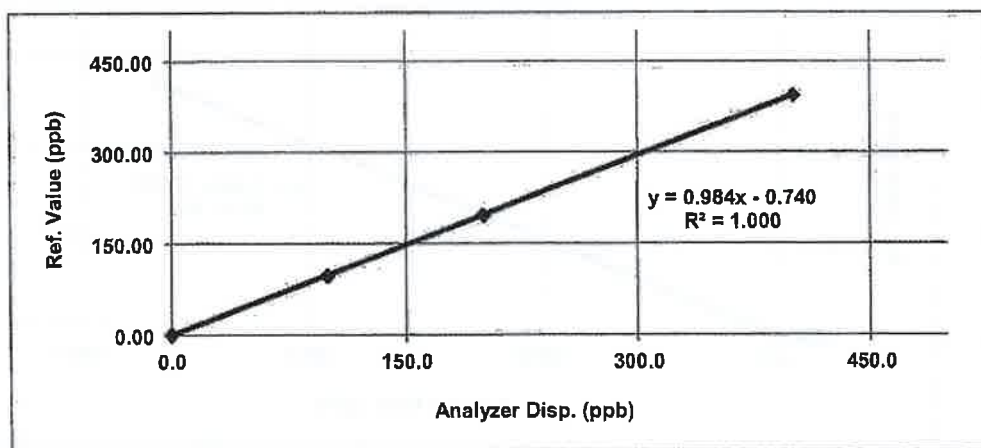
|            |                     |
|------------|---------------------|
| Dilutor :  | Teledyne T 700 1367 |
| Zero Air : | M701 S/N 1039       |
| STD GAS :  | EB0108319           |

## Single Point Calibration

| Supply Gas | Ref Value | Analyzer Disp. | Zero-Span Error % | Slope - Offset |
|------------|-----------|----------------|-------------------|----------------|
| Zero       | 0.00      | 0.30           | -                 | -              |
| Span       | 450.00    | 443.50         | -                 | 0.984          |

## MultiPoint Calibration

| Ref Value | Analyzer Disp. | Output Difference |                  |                   |
|-----------|----------------|-------------------|------------------|-------------------|
|           |                | Diff              | Percent Diff     | Percent Diff abs. |
| 0.0       | 0.30           | 0.30              | -                | -                 |
| 100.0     | 96.60          | -3.40             | -3.40            | 3.40              |
| 200.0     | 195.60         | -4.40             | -2.20            | 2.20              |
| 400.0     | 393.40         | -6.60             | -1.65            | 1.65              |
|           |                |                   | Average Diff (%) | 2.42              |



Calibrated by :

Approved by :



## NOX-NO Analyzer Performance Test

Date : 9 Jan 23

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

|                 |      |
|-----------------|------|
| Analyzer Type : | Nox  |
| Brand :         | API  |
| Model :         | 200A |
| S/N :           | 1528 |

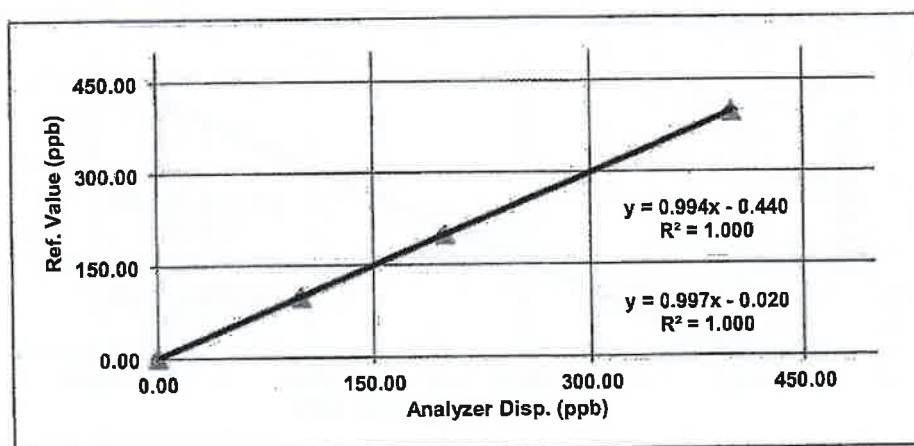
|            |                   |
|------------|-------------------|
| Dilutor :  | Teledyne 700E 587 |
| Zero Air : | M701 S/N 1044     |
| STD GAS :  | EB0108319         |

### NOX-NO Single Point Calibration

| Supply Gas | Ref Value | NOX Analyzer Disp. | NO Analyzer Disp. | Slope - Offset |
|------------|-----------|--------------------|-------------------|----------------|
| Zero       | 0.0       | 0.9                | 0.5               | 0.994          |
| Span       | 450.0     | 444.4              | 444.30            | 0.997          |

### NOX-NO MultiPoint Calibration

| Ref Value | NOX Analyzer Disp. | NO Analyzer Disp. | Output Difference     |                      |
|-----------|--------------------|-------------------|-----------------------|----------------------|
|           |                    |                   | NOx Percent Diff abs. | NO Percent Diff abs. |
| 0.00      | 0.90               | 0.5               | -                     | -                    |
| 100.00    | 98.20              | 97.7              | 1.8                   | 2.3                  |
| 200.00    | 199.60             | 198.3             | 0.2                   | 0.8                  |
| 400.00    | 398.80             | 397.4             | 0.3                   | 0.7                  |
|           |                    | Average Diff (%)  | 0.8                   | 1.3                  |



Calibrated by :

Approved by :



# NOX-NO Analyzer Performance Test

Date : 9 Jan 23

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

|                 |      |
|-----------------|------|
| Analyzer Type : | Nox  |
| Brand :         | API  |
| Model :         | 200A |
| S/N :           | 1505 |

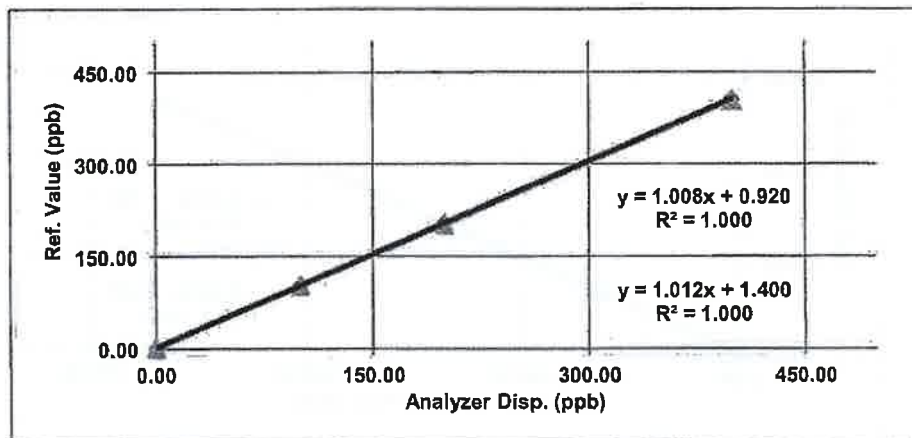
|          |                     |
|----------|---------------------|
| Dilutor  | : Teledyne 700E 587 |
| Zero Air | : M701 S/N 1044     |
| STD GAS  | : EB0108319         |

## NOX-NO Single Point Calibration

| Supply Gas | Ref Value | NOX Analyzer Disp. | NO Analyzer Disp. | Slope - Offset |
|------------|-----------|--------------------|-------------------|----------------|
| Zero       | 0.0       | 0.7                | 0.7               | 1.008          |
| Span       | 450.0     | 455.7              | 456.10            | 1.012          |

## NOX-NO MultiPoint Calibration

| Ref Value | NOX Analyzer Disp. | NO Analyzer Disp. | Output Difference     |                      |
|-----------|--------------------|-------------------|-----------------------|----------------------|
|           |                    |                   | NOx Percent Diff abs. | NO Percent Diff abs. |
| 0.00      | 0.70               | 0.70              | -                     | -                    |
| 100.00    | 103.50             | 102.60            | 3.5                   | 2.6                  |
| 200.00    | 203.70             | 201.70            | 1.8                   | 0.8                  |
| 400.00    | 405.80             | 404.40            | 1.5                   | 1.1                  |
|           |                    | Average Diff (%)  | 2.3                   | 1.5                  |

Calibrated by : RensanaApproved by : Wattana K.



Airgas Specialty Gases  
Airgas USA, LLC  
600 Union Landing Road  
Cinnaminson, NJ 08077-0000  
Airgas.com

## CERTIFICATE OF ANALYSIS

### Grade of Product: EPA Protocol

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

Expiration Date: Feb 05, 2027

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

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

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

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

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

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

Triad Data Available Upon Request

PERMANENT NOTES: PRODUCED IN ACCORDANCE WITH ISO17025 REQUIREMENTS

#### NOTES:

Gross Weight: 27806.3 grams

Net Weight: 4733.2 grams

This calibration std. has been certified in accordance with the May 2012 EPA Traceability Protocol document EPA-600/R-12/531. All testing processes and measurements conform to the requirements of ISO/IEC 17025 and to Airgas ISO 9001:2008 and relate only to items identified on this certificate. All concentrations are certified to be NIST Traceable with total uncertainty as detailed under Analytical Uncertainty. This document shall not be reproduced in full without written approval of the issuer.



TESTING CERT No. 3082.05

Approved for Release



# CONTROL UNIT CALIBRATION

(Metric units, mm)

Date 6 Jan 24

Initial Final Average

Barometric press, Pb 759 759 759 mmHg

## Dry Gas Meter Data

Console No. M50-09

Metering System ID

DGM Number 333249

DGM Model ES-110

Calibrated by : Montri P.

## Reference Dry Gas Meter Data

Serial No. 358794

Model S110

Correction factor (Yr) 1.0068

Last Calibration Date 26 Oct 23

| Orifice<br>manometer<br>setting, ΔH<br>mm H2O | Ref.<br>DGM<br>Volume<br>V <sub>r</sub> Liters | DGM<br>Volume<br>V <sub>m</sub><br>Liters | Temperature (°C)             |                         |                          |                       | Time<br>Θ<br>min | DGM<br>Correction<br>factor<br>(Y) | ΔH@<br>mm |
|-----------------------------------------------|------------------------------------------------|-------------------------------------------|------------------------------|-------------------------|--------------------------|-----------------------|------------------|------------------------------------|-----------|
|                                               |                                                |                                           | Ref<br>DGM<br>T <sub>r</sub> | Dry Gas Meter           |                          |                       |                  |                                    |           |
|                                               |                                                |                                           |                              | Inlet<br>T <sub>i</sub> | Outlet<br>T <sub>o</sub> | Avg<br>T <sub>m</sub> |                  |                                    |           |
| 12.5                                          | 100.3                                          | 99.0                                      | 25                           | 25                      | 24                       | 24.5                  | 8.53             | 1.0165                             | 41.1799   |
| 25.0                                          | 100.0                                          | 99.5                                      | 25                           | 25                      | 24                       | 24.5                  | 6.08             | 1.0073                             | 42.0742   |
| 50.0                                          | 100.1                                          | 99.8                                      | 25                           | 25                      | 24                       | 24.5                  | 4.47             | 1.0041                             | 45.2483   |
| 76.0                                          | 100.4                                          | 99.1                                      | 25                           | 25                      | 24                       | 24.5                  | 3.55             | 1.0114                             | 43.2112   |
| 100.0                                         | 100.1                                          | 99.4                                      | 25                           | 25                      | 24                       | 24.5                  | 3.55             | 1.0024                             | 44.6038   |
| 150.0                                         | 100.1                                          | 98.9                                      | 25                           | 25                      | 24                       | 24.5                  | 2.57             | 1.0022                             | 44.8941   |

Average 1.0073 43.5352

Approved by :



## PITOT TUBE CALIBRATION

Calibration Location: SECOT

Calibration Date : 09-01-2024

Calibration Duct No.: CD-0123

Calibration Standard Pitot tube data

Pitot No. : Std-02

Coefficient (Cp) : 0.99

Type S Pitot No. : PS22-01

Calibrated by : Mr. Montri P.

## A Side Calibration

| Run No. | $\Delta P_{std}$<br>(mm H <sub>2</sub> O) | $\Delta P_s$<br>(mm H <sub>2</sub> O) | Cp(s)  | Deviation, $\delta$<br>Cp(s) - Cp(A) |
|---------|-------------------------------------------|---------------------------------------|--------|--------------------------------------|
| 1       | 14.50                                     | 20.00                                 | 0.8430 | 0.0102                               |
| 2       | 14.50                                     | 20.50                                 | 0.8326 | -0.0001                              |
| 3       | 14.50                                     | 21.00                                 | 0.8226 | -0.0101                              |

 $C_{P(A),avg}$  0.8327 Out of Range

## B Side Calibration

| Run No. | $\Delta P_{std}$<br>(mm H <sub>2</sub> O) | $\Delta P_s$<br>(mm H <sub>2</sub> O) | Cp(s)  | Deviation, $\delta$<br>Cp(s) - Cp(B) |
|---------|-------------------------------------------|---------------------------------------|--------|--------------------------------------|
| 1       | 14.50                                     | 20.00                                 | 0.8430 | 0.0000                               |
| 2       | 14.50                                     | 20.00                                 | 0.8430 | 0.0000                               |
| 3       | 14.50                                     | 20.00                                 | 0.8430 | 0.0000                               |

 $C_{P(B),avg}$  0.8430

 $|C_{P(A)} - C_{P(B)}| = 0.0102$  Out of range

 $C_{P(Avg)} = 0.8378$ 
Approved by : \*\*\*  $\delta$  must be  $\leq 0.01$  for the test to be acceptable \*\*\*\*\*\*  $|C_{P(A)} - C_{P(B)}|$  must also be  $< 0.01$  if average of  $C_{P(A)}$  and  $C_{P(B)}$  is to be used \*\*\*

**SOUND LEVEL METER CALIBRATION**

Calibration Location:

SECOT

Calibration Date:

Jan 19, 24

**ACOUSTIC CALIBRATOR**

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

| No. | Brand  | Model  | Serial No. | Reading<br>(dB) | dB Adjust |
|-----|--------|--------|------------|-----------------|-----------|
| 17  | Cirrus | CR162B | G300846    | 93.0            | 0.7       |
| 18  | Cirrus | CR162B | G300892    | 91.8            | 1.9       |
| 19  | Cirrus | CR162B | G300990    | 92.2            | 1.5       |

Calibrated by :

Approved by :

Preeda S.



# SOUND LEVEL METER CALIBRATION

Calibration Location:

SECOT

Calibration Date:

Jan 18, 24

## ACOUSTIC CALIBRATOR

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

| No. | Brand   | Model  | Serial No. | Reading<br>(dB) | dB Adjust |
|-----|---------|--------|------------|-----------------|-----------|
| 4   | SCARLET | ST-21D | 820725     | 93.8            | 0.0       |
| 5   | SCARLET | ST-21D | 820726     | 93.8            | 0.0       |
| 8   | SCARLET | ST-21D | 820729     | 93.8            | 0.0       |
| 10  | SCARLET | ST-21D | 820731     | 93.8            | 0.0       |

Calibrated by :

Approved by :



## SOUND LEVEL METER CALIBRATION

Calibration Location:

SECOT

Calibration Date:

Jan 18, 24

### ACOUSTIC CALIBRATOR

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

| No. | Brand   | Model  | Serial No. | Reading<br>(dB) | dB Adjust |
|-----|---------|--------|------------|-----------------|-----------|
| 2   | SCARLET | ST-21D | 820723     | 93.8            | 0.0       |
| 6   | SCARLET | ST-21D | 820727     | 93.8            | 0.0       |
| 7   | SCARLET | ST-21D | 820728     | 93.8            | 0.0       |

Calibrated by :

Approved by :

**SOUND LEVEL METER CALIBRATION**

Calibration Location:

SECOT

Calibration Date:

Jan 18, 24

**ACOUSTIC CALIBRATOR**

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

| No. | Brand  | Model  | Serial No. | Reading<br>(dB) | dB Adjust |
|-----|--------|--------|------------|-----------------|-----------|
| 14  | Cirrus | CR162B | G300709    | 93.7            | 0.0       |

Calibrated by :

Approved by :



# SOUND LEVEL METER CALIBRATION

Calibration Location:

SECOT

Calibration Date:

Apr 8, 24

## ACOUSTIC CALIBRATOR

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

| No. | Brand   | Model  | Serial No. | Reading<br>(dB) | dB Adjust |
|-----|---------|--------|------------|-----------------|-----------|
| 1   | SCARLET | ST-21D | 820722     | 93.8            | 0.0       |
| 2   | SCARLET | ST-21D | 820723     | 93.7            | 0.1       |
| 4   | SCARLET | ST-21D | 820725     | 93.7            | 0.1       |
| 6   | SCARLET | ST-21D | 820727     | 93.7            | 0.1       |

Calibrated by :

Approved by :



## SOUND LEVEL METER CALIBRATION

Calibration Location:

SECOT

Calibration Date:

Apr 8, 24

### ACOUSTIC CALIBRATOR

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

| No. | Brand   | Model  | Serial No. | Reading<br>(dB) | dB Adjust |
|-----|---------|--------|------------|-----------------|-----------|
| 5   | SCARLET | ST-21D | 820726     | 93.7            | 0.1       |
| 7   | SCARLET | ST-21D | 820728     | 93.8            | 0.0       |
| 8   | SCARLET | ST-21D | 820729     | 93.8            | 0.0       |
| 10  | SCARLET | ST-21D | 820731     | 93.8            | 0.0       |

Calibrated by :

Approved by :



**ELECTRICAL AND ELECTRONICS INSTITUTE  
FOUNDATION FOR INDUSTRIAL DEVELOPMENT**

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

Phraek Sa, Mueang Samut Prakan, Samut Prakan 10280

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



Certificate No.: CP20230345EA

Operation No.: CP2023080023

## Certificate of Calibration

Equipment: Sound Calibrator

Manufacturer: Cirrus Research Plc

Model/Type: CR:515

Serial No.: 97097

ID No.: -

Customer: SECOT Co.,Ltd.

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

Received Date: 28 August 2023

Calibrated Date: 4 September 2023

Issued Date: 8 September 2023

Calibrated by: Ms. Juntaporn Kunhakom

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

( Mr. Sittichai Swaksuriyawong )  
Group Manager

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

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

Certificate No.: CP20230345EA

## Calibration Report

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

Method of Calibration :-

IEC 60942:2017

### Condition of this result of calibration

1. Reference standards instrument :-

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

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

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

Reference standards instrument for Acoustic function

- National Institute of Metrology (Thailand)

Reference standards instrument for Electrical function

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

### Result of Calibration:-

1. Function : Sound pressure level

| Normal         | Specified Sound     | Measured value | Deviated value <sup>[1]</sup> | Acceptance limit <sup>[3]</sup> |
|----------------|---------------------|----------------|-------------------------------|---------------------------------|
| Frequency (Hz) | Pressure level (dB) | (dB)           | (dB)                          | (dB)                            |
| 1000           | 94                  | 94.13          | 0.13                          | ±0.25                           |

2. Function : Frequency

| Normal Sound        | Specified Frequency | Measured value | Deviated value <sup>[2]</sup> | Acceptance limit <sup>[3]</sup> |
|---------------------|---------------------|----------------|-------------------------------|---------------------------------|
| Pressure level (dB) | (Hz)                | (Hz)           | (%)                           | (%)                             |
| 94                  | 1000                | 1000.3         | 0.0                           | ±0.7                            |

Certificate No.: CP20230345EA

### Calibration Report

#### 3. Function : Total distortion + noise

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

#### Uncertainty of measurement

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

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

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

-- End of Report --

# Calibration Certificate

BEIJING J.T. TECHNOLOGY CO., LTD.  
www.jttech.com  
www.jttech.com

## Instrument information



JANTYTECH  
建通科技

|           |                                                                |
|-----------|----------------------------------------------------------------|
| Name      | WET BULB GLOBE TEMPERATURE (WBGT)METER                         |
| Series No | 3522210172                                                     |
| Type      | JT2011-E2A                                                     |
| Customer  | SECOT CO., LTD.                                                |
| Address   | 239 Rim Klong Prapa Road, Bang Sue, Bang Sue, Bangkok<br>10800 |

## Integrity check of instrument

|                                                                 |   |
|-----------------------------------------------------------------|---|
| Appearance                                                      | √ |
| Parts integrity                                                 | √ |
| Screen display or touch                                         | √ |
| Instrument button                                               | √ |
| Power supply                                                    | √ |
| battery                                                         | √ |
| Data storage and export                                         | √ |
| Deviation degree of comparison test with<br>standard instrument | √ |

## Calibration Results

| UUC Sensor | Standard Temperature<br>( °C ) | UUC Reading<br>( °C ) | Correction<br>( °C ) | Uncertainty<br>( ± °C ) |
|------------|--------------------------------|-----------------------|----------------------|-------------------------|
| WET        | 25.0                           | 25.1                  | -0.1                 | 0.2                     |
|            | 30.0                           | 30.1                  | 0.1                  | 0.2                     |
|            | 35.0                           | 35.2                  | -0.2                 | 0.2                     |
|            | 40.0                           | 39.9                  | 0.1                  | 0.2                     |
|            | 45.0                           | 45.1                  | -0.1                 | 0.2                     |
| DRY        | 25.0                           | 24.9                  | 0.1                  | 0.2                     |
|            | 30.0                           | 29.9                  | 0.1                  | 0.2                     |
|            | 35.0                           | 35.1                  | -0.1                 | 0.2                     |
|            | 40.0                           | 39.8                  | 0.2                  | 0.2                     |
|            | 45.0                           | 44.9                  | 0.1                  | 0.2                     |
| GLOBE      | 25.0                           | 24.9                  | 0.1                  | 0.2                     |
|            | 30.0                           | 29.8                  | 0.2                  | 0.2                     |
|            | 35.0                           | 35.1                  | -0.1                 | 0.2                     |
|            | 40.0                           | 39.9                  | 0.1                  | 0.2                     |
|            | 45.0                           | 44.9                  | 0.1                  | 0.2                     |

Environmental conditions: temperature: 26 °C±2°C, relative humidity: 30% RH±10RH%

Reference Standard : Standard Mercury Thermometers, Manufacturer: BGRI, Model: STA, SN : 2-56,

Calibrated Date : 20 February 2023, Calibration Certificate No. : RA21H-AB1000009

This Certificate is traceable to NCMT North China, Certificate No.: RA20J-AK000075

Calibration Engineer : \_\_\_\_\_

Date : \_\_\_\_\_



# Calibration Certificate

BEIJING J.T TECHNOLOGY CO., LTD.  
www.jttech.com  
www.jiantech.com

## Instrument information



JANTYTECH  
建通科技

Name **WET BULB GLOBE TEMPERATURE (WBGT)METER**

---

Series No **3522210173**

---

Type **JT2011-E2A**

---

Customer **SECOT CO., LTD.**

---

Address **239 Rim Klong Prapa Road, Bang Sue, Bang Sue, Bangkok 10800**

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## Integrity check of instrument

|                                                              |   |
|--------------------------------------------------------------|---|
| Appearance                                                   | √ |
| Parts integrity                                              | √ |
| Screen display or touch                                      | √ |
| Instrument button                                            | √ |
| Power supply                                                 | √ |
| battery                                                      | √ |
| Data storage and export                                      | √ |
| Deviation degree of comparison test with standard instrument | √ |

## Calibration Results

| UUC Sensor | Standard Temperature<br>( °C ) | UUC Reading<br>( °C ) | Correction<br>( °C ) | Uncertainty<br>( ± °C ) |
|------------|--------------------------------|-----------------------|----------------------|-------------------------|
| WET        | 25.0                           | 24.9                  | 0.1                  | 0.2                     |
|            | 30.0                           | 29.8                  | 0.2                  | 0.2                     |
|            | 35.0                           | 35.1                  | -0.1                 | 0.2                     |
|            | 40.0                           | 40.2                  | -0.2                 | 0.2                     |
|            | 45.0                           | 45.1                  | -0.1                 | 0.2                     |
| DRY        | 25.0                           | 24.9                  | 0.1                  | 0.2                     |
|            | 30.0                           | 29.8                  | 0.2                  | 0.2                     |
|            | 35.0                           | 35.1                  | -0.1                 | 0.2                     |
|            | 40.0                           | 40.2                  | -0.2                 | 0.2                     |
|            | 45.0                           | 45.1                  | -0.1                 | 0.2                     |
| GLOBE      | 25.0                           | 24.9                  | 0.1                  | 0.2                     |
|            | 30.0                           | 29.8                  | 0.2                  | 0.2                     |
|            | 35.0                           | 35.2                  | -0.2                 | 0.2                     |
|            | 40.0                           | 40.1                  | -0.1                 | 0.2                     |
|            | 45.0                           | 45.1                  | -0.1                 | 0.2                     |

Environmental conditions: temperature: 26 °C±2°C, relative humidity: 30% RH±10RH%

Reference Standard : Standard Mercury Thermometers, Manufacturer: BGRI, Model: STA, SN : 2-56,  
Calibrated Date : 20 February 2023, Calibration Certificate No. : RA21H-AB1000009

This Certificate is traceable to NCMT North China, Certificate No.: RA20J-AK000073

Calibration Engineer : \_\_\_\_\_

Date : \_\_\_\_\_



January 16, 2024

# Calibration Certificate

BEIJING J.T. TECHNOLOGY CO., LTD.  
www.jttech.com  
www.janttech.com

## Instrument information



|           |                                                                |
|-----------|----------------------------------------------------------------|
| Name      | WET BULB GLOBE TEMPERATURE (WBGT)METER                         |
| Series No | 3522210174                                                     |
| Type      | JT2011-E2A                                                     |
| Customer  | SECOT CO., LTD.                                                |
| Address   | 239 Rim Klong Prapa Road, Bang Sue, Bang Sue, Bangkok<br>10800 |

## Integrity check of instrument

|                                                                 |   |
|-----------------------------------------------------------------|---|
| Appearance                                                      | √ |
| Parts integrity                                                 | √ |
| Screen display or touch                                         | √ |
| Instrument button                                               | √ |
| Power supply                                                    | √ |
| battery                                                         | √ |
| Data storage and export                                         | √ |
| Deviation degree of comparison test with<br>standard instrument | √ |

## Calibration Results

| UUC Sensor | Standard Temperature<br>( °C ) | UUC Reading<br>( °C ) | Correction<br>( °C ) | Uncertainty<br>( ± °C ) |
|------------|--------------------------------|-----------------------|----------------------|-------------------------|
| WET        | 25.0                           | 25.1                  | -0.1                 | 0.2                     |
|            | 30.0                           | 29.8                  | 0.2                  | 0.2                     |
|            | 35.0                           | 35.1                  | -0.1                 | 0.2                     |
|            | 40.0                           | 40.1                  | -0.1                 | 0.2                     |
|            | 45.0                           | 44.8                  | 0.2                  | 0.2                     |
| DRY        | 25.0                           | 24.9                  | 0.1                  | 0.2                     |
|            | 30.0                           | 29.8                  | 0.2                  | 0.2                     |
|            | 35.0                           | 34.9                  | 0.1                  | 0.2                     |
|            | 40.0                           | 39.8                  | 0.2                  | 0.2                     |
|            | 45.0                           | 45.1                  | -0.1                 | 0.2                     |
| GLOBE      | 25.0                           | 24.9                  | 0.1                  | 0.2                     |
|            | 30.0                           | 29.8                  | 0.2                  | 0.2                     |
|            | 35.0                           | 34.9                  | 0.1                  | 0.2                     |
|            | 40.0                           | 39.8                  | 0.2                  | 0.2                     |
|            | 45.0                           | 44.9                  | 0.1                  | 0.2                     |

Environmental conditions: temperature: 26 °C±2°C, relative humidity: 30% RH±10RH%

Reference Standard : Standard Mercury Thermometers, Manufacturer: BGRI, Model: STA, SN : 2-56,  
Calibrated Date : 20 February 2023, Calibration Certificate No. : RA21H-AB1000009

This Certificate is traceable to NCMT North China, Certificate No.: RA20J-AK000073

Calibration Engineer : \_\_\_\_\_

Date : \_\_\_\_\_



# Calibration Certificate

BEIJING J.T TECHNOLOGY CO., LTD.  
www.jttech.com  
www.jiantech.com

## Instrument information



JANTYTECH  
建通科技

Name **WET BULB GLOBE TEMPERATURE (WBGT)METER**

Series No **3522210176**

Type **JT2011-E2A**

Customer **SECOT CO., LTD.**

Address **239 Rim Klong Prapa Road, Bang Sue, Bang Sue, Bangkok  
10800**

## Integrity check of instrument

|                                                                 |   |
|-----------------------------------------------------------------|---|
| Appearance                                                      | √ |
| Parts integrity                                                 | √ |
| Screen display or touch                                         | √ |
| Instrument button                                               | √ |
| Power supply                                                    | √ |
| battery                                                         | √ |
| Data storage and export                                         | √ |
| Deviation degree of comparison test with<br>standard instrument | √ |

## Calibration Results

| UUC Sensor | Standard Temperature<br>( °C ) | UUC Reading<br>( °C ) | Correction<br>( °C ) | Uncertainty<br>( ± °C ) |
|------------|--------------------------------|-----------------------|----------------------|-------------------------|
| WET        | 25.0                           | 24.9                  | 0.1                  | 0.2                     |
|            | 30.0                           | 29.8                  | 0.2                  | 0.2                     |
|            | 35.0                           | 35.1                  | -0.1                 | 0.2                     |
|            | 40.0                           | 40.1                  | -0.1                 | 0.2                     |
|            | 45.0                           | 45.2                  | -0.2                 | 0.2                     |
| DRY        | 25.0                           | 25.1                  | -0.1                 | 0.2                     |
|            | 30.0                           | 30.2                  | -0.2                 | 0.2                     |
|            | 35.0                           | 35.2                  | -0.2                 | 0.2                     |
|            | 40.0                           | 39.8                  | 0.2                  | 0.2                     |
|            | 45.0                           | 44.8                  | 0.2                  | 0.2                     |
| GLOBE      | 25.0                           | 24.9                  | 0.1                  | 0.2                     |
|            | 30.0                           | 29.8                  | 0.2                  | 0.2                     |
|            | 35.0                           | 35.1                  | -0.1                 | 0.2                     |
|            | 40.0                           | 39.9                  | 0.1                  | 0.2                     |
|            | 45.0                           | 44.8                  | 0.2                  | 0.2                     |

Environmental conditions: temperature: 26 °C±2°C, relative humidity: 30% RH±10RH%

Reference Standard : Standard Mercury Thermometers, Manufacturer: BGRI, Model: STA, SN : 2-56,

Calibrated Date : 20 February 2023, Calibration Certificate No. : RA21H-AB1000009

This Certificate is traceable to NCMT North China, Certificate No.: RA20J-AK000073

Calibration Engineer : \_\_\_\_\_

Date : \_\_\_\_\_



January 16, 2024

## Instrument information

JANTYTECH  
建通科技

|           |                                                                |
|-----------|----------------------------------------------------------------|
| Name      | WET BULB GLOBE TEMPERATURE (WBGT)METER                         |
| Series No | 3522210177                                                     |
| Type      | JT2011-E2A                                                     |
| Customer  | SECOT CO., LTD.                                                |
| Address   | 239 Rim Klong Prapa Road, Bang Sue, Bang Sue, Bangkok<br>10800 |

## Integrity check of instrument

|                                                                 |   |
|-----------------------------------------------------------------|---|
| Appearance                                                      | √ |
| Parts integrity                                                 | √ |
| Screen display or touch                                         | √ |
| Instrument button                                               | √ |
| Power supply                                                    | √ |
| battery                                                         | √ |
| Data storage and export                                         | √ |
| Deviation degree of comparison test with<br>standard instrument | √ |

## Calibration Results

| UUC Sensor | Standard Temperature<br>( °C ) | UUC Reading<br>( °C ) | Correction<br>( °C ) | Uncertainty<br>( ±°C ) |
|------------|--------------------------------|-----------------------|----------------------|------------------------|
| WET        | 25.0                           | 25.1                  | -0.1                 | 0.2                    |
|            | 30.0                           | 30.2                  | -0.2                 | 0.2                    |
|            | 35.0                           | 34.9                  | 0.1                  | 0.2                    |
|            | 40.0                           | 39.8                  | 0.2                  | 0.2                    |
|            | 45.0                           | 44.9                  | 0.1                  | 0.2                    |
| DRY        | 25.0                           | 25.1                  | -0.1                 | 0.2                    |
|            | 30.0                           | 30.2                  | -0.2                 | 0.2                    |
|            | 35.0                           | 34.9                  | 0.1                  | 0.2                    |
|            | 40.0                           | 39.8                  | 0.2                  | 0.2                    |
|            | 45.0                           | 44.8                  | 0.2                  | 0.2                    |
| GLOBE      | 25.0                           | 25.1                  | -0.1                 | 0.2                    |
|            | 30.0                           | 30.2                  | -0.2                 | 0.2                    |
|            | 35.0                           | 34.9                  | 0.1                  | 0.2                    |
|            | 40.0                           | 40.2                  | -0.2                 | 0.2                    |
|            | 45.0                           | 45.1                  | -0.1                 | 0.2                    |

Environmental conditions: temperature: 26 °C±2°C, relative humidity: 30% RH±10RH%

Reference Standard : Standard Mercury Thermometers, Manufacturer: BGRI, Model: STA, SN : 2-56,  
Calibrated Date : 20 February 2023, Calibration Certificate No. : RA21H-AB1000009

This Certificate is traceable to NCMT North China, Certificate No.: RA20J-AK000073

Calibration Engineer : \_\_\_\_\_

Date : \_\_\_\_\_



## Instrument information

JANTYTECH  
建通科技

|           |                                                                |
|-----------|----------------------------------------------------------------|
| Name      | WET BULB GLOBE TEMPERATURE (WBGT)METER                         |
| Series No | 3522210179                                                     |
| Type      | JT2011-E2A                                                     |
| Customer  | SECOT CO., LTD.                                                |
| Address   | 239 Rim Klong Prapa Road, Bang Sue, Bang Sue, Bangkok<br>10800 |

## Integrity check of instrument

|                                                                 |   |
|-----------------------------------------------------------------|---|
| Appearance                                                      | ✓ |
| Parts integrity                                                 | ✓ |
| Screen display or touch                                         | ✓ |
| Instrument button                                               | ✓ |
| Power supply                                                    | ✓ |
| battery                                                         | ✓ |
| Data storage and export                                         | ✓ |
| Deviation degree of comparison test with<br>standard instrument | ✓ |

## Calibration Results

| UUC Sensor | Standard Temperature<br>( °C ) | UUC Reading<br>( °C ) | Correction<br>( °C ) | Uncertainty<br>( ± °C ) |
|------------|--------------------------------|-----------------------|----------------------|-------------------------|
| WET        | 25.0                           | 24.8                  | 0.2                  | 0.2                     |
|            | 30.0                           | 30.1                  | -0.1                 | 0.2                     |
|            | 35.0                           | 34.8                  | 0.2                  | 0.2                     |
|            | 40.0                           | 40.1                  | -0.1                 | 0.2                     |
|            | 45.0                           | 45.1                  | -0.1                 | 0.2                     |
| DRY        | 25.0                           | 25.1                  | -0.1                 | 0.2                     |
|            | 30.0                           | 29.9                  | 0.1                  | 0.2                     |
|            | 35.0                           | 35.1                  | -0.1                 | 0.2                     |
|            | 40.0                           | 40.2                  | -0.2                 | 0.2                     |
|            | 45.0                           | 44.8                  | 0.2                  | 0.2                     |
| GLOBE      | 25.0                           | 24.8                  | 0.2                  | 0.2                     |
|            | 30.0                           | 29.8                  | 0.2                  | 0.2                     |
|            | 35.0                           | 34.8                  | 0.2                  | 0.2                     |
|            | 40.0                           | 40.1                  | -0.1                 | 0.2                     |
|            | 45.0                           | 45.2                  | -0.2                 | 0.2                     |

Environmental conditions: temperature: 26 °C±2°C, relative humidity: 30% RH±10RH%

Reference Standard : Standard Mercury Thermometers, Manufacturer: BGRI, Model: STA, SN : 2-56,  
Calibrated Date : 20 February 2023, Calibration Certificate No. : RA21H-AB1000009

This Certificate is traceable to NCMT North China, Certificate No.: RA20J-AK000073

Calibration Engineer : \_\_\_\_\_

Date : \_\_\_\_\_



# Calibration Certificate

BEIJING J.T. TECHNOLOGY CO., LTD.  
www.jttech.com  
www.jttech.com

## Instrument information



Name **WET BULB GLOBE TEMPERATURE (WBGT)METER**

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Series No **3522210181**

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Type **JT2011-E2A**

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Customer **SECOT CO., LTD.**

Address **239 Rim Klong Prapa Road, Bang Sue, Bang Sue, Bangkok**  
**10800**

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## Integrity check of instrument

|                                          |   |
|------------------------------------------|---|
| Appearance                               | √ |
| Parts integrity                          | √ |
| Screen display or touch                  | √ |
| Instrument button                        | √ |
| Power supply                             | √ |
| battery                                  | √ |
| Data storage and export                  | √ |
| Deviation degree of comparison test with | √ |
| standard instrument                      | √ |

---

## Calibration Results

| UUC Sensor | Standard Temperature<br>( °C ) | UUC Reading<br>( °C ) | Correction<br>( °C ) | Uncertainty<br>( ±°C ) |
|------------|--------------------------------|-----------------------|----------------------|------------------------|
| WET        | 25.0                           | 24.9                  | 0.1                  | 0.2                    |
|            | 30.0                           | 29.8                  | 0.2                  | 0.2                    |
|            | 35.0                           | 34.9                  | 0.1                  | 0.2                    |
|            | 40.0                           | 40.1                  | -0.1                 | 0.2                    |
|            | 45.0                           | 45.1                  | -0.1                 | 0.2                    |
| DRY        | 25.0                           | 25.1                  | -0.1                 | 0.2                    |
|            | 30.0                           | 30.2                  | -0.2                 | 0.2                    |
|            | 35.0                           | 35.2                  | -0.2                 | 0.2                    |
|            | 40.0                           | 40.2                  | -0.2                 | 0.2                    |
|            | 45.0                           | 44.9                  | 0.1                  | 0.2                    |
| GLOBE      | 25.0                           | 24.9                  | 0.1                  | 0.2                    |
|            | 30.0                           | 29.9                  | 0.1                  | 0.2                    |
|            | 35.0                           | 34.9                  | 0.1                  | 0.2                    |
|            | 40.0                           | 40.1                  | -0.1                 | 0.2                    |
|            | 45.0                           | 45.2                  | -0.2                 | 0.2                    |

Environmental conditions: temperature: 26 °C±2°C, relative humidity: 30% RH±10RH%

Reference Standard : Standard Mercury Thermometers, Manufacturer: BGRI, Model: STA, SN : 2-56,  
Calibrated Date : 20 February 2023, Calibration Certificate No. : RA21H-AB1000009

This Certificate is traceable to NCMT North China, Certificate No.: RA20J-AK000075

Calibration Engineer : \_\_\_\_\_

Date : \_\_\_\_\_





THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

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

Request No.23-66/0270

MTC.No.23-66/0270-01

Number of page(s) 2

## CALIBRATION CERTIFICATE

### Nomenclature : DRYCAL

Manufacturer : Mesa Labs

Serial No.: 114069

Model : Defender 520-H

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

Subdivision : ( 0.0001, 0.001 ) L/min

Submitted by : SECOT CO.,LTD.

239, Rimklongprapa Road, Bangsue,  
Bangkok 10800, Thailand.

Received date : 23 February 2023

Condition of measured item : Normal

Calibration date : 7 March 2023

### Standard :

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

Calibrated by : Terasak Panna  
(Mr.Terasak Panna)

Approved by : (Signature)  
(Ms.Kirana Luanghirun)

Director

Mechanical Engineering Standards Laboratory

Ref. 2013266022300798001

Issued Date 13 March 2023

The results relate only to the items tested/calibrated or value assigned.

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FM.BL.MTC.002 Rev.4

#### Head Office

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Amphoe Muang, Changwat Samutprakan 10280, Thailand  
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Thailand  
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Fax. (66) 0 2579 8592  
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THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

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

Request No.23-66/0270

2/2

MTC.No.23-66/0270-01

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

**Ambient condition :** Temperature (  $23 \pm 3$  ) °C , Relative humidity (  $55 \pm 15$  ) %

Atmospheric pressure (  $1010 \pm 13$  ) hPa

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

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

**Measurement data :**

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

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

The end of calibration certificate.

Ty.

The results relate only to the items tested/calibrated or value assigned.

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FM.BL.MTC.002 Rev.4

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Fax. (66) 0 2579 8592  
E-mail : sumalee@tistr.or.th

ภาคผนวก จ

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หนังสืออนุญาตขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน  
จากกรมโรงงานอุตสาหกรรม



ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐๑ ๖

กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒๐ กรกฎาคม ๒๕๖๖

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท ซิคอท จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๗ เมษายน ๒๕๖๖

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

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

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท ซิคอท จำกัด ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

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

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

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายประสม ดำรงพงษ์)

กองวิจัยและเตือนภัยมลพิษโรงงาน  
ผู้อำนวยการกองวิจัยและเตือนภัยมลพิษโรงงาน  
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๔

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๔๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



สิ่งที่ส่งมาด้วย ๑

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ซิคอท จำกัด

เลขทะเบียน ๖-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐๑ ๖

ลงวันที่ ๒๐ กรกฎาคม ๒๕๖๖

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑๐ ราย

๑) นายขรรชัย เกรียงไกรอุดม

ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๒

๒) นางสมฤดี เกรียงไกรอุดม

ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๓

๓) นางอารยา ทิพรัักษ์

ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๔

๔) นางสาวเชมชุตตา อินทร์ศรี

ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๕

๕) นางสาวปรีดา สมใจ

ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๖

๖) นางสาวอรุณญา มาตา

ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๗

๗) นางสาวลดาวัลย์ วงศ์เจริญ

ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๘

๘) นางสาวมณีวรรณ เกตะวันดี

ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๐๙

๙) นางสาวริสา ภูวสรเพ็ชญ์

ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๑๐

๑๐) นางสาวศิริวรรณ นิยมสง่า

ทะเบียนเลขที่ ๖-๒๓๙-ค-๐๐๑๑

วิมล

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ชีคอฟ จำกัด

เลขทะเบียน ว-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐ ๑ ๖

ลงวันที่ ๒๐ กรกฎาคม ๒๕๖๖

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓๘ ราย

- ๑) นางสาวสุดาพร สุนทร
- ๒) นางสาวสุธาทิพย์ เทียนเตี้ย
- ๓) นางสาวสุนันtha ศิริวัฒนานนท์
- ๔) นายบวร ดีชัยยะ
- ๕) นางสาวเกศรินทร์ วรเดชาวิทยา
- ๖) นายอนันต์ วัฒนานนท์
- ๗) นายชิตพล สมประสงค์
- ๘) นางสาวศศิธร พรหมประเสริฐ
- ๙) นายศิวะนันท์ กุลวงษ์
- ๑๐) นางสาวอลิษา คณิรารักษ์
- ๑๑) นางสาวสิริวรรณ แก้วสิงตวง
- ๑๒) นางสาวปัทมวรรณ สุวรรณวิโรจน์
- ๑๓) นางสาวกนิษฐา เจริญเชื้อ
- ๑๔) นายวัชรกานต์ ประมาคะเด
- ๑๕) นายชอง เสงฆ์วัลกุล
- ๑๖) นางสาวกฤษณา จันทุม
- ๑๗) นางสาวพนภา บุตรธรรม
- ๑๘) นางสาวธาริณี อาจปิลิว
- ๑๙) นายธนโชติ ช่างล้อ
- ๒๐) นางสาวพัชรา สมานฉันท์
- ๒๑) นางสาวจุฑารัตน์ แจ่มเรือน
- ๒๒) นางสาวจณิสตา กุ้ยอ่อน
- ๒๓) นายกิตติพงศ์ ณะกิจสุข
- ๒๔) นายจิรวัฒน์ โคตรคำหาญ
- ๒๕) นายชนะพล อัครผล
- ๒๖) นางสาวทิพย์สุดา วรรณการ
- ๒๗) นายสิทธิชัย สว่างวงศ์ไชย
- ๒๘) นายพิษณุ สีนามเพ็ง
- ๒๙) นายรัตนชัย ขอบทำกิจ
- ๓๐) นายธนาวุฒิ ค่วนแสง
- ๓๑) นายณัฐชัย ไชยโคตร
- ๓๒) นายณัฐดนัย กฤษณะโสม
- ๓๓) นายศุภชัย สุขใหม่
- ๓๔) นายรอมฎอน เหลี่ยมมามา
- ๓๕) นางสาวสุภาวดี บัวแก้ว
- ๓๖) นางสาวมาเรียณี ฮาแว
- ๓๗) นางสาววิระยา ปัจฉิมบุรณ์
- ๓๘) นางสาวศลิษา อินทรีย์

- ทะเบียนเลขที่
- ว-๒๓๙-จ-๐๐๐๑
- ว-๒๓๙-จ-๐๐๐๓
- ว-๒๓๙-จ-๐๐๐๔
- ว-๒๓๙-จ-๐๐๐๕
- ว-๒๓๙-จ-๐๐๐๖
- ว-๒๓๙-จ-๐๐๐๗
- ว-๒๓๙-จ-๐๐๐๘
- ว-๒๓๙-จ-๐๐๐๙
- ว-๒๓๙-จ-๐๐๑๐
- ว-๒๓๙-จ-๐๐๑๑
- ว-๒๓๙-จ-๐๐๑๒
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- ว-๒๓๙-จ-๐๐๑๕
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- ว-๒๓๙-จ-๐๐๓๘
- ว-๒๓๙-จ-๐๐๓๙

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สิ่งที่ส่งมาด้วย ๒

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ชีคอฟ จำกัด

เลขทะเบียน ว-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐ ๑ ๖

ลงวันที่ ๒๐ กรกฎาคม ๒๕๖๖

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๕๕ รายการ

น้ำเสีย จำนวน 45 รายการ

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

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สิ่งที่ส่งมาด้วย ๓

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

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

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

3) Digestion...

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

น้ำใต้ดิน จำนวน 125 รายการ

| ลำดับที่ | สารมลพิษ             | วิธีวิเคราะห์                                                                                                                                                              |
|----------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Acenaphthene         | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>[4]</sup>                                                                                 |
| 2        | Acetone              | Purge and Trap Gas Chromatographic/Mass<br>Spectrometric Method <sup>[4]</sup>                                                                                             |
| 3        | Aldrin               | 1) Liquid-Liquid Extraction, Gas Chromatographic<br>Method <sup>[4]</sup><br>2) Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>[4]</sup> |
| 4        | Anthracene           | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>[4]</sup>                                                                                 |
| 5        | Antimony             | Digestion, Inductively Coupled Plasma<br>Spectrometric Method <sup>[4]</sup>                                                                                               |
| 6        | Arsenic              | 1) Digestion, Hydride Generation/Atomic<br>Absorption Spectrometric Method <sup>[4]</sup><br>2) Digestion, Inductively Coupled Plasma<br>Method <sup>[4]</sup>             |
| 7        | Atrazine             | Liquid-Liquid Extraction, Gas Chromatographic<br>Method <sup>[4]</sup>                                                                                                     |
| 8        | Barium               | 1) Digestion, Direct Nitrous Oxide-Acetylene Flame<br>Method <sup>[4]</sup><br>2) Digestion, Inductively Coupled Plasma<br>Spectrometric Method <sup>[4]</sup>             |
| 9        | Benz(a)anthracene    | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>[4]</sup>                                                                                 |
| 10       | Benzene              | Purge and Trap Gas Chromatographic/Mass<br>spectrometric Method <sup>[4]</sup>                                                                                             |
| 11       | Benzo(b)fluoranthene | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>[4]</sup>                                                                                 |
| 12       | Benzo(k)fluoranthene | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>[4]</sup> 3.1.1)                                                                          |

| ลำดับที่ | สารมลพิษ                   | วิธีวิเคราะห์                                                                                                                                                                                                                              |
|----------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13       | Benzoic acid               | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>[4]</sup>                                                                                                                                                 |
| 14       | Benzo(a)pyrene             | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>[4]</sup>                                                                                                                                                 |
| 15       | Benzo(g,h,i)perylene       | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>[4]</sup>                                                                                                                                                 |
| 16       | Beryllium                  | Digestion, Inductively Coupled Plasma<br>Spectrometric Method <sup>[4]</sup>                                                                                                                                                               |
| 17       | Bis(2-chloroethyl)ether    | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>[4]</sup>                                                                                                                                                 |
| 18       | Bis(2-ethylhexyl)phthalate | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>[4]</sup>                                                                                                                                                 |
| 19       | Bromodichloromethane       | Purge and Trap Gas Chromatographic/Mass<br>Spectrometric Method <sup>[4]</sup>                                                                                                                                                             |
| 20       | Bromoform                  | Purge and Trap Gas Chromatographic/Mass<br>Spectrometric Method <sup>[4]</sup>                                                                                                                                                             |
| 21       | Butanol                    | Purge and Trap Gas Chromatographic/Mass<br>Spectrometric Method <sup>[4]</sup>                                                                                                                                                             |
| 22       | Butyl benzyl phthalate     | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>[4]</sup>                                                                                                                                                 |
| 23       | Cadmium                    | 1) Digestion, Direct Air-Acetylene Flame Method <sup>[4]</sup><br>2) Digestion, Electrothermal Atomic Absorption<br>Spectrometric Method <sup>[4]</sup><br>3) Digestion, Inductively Coupled Plasma<br>Spectrometric Method <sup>[4]</sup> |
| 24       | Carbazole                  | Liquid-Liquid Extraction, Gas Chromatographic/<br>Mass Spectrometric Method <sup>[4]</sup>                                                                                                                                                 |
| 25       | Carbon disulfide           | Purge and Trap Gas Chromatographic/Mass<br>Spectrometric Method <sup>[4]</sup>                                                                                                                                                             |
| 26       | Carbon tetrachloride       | Purge and Trap Gas Chromatographic/Mass<br>Spectrometric Method <sup>[4]</sup> 3.1.1)                                                                                                                                                      |

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

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

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

2) Liquid-Liquid...

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

2) Liquid-Liquid...

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

87 Methylene chloride...

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

99 Phenanthrene...

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

2) Separatory...

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

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

อากาศเสีย (ปล่อยระบาย) จำนวน 27 รายการ

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

| ลำดับที่ | สารมลพิษ          | วิธีวิเคราะห์                                                                                                                                                                  |
|----------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8        | Cobalt            | Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>                                                                                               |
| 9        | Copper            | 1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method <sup>[5]</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>     |
| 10       | Cresol            | Adsorption Sampling, Gas Chromatographic Method <sup>[5]</sup>                                                                                                                 |
| 11       | Dioxin/Furans     | Isokinetic Sampling <sup>[5]</sup>                                                                                                                                             |
| 12       | Hydrogen chloride | 1) Absorption Sampling, Ion Chromatographic Method <sup>[5]</sup><br>2) Isokinetic Sampling, Ion Chromatographic Method <sup>[5]</sup>                                         |
| 13       | Hydrogen Fluoride | 1) Absorption Sampling, Ion Chromatographic Method <sup>[5]</sup><br>2) Isokinetic Sampling, Ion Chromatographic Method <sup>[5]</sup>                                         |
| 14       | Hydrogen Sulfide  | Absorption Sampling, Iodometric Method <sup>[5]</sup>                                                                                                                          |
| 15       | Lead              | 1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method <sup>[5]</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>     |
| 16       | Manganese         | 1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method <sup>[5]</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>     |
| 17       | Mercury           | Isokinetic Sampling, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>[5]</sup>                                                                               |
| 18       | Nickel            | 1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method <sup>[5]</sup><br>2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup> 3mm |

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

สิ่งปฏิกูล...

สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน 34 รายการ

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

2) Waste Extraction...

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

3) Digestion...

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

13 2,4-D...

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

17 Dieldrin...

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

3) Digestion...

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


24 Molybdenum...

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


4) Digestion...

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

ดิน จำนวน 124 รายการ

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

2 Acetone...

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

14 Benzo(a)pyrene...

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

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

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

54 1,2-Dichloropropane...

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

67 Fluoranthene...

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

78 Hexachloroethane...

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


90 Methyl tert-butyl ether...

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

2) Digestion...


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

114 2,4,5-Trichlorophenol...

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

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
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ที่ อก ๐๓๑๐(๑)/ ๕๐๕๔



กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๒ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒๗ พฤษภาคม ๒๕๖๗

เรื่อง เปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท ซีคोट จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๒๑ พฤษภาคม ๒๕๖๗

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

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ไต่ถามเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์  
จำนวน ๒ ราย ได้แก่

๑) นายวัชรกานต์ ประมาคะเต

ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๑๕

๒) นายรัตนชัย ชอบทำกิจ

ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๓๐

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายพรยศ กลั่นกรอง)

รองอธิบดี ปฏิบัติราชการแทน

อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

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ภาคผนวก ข

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



แบบ กมช./สมอ.๒  
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ใบรับรองเลขที่ 24-LB0026  
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(General requirements for the competence of testing and calibration laboratories)

หมายเลขการรับรองที่ ทดสอบ ๐๓๙๔  
(Accreditation No. Testing 0394)

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

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



(นายวีระศักดิ์ เพ็งหล่ง)

ผู้อำนวยการสำนักงานคณะกรรมการการมาตรฐานแห่งชาติ  
ปฏิบัติราชการแทน

เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม



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



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



ชื่อห้องปฏิบัติการ  
(Laboratory Name)

หมายเลขการรับรองที่  
(Accreditation No.)

ฉบับที่ 02  
(Issue No.02)

สถานภาพห้องปฏิบัติการ  
(Laboratory status)

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

ทดสอบ 0394  
(Testing 0394)

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

☒ ถาวร  
(Permanent)

☐ นอกสถานที่  
(Site)

☐ชั่วคราว  
(Temporary)

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

☐เคลื่อนที่  
(Mobile)

☐หลายสถานที่  
(Multisite)

| สาขาการทดสอบ<br>(Field of Testing)                                                        | รายการทดสอบ<br>(Parameter)                                                                                                                                                                                                                                                                                                                                                                                                                     | วิธีทดสอบ<br>(Test Method)                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| สาขาสังแวดล้อม<br>(environmental field)<br><br>1. น้ำและน้ำเสีย<br>(water and wastewater) | <ul style="list-style-type: none"><li>โลหะหนัก<br/>(heavy metals)<ul style="list-style-type: none"><li>สารหนู<br/>(Arsenic, As)<br/>0.000 5 mg/L ถึง 0.090 0 mg/L</li><li>สารหนู<br/>(Arsenic, As)<br/>0.05 mg/L ถึง 4.50 mg/L</li><li>แบเรียม<br/>(Barium, Ba)<br/>0.02 mg/L ถึง 4.50 mg/L</li><li>แคดเมียม<br/>(Cadmium, Cd)<br/>0.01 mg/L ถึง 4.50 mg/L</li><li>โครเมียม<br/>(Chromium, Cr)<br/>0.01 mg/L ถึง 4.50 mg/L</li></ul></li></ul> | <ul style="list-style-type: none"><li>Standard Methods for the Examination of Water and Wastewater, APHA , AWWA, WEF, 23<sup>rd</sup> edition , 2017, Part 3030 F and Part 3114 C</li><li>Standard Methods for the Examination of Water and Wastewater, APHA , AWWA, WEF, 23<sup>rd</sup> edition , 2017, Part 3030 E and Part 3120 B</li></ul> |

กระทรวงอุตสาหกรรมสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม  
(Ministry of Industry, Thai Industrial Standards Institute)

หน้าที่ 1/9

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 24-LB0026

(Certification No. 24-LB0026)



ฉบับที่ 02  
(Issue No.02)

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

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

สถานภาพห้องปฏิบัติการ  
(Laboratory status)

☒ ถาวร  
(Permanent)

☐ นอกสถานที่  
(Site)

☐ชั่วคราว  
(Temporary)

☐เคลื่อนที่  
(Mobile)

☐หลายสถานที่  
(Multisite)

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

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 24-LB0026

(Certification No. 24-LB0026)



ฉบับที่ 02  
(Issue No.02)

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

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

สถานภาพห้องปฏิบัติการ  
(Laboratory status)

☒ ถาวร  
(Permanent)

☐นอกสถานที่  
(Site)

☐ชั่วคราว  
(Temporary)

☐เคลื่อนที่  
(Mobile)

☐หลายสถานที่  
(Multisite)

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

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ  
(Scope of Accreditation for Testing)

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



ฉบับที่ 02  
(Issue No.02)

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

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

สถานภาพห้องปฏิบัติการ  
(Laboratory status)

☒ ถาวร  
(Permanent)

☐ นอกสถานที่  
(Site)

☐ชั่วคราว  
(Temporary)

☐เคลื่อนที่  
(Mobile)

☐หลายสถานที่  
(Multisite)

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

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ  
(Scope of Accreditation for Testing)

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



ฉบับที่ 02  
(Issue No.02)

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

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

สถานภาพห้องปฏิบัติการ  
(Laboratory status)

☒ ถาวร  
(Permanent)

☐นอกสถานที่  
(Site)

☐ชั่วคราว  
(Temporary)

☐เคลื่อนที่  
(Mobile)

☐หลายสถานที่  
(Multisite)

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

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



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

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

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

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



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

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

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

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ  
(Scope of Accreditation for Testing)

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



ฉบับที่ 02  
(Issue No.02)

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

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

สถานภาพห้องปฏิบัติการ  
(Laboratory status)

☒ถาวร  
(Permanent)

☒นอกสถานที่  
(Site)

☐ชั่วคราว  
(Temporary)

☐เคลื่อนที่  
(Mobile)

☐หลายสถานที่  
(Multisite)

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

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ  
(Scope of Accreditation for Testing)

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



ฉบับที่ 02  
(Issue No.02)

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

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

สถานภาพห้องปฏิบัติการ  
(Laboratory status)

☒ถาวร  
(Permanent)

☒นอกสถานที่  
(Site)

☐ชั่วคราว  
(Temporary)

☐เคลื่อนที่  
(Mobile)

☐หลายสถานที่  
(Multisite)

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

ภาคผนวก ข

ใบอนุญาตเป็นนิติบุคคลผู้ให้บริการตรวจวัดและวิเคราะห์การทำงาน  
จากกรมสวัสดิการและคุ้มครองแรงงาน



แบบ ก.ภ.บญ  
นิติบุคคล

กรมสวัสดิการและคุ้มครองแรงงาน

ใบอนุญาต

เป็นนิติบุคคลผู้ให้บริการตรวจวัดและวิเคราะห์สภาวะการทำงานเกี่ยวกับระดับความร้อน

ใบอนุญาตเลขที่ ๑๕๑๑-๑๓-๒๕๖๕-๑๑๕๘

อนุญาตให้.....บริษัท ซีแอลที จำกัด.....

เลขทะเบียนนิติบุคคล ๑๑๑๕๕๓๖๑๑๑๑๗๒.....

ตั้งอยู่เลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร.....

เป็นนิติบุคคลผู้ให้บริการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน ตามกฎกระทรวง  
กำหนดมาตรฐานในการบริหาร จัดการ และดำเนินการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อม  
ในการทำงานเกี่ยวกับความร้อน แสงสว่าง และเสียง พ.ศ. ๒๕๕๙ ในการตรวจวัดและวิเคราะห์สภาวะการทำงาน  
เกี่ยวกับระดับความร้อน ประกอบกับกฎกระทรวงการขึ้นทะเบียนและการอนุญาตให้บริการเพื่อส่งเสริม  
ความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน พ.ศ. ๒๕๖๔ แห่งพระราชบัญญัติความปลอดภัย  
อาชีวอนามัย และสภาพแวดล้อมในการทำงาน พ.ศ. ๒๕๕๔ โดยมีบุคลากร จำนวน ๕ ราย ดังรายชื่อแนบท้าย  
ใบอนุญาตนี้

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

ให้ไว้ ณ วันที่ ๑๗ มิถุนายน พ.ศ. ๒๕๖๕

(นายสมพนธ์ กวางแก้ว)  
รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน

เลขทะเบียนควบคุม

๗-๑๑-๑๔๐๑-๐๕๘-๐๑-๖๕

(ลงนาม).....(นายทะเบียน)

(นายศักดิ์ศิลป์ ตุลาธร)

ตำแหน่ง ผู้อำนวยการกองความปลอดภัยแรงงาน

รายชื่อบุคลากรแนบท้ายใบอนุญาต  
เป็นนิติบุคคลผู้ให้บริการตรวจวัดและวิเคราะห์สภาวะการทำงานเกี่ยวกับระดับความร้อน  
ของบริษัท ซีคอท จำกัด

ใบอนุญาตเลขที่ ๐๔๐๑-๐๓-๒๕๖๕-๐๐๔๘

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

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

ให้ไว้ ณ วันที่ ๑๗ มิถุนายน พ.ศ. ๒๕๖๕



(นายสมพจน์ กวางแก้ว)

รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน

รายชื่อบุคลากร (เพิ่มเติม)  
แนบท้ายใบอนุญาตเป็นนิติบุคคลผู้ให้บริการตรวจวัดและวิเคราะห์สภาวะการทำงานเกี่ยวกับระดับความร้อน  
ของบริษัท ซีคอท จำกัด

ใบอนุญาตเลขที่ ๐๔๐๑-๐๓-๒๕๖๕-๐๐๔๘

- |                    |              |
|--------------------|--------------|
| ๑. นางสาวศลิษา     | อินริย์      |
| ๒. นางสาวมาริยามณี | ฮานว         |
| ๓. นางสาววิระยา    | ปัจฉิมบุญรณ์ |

ทั้งนี้ ตั้งแต่วันที่ ๑๗ มกราคม พ.ศ. ๒๕๖๖ ถึงวันที่ ๑๖ มิถุนายน พ.ศ. ๒๕๖๘

ให้ไว้ ณ วันที่ ๑๗ มกราคม พ.ศ. ๒๕๖๖



(นายสมพจน์ กวางแก้ว)

รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน



แบบ กภ.บญ  
นิติบุคคล

กรมสวัสดิการและคุ้มครองแรงงาน  
ใบอนุญาต  
เป็นนิติบุคคลผู้ให้บริการตรวจวัดและวิเคราะห์สภาวะการทำงานเกี่ยวกับระดับเสียง

ใบอนุญาตเลขที่ ๑๕๑๓-๐๓-๒๕๖๕-๐๑๕๘

อนุญาตให้ บริษัท ซีคอน จำกัด

เลขทะเบียนนิติบุคคล ๐๙๐๕๕๓๖๐๐๐๙๗๖

ตั้งอยู่ เลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร

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

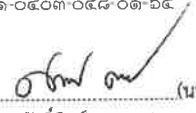
ทั้งนี้ ตั้งแต่วันที่ ๑๗ มิถุนายน พ.ศ. ๒๕๖๕ ถึงวันที่ ๑๖ มิถุนายน พ.ศ. ๒๕๖๘

ให้ไว้ ณ วันที่ ๑๗ มิถุนายน พ.ศ. ๒๕๖๕

(นายสมพงษ์ กวางแก้ว)  
รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน

เลขทะเบียนควบคุม

๗-๑๑-๐๔๐๓-๐๔๘-๐๑-๖๕

(ลงนาม)  (นายทะเบียน)

(นายศักดิ์ศิลป์ ตูลาธร)

ตำแหน่ง ผู้อำนวยการกองความปลอดภัยแรงงาน

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

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

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

ให้ไว้ ณ วันที่ ๑๗ มิถุนายน พ.ศ. ๒๕๖๕



(นายสมพจน์ กวางแก้ว)

รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน

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

|                   |             |
|-------------------|-------------|
| ๑. นางสาวศลิษา    | อินริย์     |
| ๒. นางสาวมาริยาณี | ธามว        |
| ๓. นางสาววิรัชยา  | ปัจฉิมบุรณ์ |

ทั้งนี้ ตั้งแต่วันที่ ๑๗ มกราคม พ.ศ. ๒๕๖๖ ถึงวันที่ ๑๖ มิถุนายน พ.ศ. ๒๕๖๘

ให้ไว้ ณ วันที่ ๑๗ มกราคม พ.ศ. ๒๕๖๖



(นายสมพจน์ กวางแก้ว)

รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน



แบบ กภ.บุญ  
นิติบุคคล

กรมสวัสดิการและคุ้มครองแรงงาน

ใบอนุญาต

เป็นนิติบุคคลผู้ให้บริการตรวจวัดระดับความเข้มข้นของสารเคมีอันตราย  
ในบรรยากาศของสถานที่ทำงานและสถานที่เก็บรักษาสารเคมีอันตราย

ใบอนุญาตเลขที่ ๑๒๐๑-๐๓-๒๕๖๕-๑๐๔๙

อนุญาตให้ นริศ พิชิตกุล จักร...

เลขทะเบียนนิติบุคคล ๐๑๐๕๕๓๖๐๐๐๙๗๖

ตั้งอยู่ เลขที่ ๒๓๙ ถนนวิมลทองประเสริฐ แขวงนางหล่อ เขตบางซื่อ กรุงเทพมหานคร

เป็นนิติบุคคลผู้ให้บริการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน ตามกฎกระทรวง  
กำหนดมาตรฐานในการบริหาร จัดการ และดำเนินการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อม  
ในการทำงานเกี่ยวกับสารเคมีอันตราย พ.ศ. ๒๕๕๖ ในการเป็นผู้ให้บริการตรวจวัดระดับความเข้มข้น  
ของสารเคมีอันตรายในบรรยากาศของสถานที่ทำงานและสถานที่เก็บรักษาสารเคมีอันตราย ประกอบกับ  
กฎกระทรวงการขึ้นทะเบียนและการอนุญาตให้บริการเพื่อส่งเสริมความปลอดภัย อาชีวอนามัย และสภาพแวดล้อม  
ในการทำงาน พ.ศ. ๒๕๖๔ แห่งพระราชบัญญัติความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน  
พ.ศ. ๒๕๕๔ โดยมีบุคลากร จำนวน ๑๔ ราย ดังรายชื่อแนบท้ายใบอนุญาตนี้

ทั้งนี้ ตั้งแต่วันที่ ๑๕ มิถุนายน พ.ศ. ๒๕๖๕ ถึงวันที่ ๑๓ มิถุนายน พ.ศ. ๒๕๖๘

ให้ไว้ ณ วันที่ ๑๕ มิถุนายน พ.ศ. ๒๕๖๕

(นายสมพงษ์ กวางแก้ว)

รองอธิบดี ปฏิบัติราชการแทน

อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน

เลขทะเบียนควบคุม

๒-๑๑-๐๒๐๑-๐๔๙-๐๑-๖๕

(ลงนาม)

(นายทะเบียน)

(นายศักดิ์ศิลป์ ทุลาธร)

ผู้อำนวยการกองความปลอดภัยแรงงาน

รายชื่อบุคลากรแนบท้ายใบอนุญาต  
เป็นนิติบุคคลผู้ให้บริการตรวจวัดระดับความเข้มข้นของสารเคมีอันตรายในบรรยากาศของสถานที่ทำงาน  
และสถานที่เก็บรักษาสารเคมีอันตราย  
ของบริษัท ซีคอท จำกัด  
ใบอนุญาตเลขที่ ๐๒๐๑-๐๓-๒๕๖๕-๐๐๔๙

|                     |           |
|---------------------|-----------|
| ๑. นายชิตพล         | สมประสงค์ |
| ๒. นายอนิวัฒน์      | พิมพ์นา   |
| ๓. นายศิวนนท์       | กุลวงษ์   |
| ๔. นายวัชรกานต์     | ประมาคะเต |
| ๕. นายธนโชติ        | ช่างลือ   |
| ๖. นายกิตติพงษ์     | ละเกิงสุข |
| ๗. นายจิรวุฒิ       | โคตรคำหาญ |
| ๘. นายศุภกิจ        | ตีเมูกา   |
| ๙. นางสาวธัญลักษณ์  | โยธา      |
| ๑๐. นางสาวทิพย์สุดา | วรรณการ   |
| ๑๑. นางสาวสายธาร    | ภูเขียว   |
| ๑๒. นายภาคภูมิ      | แทนไทย    |
| ๑๓. นายธนาวุฒิ      | ด่วนแสง   |
| ๑๔. นายรัตนชัย      | ชอบทำกิจ  |

ทั้งนี้ ตั้งแต่วันที่ ๑๕ มิถุนายน พ.ศ. ๒๕๖๕ ถึงวันที่ ๑๓ มิถุนายน พ.ศ. ๒๕๖๘

ให้ไว้ ณ วันที่ ๑๕ มิถุนายน พ.ศ. ๒๕๖๕



(นายสมพจน์ กวางแก้ว)

รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน



แบบ กภ.บุญ  
นิติบุคคล

กรมสวัสดิการและคุ้มครองแรงงาน

ใบอนุญาต

เป็นนิติบุคคลผู้ให้บริการวิเคราะห์ระดับความเข้มข้นของสารเคมีอันตราย  
ในบรรยากาศของสถานที่ทำงานและสถานที่เก็บรักษาสารเคมีอันตราย

ใบอนุญาตเลขที่ ๐๒๐๑-๐๓-๒๕๖๕-๐๐๓๔

อนุญาตให้ บริษัท ซีคอท จำกัด

เลขทะเบียนนิติบุคคล ๐๑๑๕๕๖๐๐๐๘๗๖

ตั้งอยู่ เลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร

เป็นนิติบุคคลผู้ให้บริการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน ตามกฎกระทรวง  
กำหนดมาตรฐานในการบริหาร จัดการ และดำเนินการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อม  
ในการทำงานเกี่ยวกับสารเคมีอันตราย พ.ศ. ๒๕๕๖ ในการเป็นผู้ให้บริการวิเคราะห์ระดับความเข้มข้น  
ของสารเคมีอันตรายในบรรยากาศของสถานที่ทำงานและสถานที่เก็บรักษาสารเคมีอันตราย ประกอบกับ  
กฎกระทรวงการขึ้นทะเบียนและการอนุญาตให้บริการเพื่อส่งเสริมความปลอดภัย อาชีวอนามัย และสภาพแวดล้อม  
ในการทำงาน พ.ศ. ๒๕๖๔ แห่งพระราชบัญญัติความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน  
พ.ศ. ๒๕๕๔ โดยมีบุคลากร จำนวน ๑๔ ราย ดังรายชื่อแนบท้ายใบอนุญาตนี้

ทั้งนี้ ตั้งแต่วันที่ ๑๕ มิถุนายน พ.ศ. ๒๕๖๕ ถึงวันที่ ๑๓ มิถุนายน พ.ศ. ๒๕๖๘

ให้ไว้ ณ วันที่ ๑๕ มิถุนายน พ.ศ. ๒๕๖๕



(นายสมพจน์ กวางแก้ว)

รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน

รายชื่อบุคลากรแนบท้ายใบอนุญาต  
เป็นนิติบุคคลผู้ให้บริการวิเคราะห์ระดับความเข้มข้นของสารเคมีอันตรายในบรรยากาศของสถานที่ทำงาน  
และสถานที่เก็บรักษาสารเคมีอันตราย  
ของบริษัท ซีคอฟ จำกัด  
ใบอนุญาตเลขที่ ๐๒๐๒-๐๓-๒๕๖๕-๐๐๓๔

|                       |               |
|-----------------------|---------------|
| ๑. นางสาวนริสา        | ภูวสรเพ็ชญ์   |
| ๒. นางอารยา           | ทิพย์รักษ์    |
| ๓. นางสาวศิริวรรณ     | ฉิมสง่า       |
| ๔. นางสาวสุธาทิพย์    | เทียนเตี้ย    |
| ๕. นางสาวพรนภา        | บุตธรรม       |
| ๖. นางสาวธารณี        | อาจปลิว       |
| ๗. นางสาวกฤษณา        | จันทุม        |
| ๘. นางสาวพัชรา        | สมานฉันท      |
| ๙. นางสาวจณิสตา       | กัญอ่อน       |
| ๑๐. นางสาวศศิภา       | ใจดี          |
| ๑๑. นางสาวจุฑารัตน์   | แจ่มเรือน     |
| ๑๒. นางสาวณัฐศิริ     | เลิศธีรพัฒน์  |
| ๑๓. นางสาวสัญญาลักษณ์ | อินทประสิทธิ์ |
| ๑๔. นางสาวสุตาพร      | สุนทร         |

ทั้งนี้ ตั้งแต่วันที่ ๑๕ มิถุนายน พ.ศ. ๒๕๖๕ ถึงวันที่ ๑๓ มิถุนายน พ.ศ. ๒๕๖๘

ให้ไว้ ณ วันที่ ๑๕ มิถุนายน พ.ศ. ๒๕๖๕




(นายสมพจน์ กวางแก้ว)

รองอธิบดี ปฏิบัติราชการแทน  
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน

เลขทะเบียนควบคุม

ป-๑๓-๐๒๐๒-๐๓๔-๒๕-๖๕

(ลงนาม)



(นายทะเบียน)

(นายศักดิ์ศิลป์ ดุลาธร)

ผู้อำนวยการกองความปลอดภัยแรงงาน