



**Ambient Air Quality Monitoring Report:**

**INDESORE SWEATER LTD.**



**Conducted By**

**GREENTECH TESTING COMPANY LTD.**

**Corporate Office:**

House: 4 Sobhanbag, Mohammadia Super  
Market, Dhanmondi-27, Dhaka-1207

Contact: +8801727-310675, 01795-333332



Date of Testing: January 28, 2019

Date of Report Submitting: February 2, 2019



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# GREENTECH TESTING COMPANY

Environmental Testing, Inspection, Assessment, Calibration  
& Consultancy Organisation.



Certificate Number: GT ET/VER/19/211

## Ambient Air Quality Monitoring Report

|                    |   |
|--------------------|---|
| Issued By          | : Greentech Testing Company Ltd. (GTCL)<br>House No: 4 Sobhanbag, 123 Mohammadia<br>Super Market (2 <sup>nd</sup> Floor), Mirpur Road,<br>Dhaka-1207.<br>Contact Number: 01795-333332<br>E-mail: <a href="mailto:ceo@gtclbangladesh.com">ceo@gtclbangladesh.com</a> |
| Date of Issue      | : February 2, 2019  |
| Certificate Number | : Certificate Number: GT ET/VER/19/211  |

|                    |  |
|--------------------|--|
| Customer           | : INDESORE SWEATER LTD.<br>Deger Chala, National University, Gazipur Sadar,<br>Gazipur-1704, Bangladesh. |
| Description        | : Ambient Air Quality Monitoring Report<br>INDESORE SWEATER LTD.   |
| Date of Assessment | : January 28, 2019   |



Prepared By:

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Environmental Specialist  
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## Ambient Air Quality Monitoring Report

### Environmental Condition:

Ambient Temperature : 25.3 °C  
Relative Humidity : 56% RH  
Weather Condition : Winter Season

### Methodology:

Ambient air(outdoor) quality of the factory has been monitored for the parameters of CO, CO<sub>2</sub>, NO<sub>2</sub>, H<sub>2</sub>O, SO<sub>2</sub>, NO, H<sub>2</sub>S, VOC, Hydrocarbon & O<sub>2</sub> following Continuous Emission Monitoring System (CEMS) by using an air analyzer. The analyzers are designed to meet BS 8494/ EN 50270:2006 standard. CO, NO<sub>2</sub>, SO<sub>2</sub>, H<sub>2</sub>S & CH<sub>2</sub>O are monitored using electrochemical method and CO<sub>2</sub> is monitoring following Non-Dispersive Infra-red (NDIR) method. Hydrocarbon & VOC are monitored using plus-in catalytic bead and O<sub>2</sub> is measured by capillary controlled concentration sensor. O<sub>2</sub> is monitored using automatic span upon activation. The Suspended Particulate Matter (SPM) of different sizes as PM 0.3, PM0.5, PM 1, PM 2.5, PM 5, PM 10, has monitored by handheld particle counter at different sections of the factory. The particle counter utilizes the laser technology for single particle detection. The scattering of light from the particle in the sampling air stream is converted into electrical pulses, which is then measured and calculated as a particle size. The concentration of particulate matter is measured in microgram per cubic meter. Greentech Assessor Mr. Arif Ullah has collected the monitoring data. The entire monitoring process has been conducted following Greentech Work Instruction WI 06, and Greentech Standard operating procedure GTCL SOP 05.

### Instrument Specification:

Size Range : 0.3µm~10 µm  
Flow range : 2.83 Liter/min (0.1 cfm)  
Counting Efficiency : 50±20%@0.3µm; 100±10%@0.5µm

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### Portable Ambient Air Quality Monitor Specification:

| Parameter        | Resolution | Specified Range |
|------------------|------------|-----------------|
| Carbon-Monoxide  | 0.1 ppm    | 0.200 ppm       |
| Carbon di-oxide  | 1 ppm      | 5000 ppm        |
| SO <sub>2</sub>  | 0.1 ppm    | 0-20 ppm        |
| NO <sub>2</sub>  | 0.1 ppm    | 0-20 ppm        |
| Formaldehyde     | 1 ppb      | 0-10,000 ppb    |
| H <sub>2</sub> S | 1 ppm      | 0-200 ppm       |
| NO               | 0.5 ppm    | 0-250 ppm       |
| VOC              | 1 ppm      | 1-1000 ppm      |
| Hydrocarbon      | 1% LEL     | 0-100% LEL      |
| O <sub>2</sub>   | 0.1        | 0-30% Vol.      |

### Test Results:

**Time & Duration:** Test has been done between 09.30 AM to 04.15 PM

### Outdoor Air Quality Monitoring Data:

| Factory Surrounding Location | Carbon Monoxide (CO), ppm | Carbon Dioxide, (CO <sub>2</sub> ), ppm | Nitrogen Dioxide, (NO <sub>2</sub> ), ppm | Sulfur Dioxide, (SO <sub>2</sub> ), ppm | Formaldehyde, (CH <sub>2</sub> O), ppb | Nitric Oxide, NO ppm | Hydrogen Sulfide, H <sub>2</sub> S ppm | Volatile Organic Compound, VOC ppm | Hydrocarbon % | Oxygen % |
|------------------------------|---------------------------|---|---|---|--|----------------------|--|------------------------------------|---------------|----------|
| North                        | 0.0                       | 845                                     | 0.0                                       | 0.0                                     | 0.0                                    | 0.0                  | 0.0                                    | 0                                  | 0             | 21.2     |
| South                        | 0.0                       | 882                                     | 0.0                                       | 0.0                                     | 0.0                                    | 0.0                  | 0.0                                    | 0                                  | 0             | 20.8     |
| East                         | 0.0                       | 910                                     | 0.0                                       | 0.0                                     | 0.0                                    | 0.0                  | 0.0                                    | 0                                  | 0             | 20.9     |
| West                         | 0.0                       | 895                                     | 0.0                                       | 0.0                                     | 0.0                                    | 0.0                  | 0.0                                    | 0                                  | 0             | 20.9     |

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## Ambient Air Quality Monitoring Report

### Suspended Particulate Matter (SPM):

| Factory Surrounding Location | Suspended Particular Matter (SPM) $\mu\text{g}/\text{m}^3$ |           |           |           |         |          | Total SPM,<br>TSP ( $\leq \mu\text{m}$ ) |
|------------------------------|--|-----------|-----------|-----------|---------|----------|--|
|                              | PM<br>0.3  | PM<br>0.5 | PM<br>1.0 | PM<br>2.5 | PM<br>5 | PM<br>10 |  |
| North                        | 1  | 3         | 2         | 34        | 45      | 55       | 140                                      |
| South                        | 2  | 1         | 4         | 32        | 43      | 62       | 144                                      |
| East                         | 2  | 1         | 2         | 36        | 52      | 42       | 135                                      |
| West                         | 1  | 2         | 3         | 33        | 42      | 56       | 137                                      |

### Standard Permissible Limit (Industrial)

| Agency                                     | Pollutant's Concentration       |                 |                                    |  |                   |
|--|---------------------------------|-----------------|------------------------------------|--|-------------------|
|  | CO                              | CO <sub>2</sub> | NO <sub>2</sub>                    | SO <sub>2</sub>                        | CH <sub>2</sub> O |
| ECR97,<br>Schedule 2,<br>Amendment<br>2005 | 35 ppm (1 hr.)<br>9 ppm (8 hr.) | NYS             | 0.053 ppm<br>(annual)              | 0.03 ppm (annual)<br>0.14 ppm (24 hr.) | NYS               |
| US EPA                                     | 35 ppm (1 hr.)<br>9 ppm (8 hr.) | NYS             | 100 ppb (1 hr.)<br>53 ppb (annual) | 75 ppb (1 hr.)                         | NYS               |
| OSHA                                       | 50 ppm                          | 5000 ppm        | NYS                                | NYS                                    | 750 ppb           |

\*NYS – Not Yet Set

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| Agency                            | Pollutants Concentration |   |     |  |   |
|-----------------------------------|--------------------------|---|-----|--|---|
|                                   | NO                       | H <sub>2</sub> S  | VOC | Hydrocarbon                            | O <sub>2</sub>  |
| ECR97, Schedule 2, Amendment 2005 | NYS                      | NYS   | NYS | NYS                                    | NYS   |
| US EPA                            | NYS                      | AEGL 1  | NYS | 5%<br>(Assuming a Methane environment) | NYS   |
|                                   |                          | AEGL 2  |     |  |   |
|                                   |                          | AEGL 3  |     |  |   |
|                                   |                          | For 8 Hour Monitoring   |     |  |   |
|                                   |                          | *AEGL- Acute Exposure Guidelines Levels. (AEGLs), which indicate the concentrations of the chemical in air above which different types of health effects could begin to occur in an environment.<br>AEGL 1< there may be some discomfort, odor, irritation, but effects, if any, are not impairing and only temporary.<br>AEGL 2< effects become more significant and may impair ability to escape, be long lasting, or permanent.<br>AEGL 3< increasingly severe effects and possible death without treatment. |     |  |   |
| OSHA                              | 25 ppm                   | 20 ppm<br>(50 ppm for 10 min once if no other measurable exposure occurs.)  | NYS | NYS                                    | 19.5 – 22 % (for employee)<br>19.5 – 23.5 % (Atmospheric) |

## Suspended Particulate Matter (SPM) Standard limit

| Agency   | SPM Density   |
|--|---|
| According to ECR 97 (Amendment 2005), Schedule-2 | SPM: 200 µg/m <sup>3</sup> (8hr Average)  |
|  | PM 2.5: 15 µg/m <sup>3</sup> (Annual Average)<br>65 µg/m <sup>3</sup> (24-hour Average) |
|  | PM 10: 50 µg/m <sup>3</sup> (Annual Average)<br>150 µg/m <sup>3</sup> (24 hour Average) |
| US EPA   | PM 2.5-35 µg/m <sup>3</sup> (24-hr)<br>PM 10-150 µg/m <sup>3</sup> (24-hr)              |

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### Discussion and Recommendation:

Ambient (Outdoor) air Quality at the surrounding of factory has been analyzed for the concentration of parameters CO, CO<sub>2</sub>, NO<sub>2</sub>, CH<sub>2</sub>O, SO<sub>2</sub> NO, H<sub>2</sub>S, and VOC, Hydrocarbon & O<sub>2</sub>. The concentration of Suspended Particulate Matter (SPM) of different sizes within the range of 0.3µg/m<sup>3</sup>-10µg/m<sup>3</sup> has also measured. From the analysis it has been observed that the value of CO, CO<sub>2</sub>, NO<sub>2</sub>, CH<sub>2</sub>O, SO<sub>2</sub> NO, H<sub>2</sub>S, VOC, Hydrocarbon & O<sub>2</sub> are within the maximum permissible limit of ECR 97 Schedule 2(amendment 2005), US EPA and OSHA guidelines. As well as the particulate matter concentration at the Surrounding of the factory are within optimum SPM limit according to ECR 97.



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