

Six-Months Compliance Status Report of Talcher Fertilizers Limited, Talcher, Odisha

October 2018 – March 2019
Report



**CSIR-National Environmental Engineering Research Institute
Nehru Marg, Nagpur**

1.0 About the Industry

In 1971, The Fertilizer Corporation of India Ltd. (FCIL), set up Talcher Unit over an area of 902 acre in the district of Angul, Odisha which is located about 126 km away from Bhubaneswar to produce urea using coal as feed stock. Licensor for the Coal gasification was M/s Krupp Koppers, Germany and for Ammonia and Urea units Ammonia synthesis, M/s Tecnimont, Italy.

Commercial Production of Ammonia and Urea commenced on 01.11.1980 with Ammonia and Urea production capacity of 900 and 1500 Tons per day respectively. However due to frequent power restriction, obsolete and mismatch of technology and precarious steam balance the plant could not be sustained. The Board for Industrial and Financial Reconstruction (BIFR) declared the FCIL sick in 1992 and in 2002 Government of India initiated actions to close the company.

Due to shortage of domestic Urea and availability of large land banks, infrastructure and tied-up rail, water & electricity in the units of FCIL, GoI in the year 2007 decided to revive all units of FCIL. Government of India approved Policy for new Investments in the Urea Sector in September 2008 and constituted Empowered Committee of Secretaries (ECOS) in October 2008 with the mandate to evaluate all options of revival of closed units of FCIL/HFCL and to make suitable recommendations for consideration of the Government. In August, 2011, the Cabinet Committee on Economic Affairs (CCEA) had approved the Draft Rehabilitation Scheme (DRS) for revival of all the Units of FCIL and HFCL. DRS envisaged revival of Talcher Unit by the consortium of M/s.Rashtriya Chemical & Fertilizers Limited (RCF), M/s Coal India Limited (CIL) and M/s GAIL (India) Ltd. (GAIL).

2.0 About the Report

TFL received environmental clearance from MoEF&CC (F. No. J-11011/231/2013-1A-II(I) dated 9th February, 2018) for Setting up Ammonia & Urea Fertilizer Unit at Village Vikrampur, Tehsil Talcher, District Angul (Odisha); under the provisions of EIA Notification, 2006 and the amendments made therein, subject to the compliance of terms and conditions (**Annexure**

1):According to the suggestion given by MoEF&CC, six-month environmental status report should be furnished to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and SPCB. In this regard, the environmental monitoring was carried out by CSIR-National Environmental Engineering Research Institute (CSIR-NEERI), Nagpur for the period of October 2018 to March 2019. The report is formulated based on the data provided by CSIR-NEERI.

3.0 EC Compliance Form

Compliance status of EC terms and conditions

Sr. No.	EC Terms and Conditions	Compliance Status
(i)	In view of the base line air quality data for PM ₁₀ already exceeding the prescribed standards, one more season data to be collected to confirm the consistency of readings/values, and for suggesting mitigating measures accordingly.	<ul style="list-style-type: none"> Monitoring of PM₁₀ has been completed for the period April to September-2018. Copy of the same is enclosed in this report.
(ii)	The project proponent shall, take stringent mitigating measures to minimize the incremental concentration of air pollutants (mainly PM ₁₀ & PM _{2.5}) to the extent possible due to the proposed industrial operations.	<ul style="list-style-type: none"> As the monitored results are well within the specified limits no additional measures are proposed to be installed.
(iii)	The project proponent shall develop local air quality management plan in consultation with SPCB and implemented to achieve desired standards.	<ul style="list-style-type: none"> Compliance Assured
(iv)	The incremental ground level concentrations (GLCs) for PM ₁₀ , PM _{2.5} , SO ₂ & NO ₂ due to the increased vehicular and other allied / developmental activities, shall be analysed and reported for actual impact of the project, besides remedial measures.	<ul style="list-style-type: none"> Compliance Assured To check the incremental increase in air pollutants during construction phase, two monitoring stations were selected in the project site. The data is included in this report. As indicated in EIA the major transport of raw material will be by conveyor and hence no impact on GLC due to transport is expected.
(v)	Consent to Establish/Operate for the project shall be obtained from the State Pollution Control Board as required under the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control	<ul style="list-style-type: none"> Procedure for getting Consent to Establish is initiated.

	of Pollution)Act, 1974.	
(vi)	As already committed by the project proponent, Zero Liquid Discharge shall be ensured and no waste/treated water shall be discharged outside the premises.	<ul style="list-style-type: none"> Feasibility study for ZLD will be undertaken and appropriate treatment/recycling method will be selected to an achieve ZLD.
(vii)	Necessary authorization required under the Hazardous and Other Wastes (Management and Trans-Boundary Movement) Rules, 2016, Solid Waste Management Rules, 2016 shall be obtained and the provisions contained in the Rules shall be strictly adhered to.	<ul style="list-style-type: none"> Compliance Assured. It will be obtained in consent to operate.
(viii)	National Emission Standards for Organic Chemicals Manufacturing Industry issued by the Ministry vide G,S,R, 608(E) dated 21st July, 2010 and amended from time to time shall be followed.	<ul style="list-style-type: none"> Compliance Assured
(ix)	To control source and the fugitive emissions, suitable pollution control devices shall be installed to meet the prescribed norms and/or the NMQS. The gaseous emissions shall be dispersed through stack of adequate height as per CPCB/SPCB guidelines.	<ul style="list-style-type: none"> Plants will be designed with state of Art technologies with inbuilt pollution control systems so that the prescribe norms and fugitive emissions will be under control.
(x)	Total fresh water requirement shall not exceed 49200 cum/day to be met from surface water from Brahmini River. Prior permission in this regard shall be obtained from the concerned regulatory authority.	<ul style="list-style-type: none"> Fresh Water source will be received from the stipulated source. And all necessary permissions will be ensured prior to installation of the project.
(xi)	Process effluent/any wastewater shall not be allowed to mix with storm water. Storm water drain shall be passed through guard pond.	<ul style="list-style-type: none"> Compliance Assured.
(xii)	Hazardous chemicals shall be stored in tanks, tank farms, drums, carboys etc, Flame arresters shall be provided on tank farm, and solvent transfer through pumps.	<ul style="list-style-type: none"> Compliance Assured.
(xiii)	ETP sludge, process inorganic & evaporation salt, if any, shall be disposed off to the TSDF.	<ul style="list-style-type: none"> Compliance Assured
(xiv)	The Company shall strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989 as amended time to time. All transportation of Hazardous	<ul style="list-style-type: none"> Compliance Assured.

	Chemicals shall be as per the Motor Vehicle Act (MVA), 1989.	
(xv)	The company shall undertake waste minimization measures as below: -	<ul style="list-style-type: none"> • Compliance Assured.
(a)	Metering and control of quantities of active ingredients to minimize waste.	
(b)	Reuse of by-products from the process as raw materials or as raw material substitutes in other processes.	
(c)	Use of automated filling to minimize spillage,	
(d)	Use of Close Feed system into batch reactors.	
(e)	Venting equipment through vapour recovery system.	
(f)	Use of high pressure hoses for equipment clearing to reduce wastewater generation.	
(xvi)	The green belt of 5-10 m width shall be developed in more than 33% of the total project area, mainly along the plant periphery, in downward wind direction, and along road sides etc. Selection of plant species shall be as per the CPCB guidelines in consultation with the State Forest Department.	<ul style="list-style-type: none"> • The project activities will be implemented in existing site of TFL with lot of greenery and the guide line of 33% area under greenbelt out of total project area will be achieved.
(xvii)	All the commitment made regarding issues raised during the Public Hearing/consultation meeting held on 30h August ,2017 shall be satisfactorily implemented.	<ul style="list-style-type: none"> • CSR dept. will keep aside a sum for CSR activities for project to meet public hearing requirement to the practical extent possible for an industrial unit.
(xviii)	At least 2.5% of the total project cost shall be allocated for Enterprise Social Commitment based on Public Hearing issues and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office.	<ul style="list-style-type: none"> • Compliance Assured.
(xix)	For the DG sets, emission limits and the stack height shall be in conformity with the extant regulations and the CPCB guidelines, Acoustic enclosure shall be provided to DG set for controlling the noise pollution,	<ul style="list-style-type: none"> • Compliance Assured.
(xx)	The unit shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling. Firefighting system shall be as per the norms.	<ul style="list-style-type: none"> • Compliance Assured.
(xxi)	Occupational health surveillance of the workers shall be done on a regular basis	<ul style="list-style-type: none"> • HR and OHC Dept. will

	and records maintained as per the Factories Act.	conduct regular health checkups and records for the same will be maintained as per the Factories Act.
(xxii)	Continuous online (24x7) monitoring system for stack emissions shall be installed for measurement of flue gas discharge and the pollutants concentration, and the data to be transmitted to the CPCB and SPCB server. For online continuous monitoring of effluent, the unit shall install web camera with night vision capability and flow meters in the channel/drain carrying effluent within the premises.	<ul style="list-style-type: none"> • Compliance Assured.

Compliance of other generic conditions

Sr. No.	EC proposal	Compliance Status
(i)	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board, Central Pollution Control Board, State Government and any other statutory authority.	<ul style="list-style-type: none"> • Compliance assured.
(ii)	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forest and Climate Change. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	<ul style="list-style-type: none"> • Compliance Assured.
(iii)	The locations of ambient air quality monitoring stations shall be decided in consultation with the State Pollution Control Board (SPCB) and it shall be ensured that at least one station each is Installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.	<ul style="list-style-type: none"> • Compliance assured.
(iv)	The National Ambient Air Quality Emission Standards issued by the Ministry vide G,S.R. No. 826(E) dated 16th November, 2009 shall be followed,	<ul style="list-style-type: none"> • Compliance assured.
(v)	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient	<ul style="list-style-type: none"> • Compliance assured.

	noise levels shall conform to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	
(vi)	The Company shall harvest rainwater from the roof tops of the buildings and storm water drains to recharge the ground water and use the same water for the process activities of the project to conserve fresh water.	<ul style="list-style-type: none"> • Compliance assured.
(vii)	Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.	<ul style="list-style-type: none"> • Training on safety and health aspects of handling of chemicals used and MSDS will be imparted regularly.
(viii)	The company shall also comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, and risk mitigation measures relating to the project shall be implemented.	<ul style="list-style-type: none"> • Compliance assured
(ix)	The company shall undertake all relevant measures for improving the socioeconomic conditions of the surrounding area. ESC activities shall be undertaken by involving local villages and administration.	<ul style="list-style-type: none"> • CSR activities shall be undertaken by involving local and other stake holders.
(x)	The company shall undertake eco developmental measures including community welfare measures in the project area for the overall improvement of the environment.	<ul style="list-style-type: none"> • Greenery development in the area will be undertaken. Activities shall be undertaken for Developmental measures for welfare of overall environment.
(xi)	The. company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment, Forest and Climate Change as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management pollution control measures shall not be diverted for any other purpose,	<ul style="list-style-type: none"> • Compliance assured

(xii)	A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, Zilla Parishad /Municipal Corporation, Urban local Body and the local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal.	<ul style="list-style-type: none"> Complied.
(xiii)	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and SPCB. A copy of .Environmental Clearance and six monthly compliance status report shall be posted on the website of the company.	<ul style="list-style-type: none"> Compliance assured. We are submitting first six monthly compliance report for the TFL joint venture project.
(xiv)	The environmental statement for each financial year ending 31st March in Form-V as is mandated shall be submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of MoEF&CC by e-mail,	This will be complied after commencement of commercial production.
(xv)	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at http://moef.nic.in . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local, newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional Office of the Ministry.	<p>Compliance done.</p> <p>Communicated In local Oriya Newspaper and in English Newspaper.</p> <p>i) Oriya on date 16.02.2018 in Semaj(Angul Edition) ii) English on date 15.02.2018 in New Indian Express (Bhubaneshwar Edition)</p> <p>Copy of the same is enclosed in Annexure 3.</p>
(xvi)	The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.	This will be complied with. Presently, the site preparation work is under progress.

4.0 Compliance report for EC condition 9(i): In view of the base line air quality data for PM₁₀ already exceeding the prescribed standards, one more season data to be collected to confirm the consistency of readings/values, and for suggesting mitigating measures accordingly.

The baseline status with respect to ambient air quality has been established through a scientifically designed ambient air quality monitoring network based on the following considerations:

- Meteorological conditions prevailing within study area;
- Topography of the study area;
- Representatives of background air quality; and
- Representatives of likely impact areas.

Air Quality monitoring has been conducted at eight sampling locations during the pre- monsoon season (April-June 2018).The location of ambient air sampling stations has been presented below in **Table 1**.

Table 1: Details of sampling locations

Sl. No	Location Name	With respect to Project Site	
		Dir.	Distance
01.	Tech. Building of FCI	-	-
02.	Housing Board Colony	ENE	1.2 km
03.	Karnpur village	W	4.5 Km
04.	TFL Guest House	-	-
05.	Balanda village	NW	2.5 Km
06.	Kukudanga village	SW	2.5 km

Salient features of the observations made with respect to PM10 during the study period are summarized below in **Table 2** as under:

Table 2: Summary of PM₁₀ concentrations ($\mu\text{g}/\text{m}^3$)(October 2018-March 2019)

Sampling Location	Min.	24-hr Average	Max.	NAAQS for PM ₁₀ $\mu\text{g}/\text{m}^3$
Technical Building of FCI	56	67	82	100
Housing Board Colony	37	56	73	
Karnpur village	59	66	73	
TFL Guest House	36	48	65	
Balanda village	67	71	117	
Kukudanga village	38	49	62	

The average concentrations of PM₁₀ at all the six sampling locations were observed in the range of 48 to 71 $\mu\text{g}/\text{m}^3$. It has been observed that the minimum value of 48 $\mu\text{g}/\text{m}^3$ have been observed at TFL Guest House, whereas the maximum value of 71 $\mu\text{g}/\text{m}^3$ was observed at Balanda Village

4.0 Compliance report for EC condition 9(iv):The incremental ground level concentrations (GLCs) for PM₁₀, PM_{2.5}, SO₂& NO₂ due to the increased vehicular and other allied / developmental activities, shall be analysed and reported for actual impact of the project, besides remedial measures.

Construction activities were started in the beginning of August 2018. Reconnaissance was undertaken to establish the existing status of air environment in the study region. Ambient Air Quality Monitoring (AAQM) locations were selected based on guidelines of network siting criteria based on meteorological data of post-Monsoon season (August and September, 2018). The ambient air quality monitoring was carried out in the study area of 10 km radial distance around the proposed site, details of these locations are presented in **Table 3**. Administrative building, Bikrampur housing board colony

and guest houses are near to the proposed project site. The average values of PM₁₀, PM_{2.5}, SO₂ and NO₂ are given in **Table 4 and 5**.

**Table 3 : Details of Air Quality Monitoring Locations
(Monsoon Season –August and September 2018)**

Sr. No.	Sample Code	Sampling Locations	Geographical Position
1.	TFL/A1	Administrative Building TFL	20°54'42.8" N 85°09'38.4" E
2.	TFL/A2	Housing Board Colony, Bikrampur	20°54'19.3" N 85°10'20.2" E
3.	TFL/A3	Village Karnapur	20°54'26.4" N 85°07'06.1" E
4.	TFL/A4	TFL-Guest House	20°54'14.8" N 85°09'56.9" E
5.	TFL/A5	Village Balanda	20°55'31.0" N 85°09'26.8" E
6.	TFL/A6	Village Kukudanga	20°53'23.3" N 85°08'50.8" E

Table 4 Air Quality Status (PM₁₀) within the Study Area

Units: µg/m³

Average: 24 hrs.

Sr. No.	Sampling Location	PM ₁₀					
		October 2018	November 2018	December 2018	January 2019	February 2019	March 2019
1	Administrative Building TFL	63	56	60	74	82	67
2	Housing Board Colony, Bikrampur	53	37	49	57	73	65
3	Village Karnapur	59	66	64	58	73	63
4	TFL-Guest House	47	36	48	43	65	60
5	Village Balanda	67	73	72	76	87	117
6	Village Kukudanga	41	38	46	46	61	62
	Permissible limits	100					

Table 4 Air Quality Status (PM_{2.5}) within the Study AreaUnits: $\mu\text{g}/\text{m}^3$

Average: 24 hrs.

Sr. No.	Sampling Location	PM _{2.5}					
		October 2018	November 2018	December 2018	January 2019	February 2019	March 2019
1	Administrative Building TFL	41	24	29	34	33	36
2	Housing Board Colony, Bikrampur	29	29	24	30	33	38
3	Village Karnapur	21	37	37	35	35	38
4	TFL-Guest House	28	19	20	27	35	43
5	Village Balanda	39	36	40	45	42	68
6	Village Kukudanga	26	20	37	36	33	52
	Permissible limits	60					

Table 5 Air Quality Status (SO₂) within the Study Area Units: $\mu\text{g}/\text{m}^3$ Units: $\mu\text{g}/\text{m}^3$

Average: 24 hrs.

Sr. No.	Sampling Location	SO ₂					
		October 2018	November 2018	December 2018	January 2019	February 2019	March 2019
1	Administrative Building TFL	38	36	22	16	71	28
2	Housing Board Colony, Bikrampur	21	34	20	11	51	26
3	Village Karnapur	26	20	16	20	58	23
4	TFL-Guest House	23	32	22	16	57	29
5	Village Balanda	35	21	17	13	47	42
6	Village Kukudanga	27	18	20	17	46	26
	Permissible limits	80					

Table 5 Air Quality Status (NO₂) within the Study Area Units: $\mu\text{g}/\text{m}^3$ Units: $\mu\text{g}/\text{m}^3$

Average: 24 hrs.

Sr. No.	Sampling Location	NO ₂					
		October 2018	November 2018	December 2018	January 2019	February 2019	March 2019
1	Administrative Building TFL	21	26	19	19	60	55
2	Housing Board Colony, Bikrampur	14	18	21	13	52	52
3	Village Karnapur	19	13	27	15	50	60
4	TFL-Guest House	11	14	18	8	50	61
5	Village Balanda	21	17	24	17	49	70
6	Village Kukudanga	13	12	19	13	51	52
	Permissible limits	80					

Table 5 Air Quality Status (NH₃) within the Study Area Units: µg/m³
Units: µg/m³ Average: 24 hrs.

Sr. No.	Sampling Location	NH ₃					
		October 2018	November 2018	December 2018	January 2019	February 2019	March 2019
1	Administrative Building TFL	208	57	52	57	68	33
2	Housing Board Colony, Bikrampur	95	23	24	12	41	45
3	Village Karnapur	23	20	25	17	34	45
4	TFL-Guest House	75	14	24	15	12	27
5	Village Balanda	40	11	29	16	49	46
6	Village Kukudanga	28	10	13	11	28	62
	Permissible limits	400					

Baseline data provided in the EIA report clearly states that PM₁₀ and PM_{2.5} concentrations in the buffer area of proposed project site is quite high. The concentrations of PM₁₀ and PM_{2.5} were quite less during October and December but show increasing trends during the January to March period. This is due to less rains and advent of summer during these months. PM₁₀ and PM_{2.5} concentrations near the project sites (Administrative building, housing board colony and guest house) in February and March are slightly higher than that of other locations. This is mainly due to the construction activities occurring at the proposed project site. Sites close to coal mining areas like Balanda and Karnapur villages have shown great increase in particulate concentrations also exceeding the permissible values in the month of March.

Slight variations in SO₂, NO₂ and NH₃ were observed during the study period. However, all the values are within the permissible limits.

The detailed air monitoring report is enclosed as **Annexure 2**.

Annexure 1
Environmental Clearance Letter

F. No. J-11011/231/2013-IA-II(I)
Government of India
Ministry of Environment, Forest and Climate Change
(IA- II Section)

Indira Paryavaran Bhawan
Jorbagh Road, New Delhi -3

Dated: 9th February, 2018

To

M/s Talcher Fertilizers Ltd
Village Vikrampur, Tehsil Talcher
District Angul (Odisha)

Sub: Setting up Ammonia & Urea Fertilizer Unit at Village Vikrampur, Tehsil Talcher, District Angul (Odisha) by M/s Talcher Fertilizers Ltd - Environmental Clearance -reg.

Sir,

This has reference to your proposal No. IA/OR/IND2/58560/2013 dated 11th October, 2017, submitting the EIA/EMP report with public consultation details on the above subject matter.

2. The Ministry of Environment, Forest and Climate Change has examined the proposal for environmental clearance to the project for setting up ammonia & urea fertilizer unit based on coal gasification for production of 1.27 MMTPA of neem coated urea (end product) by M/s Talcher Fertilizers Ltd at Village Vikrampur, Tehsil Talcher, District Angul (Odisha).

3. The total land area of the project is 570 acre, out of which green belt will be developed in 180 acre. The cost of the project is Rs.10741.05 Crores. The project will provide employment to 1500 people during construction phase.

4. The proposed product/unit and capacity are as under:

S.No	Product/Unit	Capacity
1	Ammonia	2200 MTPD
2	Urea (Neem coated)	3850 MTPD
3	Coal Gasification Plant	Synthesis Gas: 242978 Nm ³ /hr

5. Total water requirement for the project is 49,200 m³/day. The permission for drawal of surface water from Brahmini River has been obtained from the State Government of Odisha vide letter No. 1513/SF/59 dated 3rd November, 2009.

The power requirement of 72 MW will be met from the Captive Power Plant. The raw Material required for the project are Coal, Pet Coke and lime stone. During initial stages of operation of the plant, coal shall be supplied through Bhubaneswari Coal Mine of M/s Mahanadi Coalfields Ltd. Later, the project proponent shall develop the dedicated coal mine for the procurement of coal in the desired quantity.

6. The project/activity is covered under category A of item 5(a) 'Chemical fertilizers' of the Schedule to the Environment Impact Assessment Notification, 2006, and requires appraisal at central level by the sectoral Expert Appraisal Committee in the Ministry.

7. The terms of reference (ToR) for the project was initially granted on 26th November, 2013, and then extended up to 25th November, 2017. The ToR was transferred in the name of M/s Talcher Fertilizers Ltd from M/s Rashtriya Chemicals & Fertilizers Ltd, vide Ministry's letter dated 27th September, 2017. Public hearing was conducted by the State Pollution Control Board on 30th August, 2017.

(Signature)

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8. The proposal for environmental clearance was considered by the EAC (Industry-2) in its meeting held on 12-13 October, 2017. The project proponent and the accredited consultant M/s Projects & Development India Ltd presented the EIA/EMP report. The committee found the EIA/EMP report satisfactory and recommended the proposal for environmental clearance with certain conditions.

9. Based on the proposal submitted by the project proponent and recommendations of the EAC (Industry-2), the Ministry of Environment, Forest and Climate Change hereby accords environmental clearance to the project 'Setting up Ammonia & Urea Fertilizer Unit for production of 1.27 MMTPA of Neem Coated Urea (end product)' by M/s Talcher Fertilizers Ltd at Village Vikrampur, Tehsil Talcher, District Angul (Odisha), under the provisions of EIA Notification, 2006 and the amendments made therein, subject to the compliance of terms and conditions, as under:-

- (i) In view of the base line air quality data for PM₁₀ already exceeding the prescribed standards, one more season data to be collected to confirm the consistency of readings/values, and for suggesting mitigating measures accordingly.
- (ii) The project proponent shall take stringent mitigating measures to minimize the incremental concentration of air pollutants (mainly PM₁₀ & PM_{2.5}) to the extent possible due to the proposed industrial operations.
- (iii) The project proponent shall develop local air quality management plan in consultation with SPCB and implemented to achieve desired standards.
- (iv) The incremental ground level concentrations (GLCs) for PM₁₀, PM_{2.5}, SO₂ & NO₂ due to the increased vehicular and other allied/developmental activities, shall be analysed and reported for actual impact of the project, besides remedial measures.
- (v) Consent to Establish/Operate for the project shall be obtained from the State Pollution Control Board as required under the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974.
- (vi) As already committed by the project proponent, Zero Liquid Discharge shall be ensured and no waste/treated water shall be discharged outside the premises.
- (vii) Necessary authorization required under the Hazardous and Other Wastes (Management and Trans-Boundary Movement) Rules, 2016, Solid Waste Management Rules, 2016 shall be obtained and the provisions contained in the Rules shall be strictly adhered to.
- (viii) National Emission Standards for Organic Chemicals Manufacturing Industry Issued by the Ministry vide G.S.R. 608(E) dated 21st July, 2010 and amended from time to time shall be followed.
- (ix) To control source and the fugitive emissions, suitable pollution control devices shall be installed to meet the prescribed norms and/or the NAAQS. The gaseous emissions shall be dispersed through stack of adequate height as per CPCB/SPCB guidelines.
- (x) Total fresh water requirement shall not exceed 49200 cum/day to be met from surface water from Brahmini River. Prior permission in this regard shall be obtained from the concerned regulatory authority.
- (xi) Process effluent/any wastewater shall not be allowed to mix with storm water. Storm water drain shall be passed through guard pond.
- (xii) Hazardous chemicals shall be stored in tanks, tank farms, drums, carboys etc. Flame arresters shall be provided on tank farm, and solvent transfer through pumps.
- (xiii) ETP sludge, process Inorganic & evaporation salt, if any, shall be disposed off to the TSDF.



- (xiv) The Company shall strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989 as amended time to time. All transportation of Hazardous Chemicals shall be as per the Motor Vehicle Act (MVA), 1989.
 - (xv) The company shall undertake waste minimization measures as below:-
 - (a) Metering and control of quantities of active ingredients to minimize waste.
 - (b) Reuse of by-products from the process as raw materials or as raw material substitutes in other processes.
 - (c) Use of automated filling to minimize spillage.
 - (d) Use of Close Feed system into batch reactors.
 - (e) Venting equipment through vapour recovery system.
 - (f) Use of high pressure hoses for equipment clearing to reduce wastewater generation.
 - (xvi) The green belt of 5-10 m width shall be developed in more than 33% of the total project area, mainly along the plant periphery, in downward wind direction, and along road sides etc. Selection of plant species shall be as per the CPCB guidelines in consultation with the State Forest Department.
 - (xvii) All the commitment made regarding issues raised during the Public Hearing/consultation meeting held on 30th August, 2017 shall be satisfactorily implemented
 - (xviii) At least 2.5% of the total project cost shall be allocated for Enterprise Social Commitment based on Public Hearing issues and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office.
 - (xix) For the DG sets, emission limits and the stack height shall be in conformity with the extant regulations and the CPCB guidelines. Acoustic enclosure shall be provided to DG set for controlling the noise pollution.
 - (xx) The unit shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling. Fire fighting system shall be as per the norms.
 - (xxi) Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.
 - (xxii) Continuous online (24x7) monitoring system for stack emissions shall be installed for measurement of flue gas discharge and the pollutants concentration, and the data to be transmitted to the CPCB and SPCB server. For online continuous monitoring of effluent, the unit shall install web camera with night vision capability and flow meters in the channel/drain carrying effluent within the premises.
- 9.1.** The grant of environmental clearance is subject to compliance of other general conditions, as under:-
- (i) The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board, Central Pollution Control Board, State Government and any other statutory authority.
 - (ii) No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forest and Climate Change. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.
 - (iii) The locations of ambient air quality monitoring stations shall be decided in consultation with the State Pollution Control Board (SPCB) and it shall be ensured that at least one station each is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.




- (iv) The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November, 2009 shall be followed.
- (v) The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).
- (vi) The Company shall harvest rainwater from the roof tops of the buildings and storm water drains to recharge the ground water and use the same water for the process activities of the project to conserve fresh water.
- (vii) Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.
- (viii) The company shall also comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, and risk mitigation measures relating to the project shall be implemented.
- (ix) The company shall undertake all relevant measures for improving the socio-economic conditions of the surrounding area. ESC activities shall be undertaken by involving local villages and administration.
- (x) The company shall undertake eco-developmental measures including community welfare measures in the project area for the overall improvement of the environment.
- (xi) The company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment, Forest and Climate Change as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management/ pollution control measures shall not be diverted for any other purpose.
- (xii) A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, Zilla Parishad/Municipal Corporation, Urban local Body and the local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal.
- (xiii) The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and SPCB. A copy of Environmental Clearance and six monthly compliance status report shall be posted on the website of the company.
- (xiv) The environmental statement for each financial year ending 31st March in Form-V as is mandated shall be submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of MoEF&CC by e-mail.
- (xv) The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at <http://moef.nic.in>. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular




language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional Office of the Ministry.

- (xvi) The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.
10. The Ministry may revoke or suspend the clearance, at subsequent stages, if implementation of any of the above conditions is not satisfactory.
11. The Ministry reserves the right to stipulate additional conditions, if found necessary. The company in a time bound manner will implement these conditions.
12. The above conditions will be enforced, inter alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, Air (Prevention & Control of Water Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and rules.


9/2/2018
(S. K. Srivastava)
Scientist E

Copy to:-

1. The Additional PCCF (C), MoEF&CC Regional Office (EZ), A/3, Chandrasekharpur, Bhubaneswar - 23 (Odisha)
2. The Secretary, Department of Forest and Environment, Government of Odisha, Bhubaneswar (Odisha)
3. The Member Secretary, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi - 32
4. The Member Secretary, Odisha State Pollution Control Board, Paribesh Bhawan, A/118, Nilakantha Nagar, Unit - VIII, Bhubaneswar -12 (Odisha)
5. Guard File/Monitoring File/Website/Record File


9/2/2018
(S. K. Srivastava)
Scientist E

Annexure 2

Air Quality Monitoring Report (October 2018 to April 2019)

Ambient Air Quality study

The knowledge of quality of ambient air plays an important role in assessing the environmental scenario of the locality. The ambient air quality status in the vicinity of the project site forms an indispensable part of the Environment Impact Assessment studies. The quality of ambient air depends upon the concentrations of criteria pollutants, the emission sources and meteorological condition. Data collected has been analysed and presented herewith.

The studies on air environment include identification of criteria air pollutants and assessing their existing levels in ambient air within the study zone. The existing status of air environment with respect to the identified air pollutants is assessed through air quality surveillance programme with scientifically designed ambient air quality monitoring network.

The ambient air quality monitoring was carried out through reconnaissance followed by air quality surveillance programme and micrometeorological study.

Reconnaissance

Reconnaissance was undertaken to establish the existing status of air environment in the study region. Ambient Air Quality Monitoring (AAQM) locations were selected based on guidelines of network siting criteria based on meteorological data. The ambient air quality monitoring was carried out in the study area of 10 km radial distance around the proposed site, details of these locations are presented in **Figure 1 and Table 1**.

Ambient Air Quality Monitoring Network and Analytical Methods

The ambient air quality status in the study zone is assessed through a network of ambient air quality monitoring locations. The studies on air environment include identification of criteria air pollutants for assessing the impacts of existing port operations. The existing status of air environment is assessed through a systematic air quality surveillance program, which is planned based on the following criteria:

- ◆ Topography/terrain of the study area
- ◆ Regional synoptic scale climatological normals

- ◆ Densely populated areas within the region
- ◆ Location of surrounding industries
- ◆ Representation of valid cross-sectional distribution in downwind direction of the study area.



Figure 1 Ambient Air Quality Monitoring Locations around the Project Site

Table 1 Details of Air Quality Monitoring Locations

Sr. No.	Sample Code	Sampling Locations	Geographical Position
7.	TFL/A1	Administrative Building TFL	20°54'42.8" N 85°09'38.4" E
8.	TFL/A2	Housing Board Colony, Bikrampur	20°54'19.3" N 85°10'20.2" E
9.	TFL/A3	Village Karnapur	20°54'26.4" N 85°07'06.1" E
10.	TFL/A4	TFL-Guest House	20°54'14.8" N 85°09'56.9" E
11.	TFL/A5	Village Balanda	20°55'29.5" N 85°09'05.1" E
12.	TFL/A6	Village Kukudanga	20°53'23.3" N 85°08'50.8" E

As per NAAQS (2009) the pollutants viz., particulate matters (PM₁₀ and PM_{2.5}), sulphur dioxide (SO₂), nitrogen dioxide (NO₂), ammonia (NH₃), Methane Hydrocarbons (MH), Non-methane Hydrocarbons (NMHC) and Volatile Organic Carbon (VOCs) were stipulated parameters for air quality monitoring. The particulate parameters along with SO₂, NO₂ and NH₃ were monitored on 24 hourly basis and representative samples were collected for the rest. Standard analytical procedures were used for analysis and quantification of air quality parameters and the details are given in **Table 2**. The photographs showing sampling stations/locations are given in the **Plate 1**.

Table 2 Analytical Methods used for Quantification of Air Quality Parameters in the Ambient Air

Sr. No.	Air Quality Parameter	Unit	Analytical Method used for Testing/Analysis	Analytical Measurement Range	Standard value as per NAAQs, 2009 and Monitoring duration
1.	Particulate Matter size < 10 microns or PM ₁₀	µg/m ³	Gravimetric IS-5182: Part-23, 2006	5-5000	100 (24 h)
2.	Particulate Matter size < 2.5 microns or PM _{2.5}	µg/m ³	Gravimetric U.S.EPA EQM-0308-170	5-500	60 (24 h)
3.	Sulphur Dioxide (SO ₂)	µg/m ³	EPA Improved West and Gaeke Method IS-5182: Part-2, 2001	5-1000	80 (24 h)
4.	Nitrogen Dioxide (NO ₂)	µg/m ³	Modified Jacobs-Hachheiser Method IS-5182: Part-6, 2006	7-750	80 (24 h)
5.	Ammonia (NH ₃)	µg/m ³	Indophenol Blue method Method 401: Methods of Air Sampling and analysis, James P. Lodge	5-1000	400 (24 h)
6.	Benzene (C ₆ H ₆)	µg/m ³	GC based continuous analyzer IS-5182: Part-11, 2006	0.01-10	5.0 (Annual)
7.	VOCs	µg/m ³	U.S. EPA Method TO17: 1999	0.01-10	0.01-500 (Annual)
8.	Hydrocarbons	µg/m ³	HC Analyzer for Spot Concentration	0.01 – 10	-

Six AAQM locations were selected based on guidelines of network siting criteria. The six identified sampling locations for AAQM are depicted in **Figure 1** and details of which is given in **Table 1**.

In all sampling locations Fine Particulate Samplers (FPS) designed by Envirotech Pvt. Ltd. were installed for continuous sampling of PM₁₀, PM_{2.5} and gaseous pollutants. All the samples collected at the site were brought to the laboratory for further assessment for some concrete results.

Air Quality Status

Particulate matter is ubiquitous component of the atmosphere and has become a persistent and pervasive environmental problem that imposes significant health risk. The sources, characteristics and potential health effects of the larger or coarse particle (>2.5 µm in diameter) and smaller or fine particles (<2.5 µm in diameter) are very different. The fine airborne particles have a high probability of deposition deeper into the respiratory tract and likely to trigger or exacerbate respiratory diseases. These particles also have higher burdens of toxins, which when absorbed in the body can result in health consequences other than respiratory health effects. Therefore, the US environmental Protection Agency promulgated a new PM_{2.5} National Air Quality Standards to effective control the aerosol problem¹. Sources vary for gaseous pollutants viz. major source of SO₂ and NO₂ include burning of fossil fuels like coal and other petroleum products. For NH₃, sources include industrial processes, vehicular emissions. The anthropogenic sources of VOCs consist of vehicular emissions, petroleum products, chemicals, manufacturing industries, painting operations, varnishes, coating operations, consumer products, petroleum handling, auto refinishing, cold clean degreasing, printing inks, dry-cleaning etc.

Particulate Matter:

October 2018

- ◆ The concentration of PM₁₀ varied from 32 to 78µg/m³. The lowest concentration of PM₁₀ was found at TFL Guest House while the highest concentration was found at TFL Admin sampling site (**Figure 2 and Table 3**).

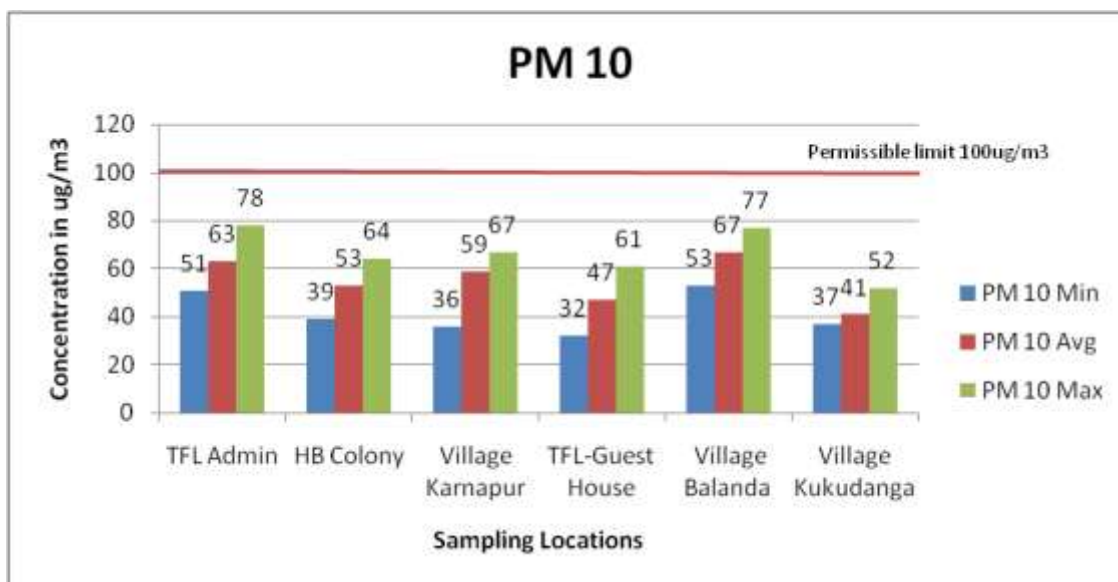
- ◆ PM_{2.5} concentrations varied from 16 to 49 $\mu\text{g}/\text{m}^3$. The lowest concentration of PM_{2.5} was found at Karnapur while the highest concentration was found in TFL Admin sampling site (**Figure 3 and Table 3**).

**Table 3 Air Quality Status within the Study Area
(Post-Monsoon Season- October, 2018)**

Units: $\mu\text{g}/\text{m}^3$

Average: 24 hrs.

Sr. No.	Sampling Location	PM ₁₀			PM _{2.5}		
		Min	Avg	Max	Min	Avg	Max
1	Administrative Building TFL	51	63	78	29	41	49
2	Housing Board Colony, Bikrampur	39	53	64	22	29	41
3	Village Karnapur	36	59	67	16	21	27
4	TFL-Guest House	32	47	61	23	28	33
5	Village Balanda	53	67	77	28	39	41
6	Village Kukudanga	37	41	52	17	26	29
	Permissible limits	100			60		



**Figure 2 Concentration of PM₁₀ at Sampling sites
(Post-Monsoon Season - October, 2018)**

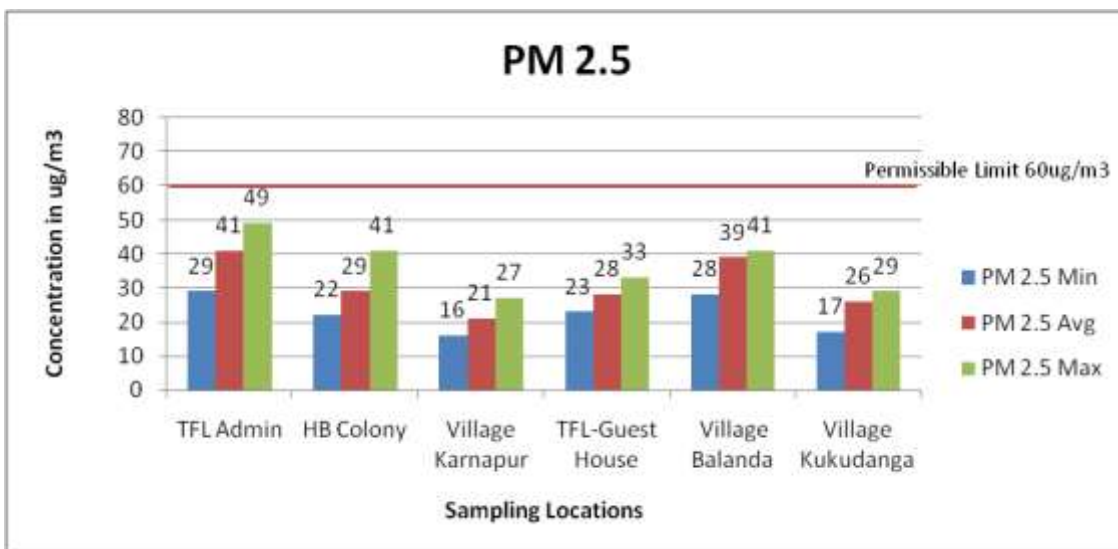


Figure 3 Concentration of PM_{2.5} at Sampling sites (Post-Monsoon Season - October, 2018)

November 2018

- ◆ The concentration of PM₁₀ varied from 36 to 73µg/m³. The lowest concentration of PM₁₀ was found at TFL Guest House while the highest concentration was found at Balanda sampling site (**Figure 4 and Table 4**).
- ◆ PM_{2.5} concentrations varied from 19 to 37µg/m³. The lowest concentration of PM_{2.5} was found at TFL Guest House while the highest concentration was found at Karnapur sampling site (**Figure 5 and Table 4**).

Table 4 Air Quality Status within the Study Area (Post-Monsoon Season- November, 2018)

Units: µg/m³

Average: 24 hrs.

Sr. No.	Sampling Location	PM ₁₀			PM _{2.5}		
		Min	Avg	Max	Min	Avg	Max
1	Administrative Building TFL	35	56	73	72	10	24
2	Housing Board Colony, Bikrampur	19	37	73	68	17	29
3	Village Karnapur	28	66	88	88	17	37
4	TFL-Guest House	17	36	58	58	13	19
5	Village Balanda	45	73	94	92	24	36

6	Village Kukudanga	17	38	59	59	9	20
	Permissible limits	100			60		

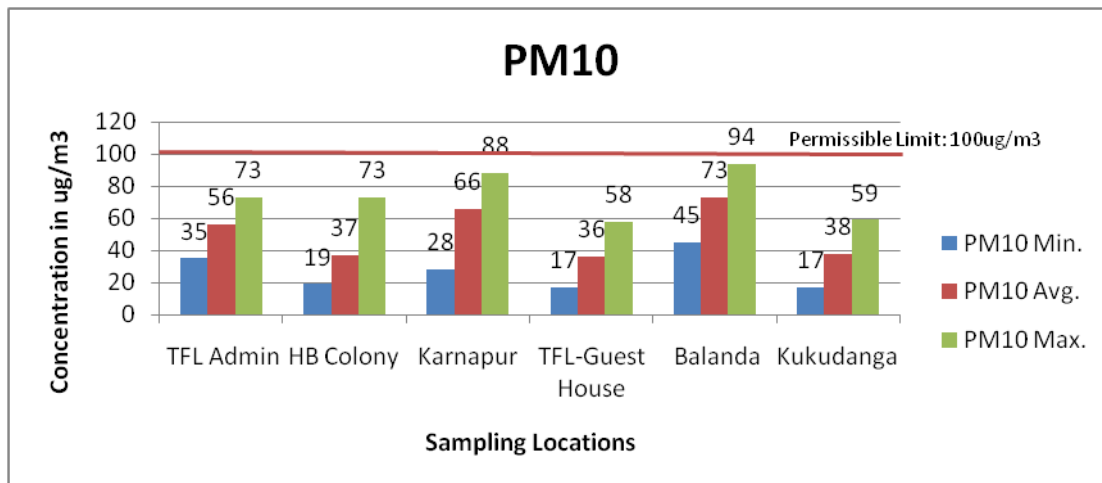


Figure 4 Concentration of PM₁₀ at Sampling sites (Post-Monsoon Season - November, 2018)

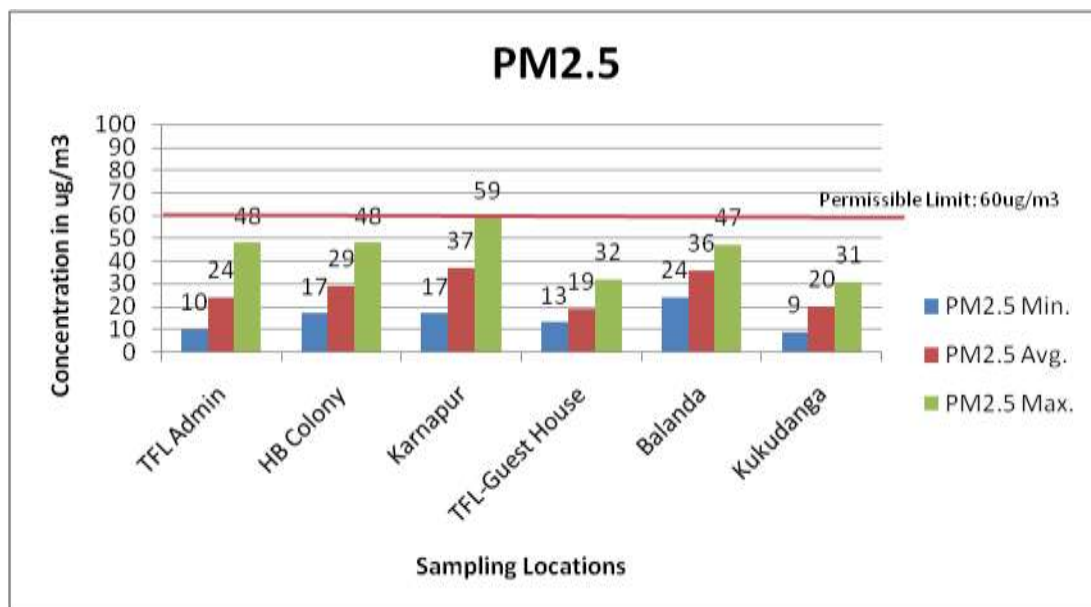


Figure 5 Concentration of PM_{2.5} at Sampling sites (Post-Monsoon Season - November, 2018)

December 2018

- ◆ The concentration of PM₁₀ varied from 46 to 72 $\mu\text{g}/\text{m}^3$. The lowest concentration of PM₁₀ was found at Kukudanga village while the highest concentration was found at Balanda sampling site (**Figure 6 and Table 5**).
- ◆ PM_{2.5} concentrations varied from 20 to 40 $\mu\text{g}/\text{m}^3$. The lowest concentration of PM_{2.5} was found at TFL Guest House while the highest concentration was found at Balanda sampling site (**Figure 7 and Table 5**).

**Table 5 Air Quality Status within the
Study Area (Winter Season- December,
2018)**

Units: $\mu\text{g}/\text{m}^3$

Average: 24 hrs.

Sr. No.	Sampling Location	PM 10			PM 2.5		
		Min	Avg	Max	Min	Avg	Max
1	Administrative Building TFL	33	60	91	16	29	58
2	Housing Board Colony, Bikrampur	27	49	68	15	24	36
3	Village Karnapur	46	64	84	17	37	54
4	TFL-Guest House	29	48	65	13	20	30
5	Village Balanda	37	72	86	22	40	54
6	Village Kukudanga	30	46	68	23	33	46
	Permissible limits	100			60		

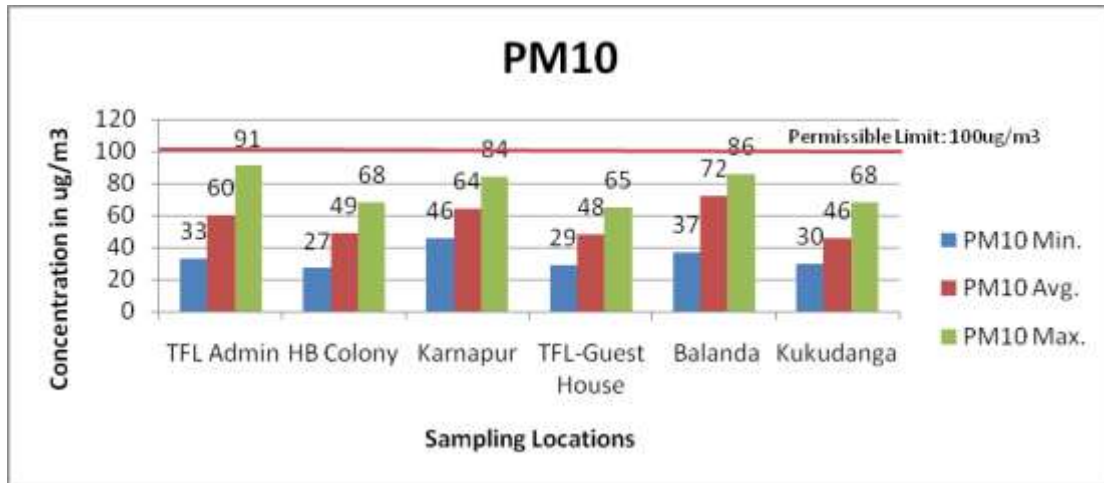


Figure 6 Concentration of PM10 at Sampling sites (Winter Season - December, 2018)

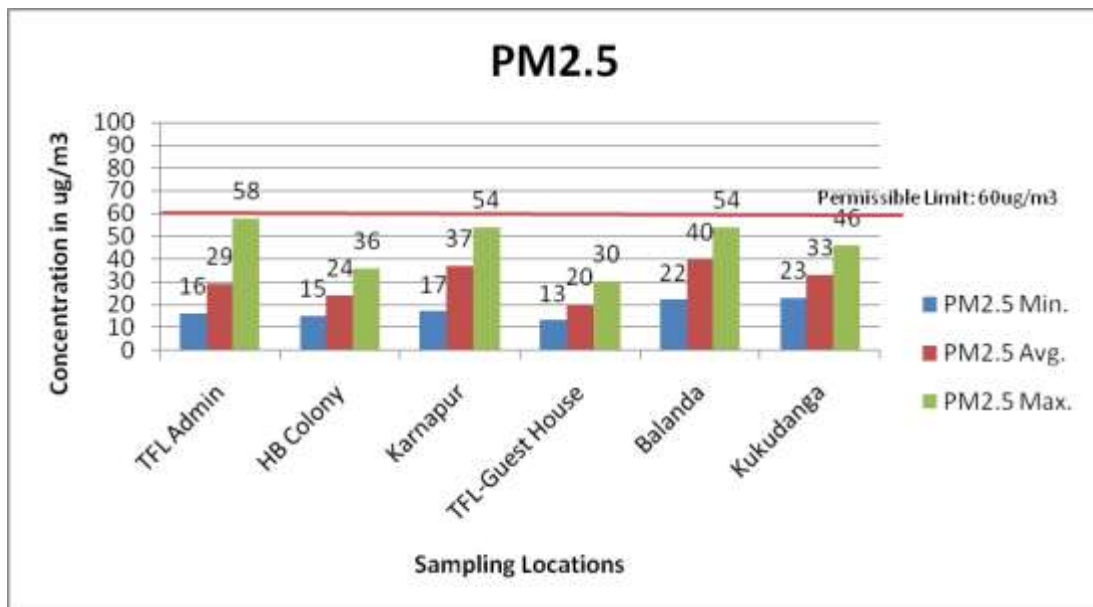


Figure 7 Concentration of PM2.5 at Sampling sites (Winter Season - December, 2018)

January 2019

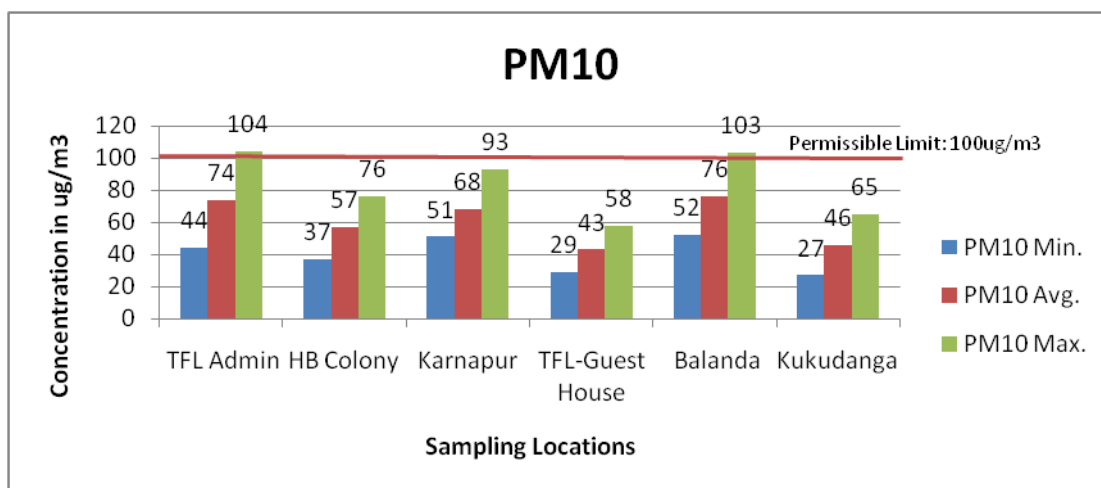
- ◆ The concentration of PM₁₀ varied from 43 to 76µg/m³. The lowest concentration of PM₁₀ was found at TFL Guest House while the highest concentration was found at Balanda sampling site (**Figure 8 and Table 6**).
- ◆ PM_{2.5} concentrations varied from 27 to 45µg/m³. The lowest concentration of PM_{2.5} was found at TFL Guest House while the highest concentration was found at Balanda sampling site (**Figure 9 and Table 6**).

Table 6 Air Quality Status within the Study Area (January 2019)

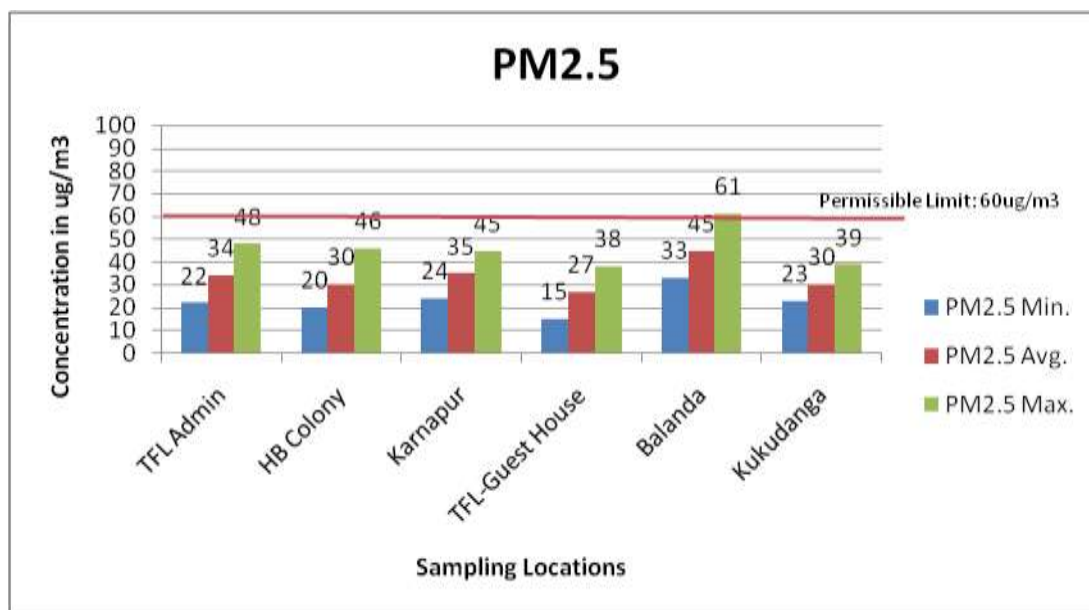
Units: µg/m³

Average: 24 hrs.

Sr. No.	Sampling Location	PM ₁₀			PM _{2.5}		
		Min	Avg	Max	Min	Avg	Max
1	Administrative Building TFL	44	74	104	22	34	48
2	Housing Board Colony, Bikrampur	37	57	76	20	30	46
3	Village Karnapur	51	68	93	24	35	45
4	TFL-Guest House	29	43	58	15	27	38
5	Village Balanda	52	76	103	33	45	61
6	Village Kukudanga	27	46	65	23	30	39
Permissible limits		100			60		



**Figure 8 Concentration of PM₁₀ at Sampling sites
(January 2019)**



**Figure 9 Concentration of PM_{2.5} at Sampling sites
(January 2019)**

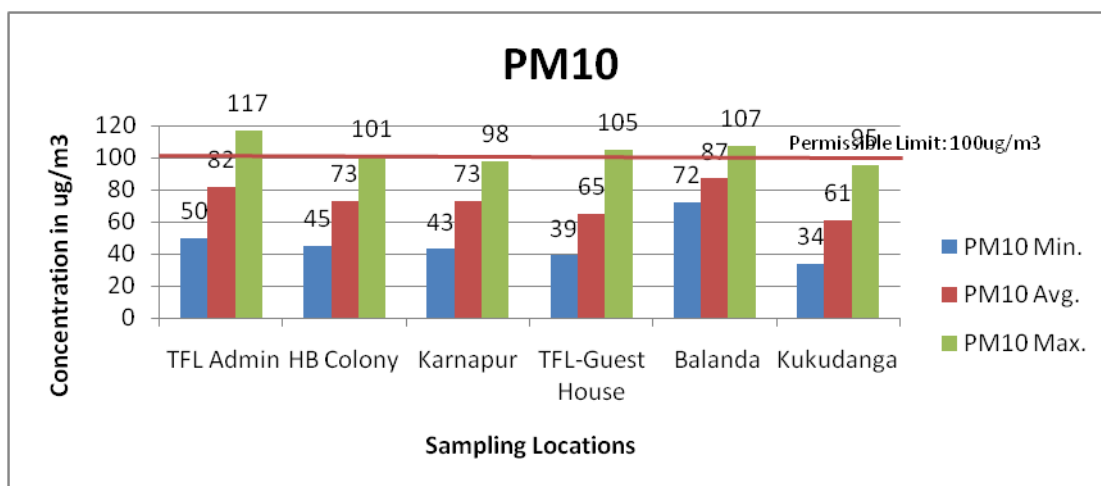
February 2019

- ◆ The average concentrations of PM₁₀ varied from 61 to 87µg/m³. The lowest concentration of PM₁₀ was found at Kukudanga while the highest concentration was found at Balanda sampling site **(Figure 10 and Table 7)**.
- ◆ Average PM_{2.5} concentrations varied from 33 to 42µg/m³. The lowest concentration of PM_{2.5} was found at TFL Admin, Housing Board Colony and Kukudanga while the highest concentration was found at Balanda sampling site **(Figure 11 and Table 7)**.

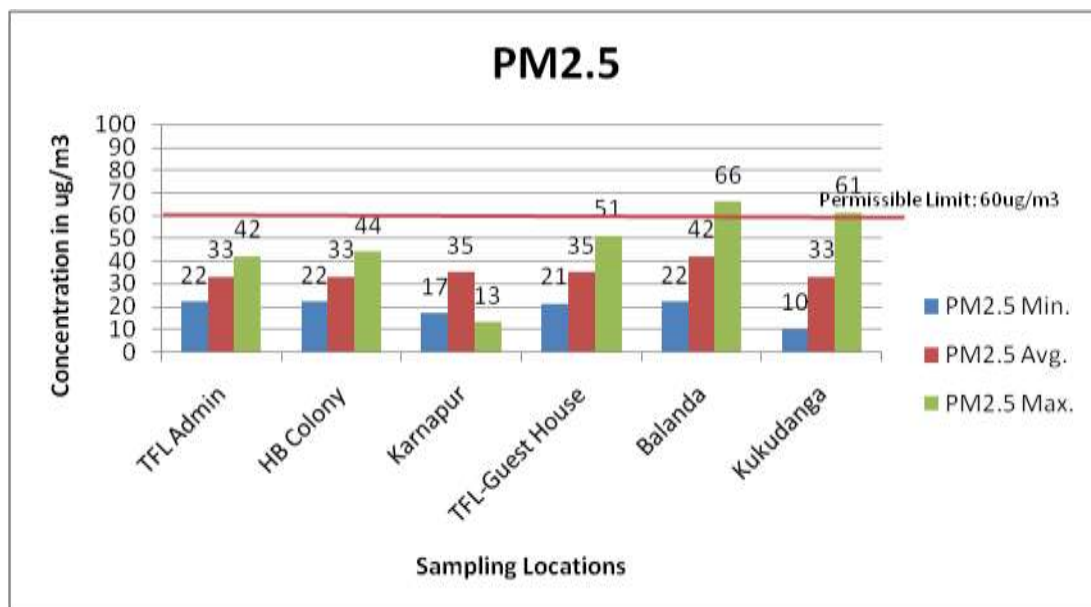
**Table 7 Air Quality Status within the Study Area
(Post-Monsoon Season- February 2019)**

Units: $\mu\text{g}/\text{m}^3$ Average: 24 hrs.

Sr. No.	Sampling Location	PM ₁₀			PM _{2.5}		
		Min	Avg	Max	Min	Avg	Max
1	Administrative Building TFL	50	82	117	22	33	42
2	Housing Board Colony, Bikrampur	45	73	101	22	33	44
3	Village Karnapur	43	73	98	17	35	55
4	TFL-Guest House	39	65	105	21	35	51
5	Village Balanda	72	87	107	22	42	66
6	Village Kukudanga	34	61	95	10	33	61
	Permissible limits	100			60		



**Figure 9 : Concentration of PM₁₀ at Sampling sites
(Post-Monsoon Season – February 2019)**



**Figure 10 : Concentration of PM_{2.5} at Sampling sites
(Post-Monsoon Season – February 2019)**

March 2019

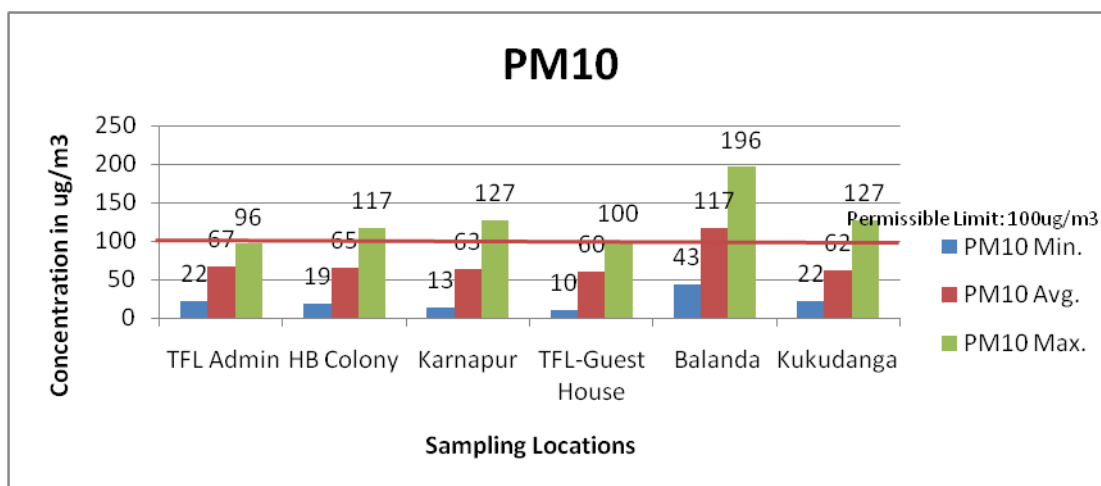
- ◆ The average concentrations of PM₁₀ varied from 60 to 117µg/m³. The lowest concentration of PM₁₀ was found at TFL Guest House while the highest concentration was found at Balanda sampling site **(Figure 11 and Table 8)**.
- ◆ Average PM_{2.5} concentrations varied from 36 to 68µg/m³. The lowest concentration of PM_{2.5} was found at TFL Admin while the highest concentration was found at Balanda sampling site **(Figure 12 and Table 8)**.

**Table 8 Air Quality Status within the Study Area
(Post-Monsoon Season- March 2019)**

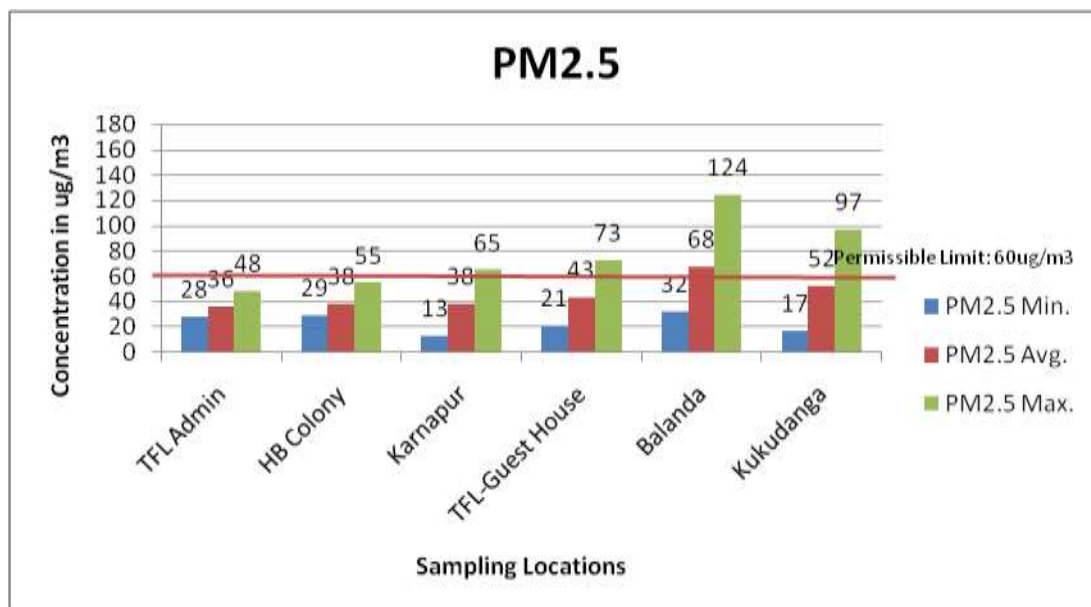
Unit: $\mu\text{g}/\text{m}^3$

Average: 24 hrs.

Sr. No.	Sampling Location	PM ₁₀			PM _{2.5}		
		Min	Avg	Max	Min	Avg	Max
1	Administrative Building TFL	22	67	96	28	36	48
2	Housing Board Colony, Bikrampur	19	65	117	29	38	55
3	Village Karnapur	13	63	127	13	38	65
4	TFL-Guest House	10	60	100	21	43	73
5	Village Balanda	43	117	196	32	68	124
6	Village Kukudanga	22	62	127	17	52	97
	Permissible limits	100			60		



**Figure 11: Concentration of PM₁₀ at Sampling sites
(Post-Monsoon Season – March 2019)**



**Figure 12: Concentration of PM_{2.5} at Sampling sites
(Post-Monsoon Season – March 2019)**

Gaseous Pollutants:

October 2018

- ◆ The concentration of Sulphur dioxide (SO₂) varied from 12 to 42 µg/m³. The concentration of Sulphur dioxide (SO₂) was observed minimum at Karnapur and maximum at TFL Admin Building (**Figure 13 and Table 9**).
- ◆ The Concentration of Nitrogen dioxide (NO₂) was observed in the range of 8 to 31 µg/m³, the minimum concentration was found at Housing Board Colony while maximum concentration was accounted at Karnapur (**Figure 14 and Table 9**).
- ◆ The concentration of NH₃ varied from 12 to 247 µg/m³, minimum concentration of Ammonia (NH₃) found at Karnapur and maximum was found at TFL Admin building sampling site (**Figure 15 and Table 9**).
- ◆ VOCs, NMHC and MHC were undetectable on any of the sampling sites. (**Table 10**)

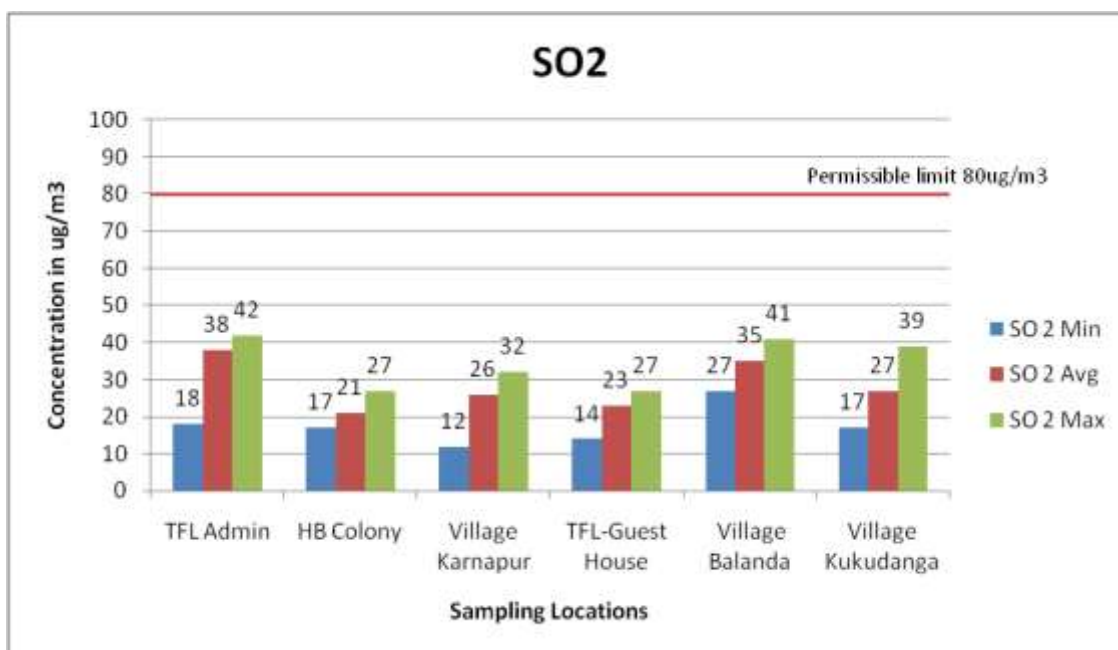
The sampling was carried out during the Post-Monsoon season (October, 2018). Overall, all Air Quality Parameters studied in the study area were found to be well within the permissible limits.

**Table 9 Air Quality Status within the Study Area
(Post-Monsoon Season - October, 2018)**

Units: $\mu\text{g}/\text{m}^3$

Average: 24 hrs.

Sr. No.	Sampling Location	SO ₂			NO ₂			NH ₃		
		Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
1	Administrative Building TFL	18	38	42	17	21	27	146	208	247
2	Housing Board Colony, Birkampur	17	21	27	8	14	23	87	95	107
3	Village Karnapur	12	26	32	11	19	31	12	23	39
4	TFL-Guest House	14	23	27	9	11	19	52	75	89
5	Village Balanda	27	35	41	13	21	25	24	40	61
6	Village Kukudanga	17	27	39	9	13	19	17	28	38
Permissible limits		80			80			400		



**Figure 13 Concentration of SO₂ at Sampling sites
(Post-Monsoon Season - October, 2018)**

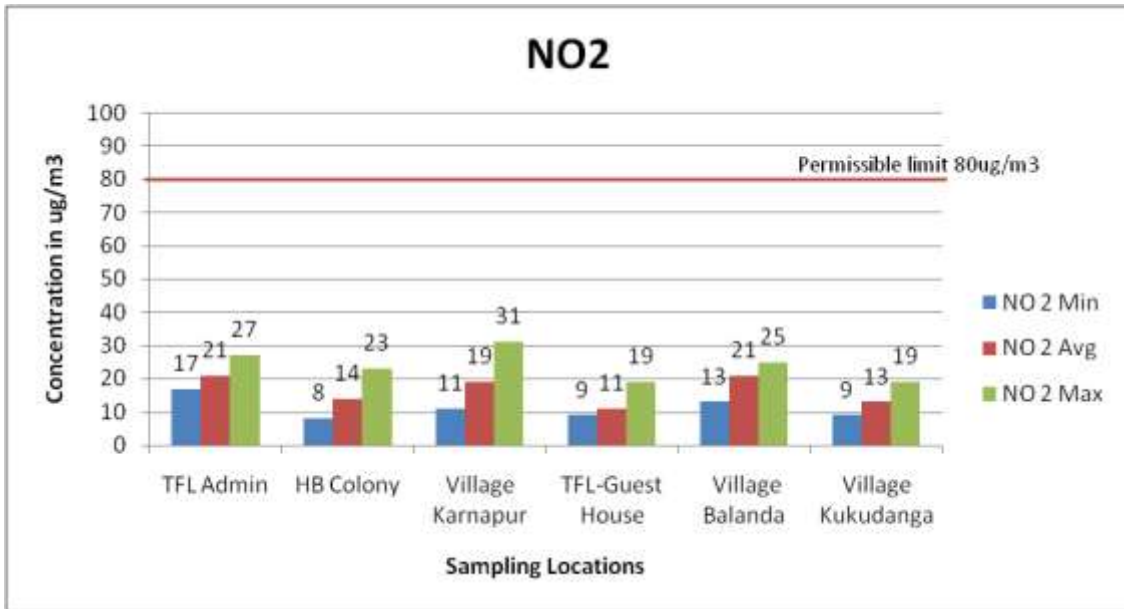


Figure 14 Concentration of NO₂ at Sampling sites (Post-Monsoon Season - October, 2018)

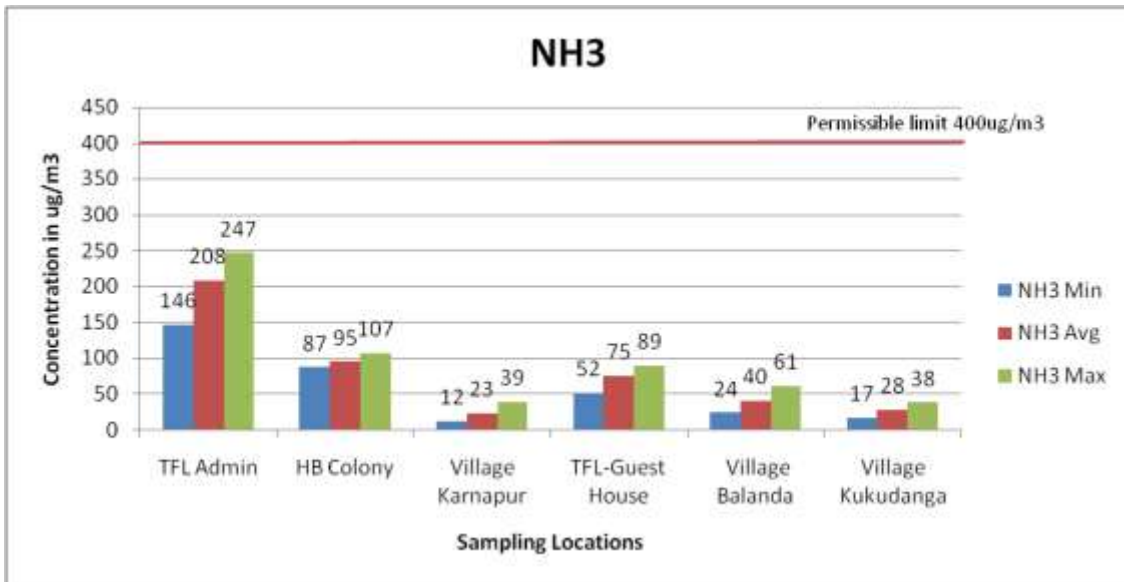


Figure 15 Concentration of NH₃ at Sampling sites (Post-Monsoon Season - October, 2018)

**Table: 10 Concentrations of VOCs and HC in the Ambient Air
(Post-Monsoon Season – October, 2018)**

Sr. No.	Sampling Location	Benzene ($\mu\text{g}/\text{m}^3$)	Toluene ($\mu\text{g}/\text{m}^3$)	Xylene ($\mu\text{g}/\text{m}^3$)	HC ppm
1.	Administrative Building TFL	<0.1	<0.1	<0.1	ND
2.	Housing Board Colony, Bikrampur	<0.1	<0.1	<0.1	ND
3.	Village Karnapur	<0.1	<0.1	<0.1	ND
4.	TFL-Guest House	<0.1	<0.1	<0.1	ND
5.	Village Balanda	<0.1	<0.1	<0.1	ND
6.	Village Kukudanga	<0.1	<0.1	<0.1	ND
	Permissible limits	5 $\mu\text{g}/\text{m}^3$			

November 2018

- ◆ The concentration of Sulphur dioxide (SO_2) varied from 18 to $36\mu\text{g}/\text{m}^3$. The concentration of Sulphur dioxide (SO_2) was observed minimum at Kukudanga and maximum at TFL Admin Building. **(Figure 16 and Table 11)**.
- ◆ The concentration of Nitrogen dioxide (NO_2) was observed in the range of 12 to $26\mu\text{g}/\text{m}^3$, the minimum concentration was found at Kukudanga while maximum concentration was accounted at TFL Admin site. **(Figure 17 and Table 11)**.
- ◆ The concentration of NH_3 varied from 10 to $57\mu\text{g}/\text{m}^3$, minimum concentration of Ammonia (NH_3) found at Kukudanga and maximum was found at TFL Admin building sampling site **(Figure 18 and Table 11)**.
- ◆ VOCs, NMHC and MHC were undetectable on any of the sampling sites. **(Table 12)**

The sampling was carried out during the Post-Monsoon season (November, 2018). Overall, all Air Quality Parameters studied in the study area were found to be well within the permissible limits.

**Table 11 Air Quality Status within the Study Area
(Post-Monsoon Season - November, 2018)**

Units: $\mu\text{g}/\text{m}^3$

Average: 24 hrs.

Sr. No.	Sampling Location	SO ₂			NO ₂			NH ₃		
		Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
1	Administrative Building TFL	7	36	69	68	22	26	38	36	10
2	Housing Board Colony, Bikrampur	12	34	70	67	9	18	22	22	9
3	Village Karnapur	9	20	46	42	9	13	18	18	2
4	TFL-Guest House	20	32	50	49	12	14	21	20	7
5	Village Balanda	15	21	30	29	9	17	22	22	5
6	Village Kukudanga	14	18	26	25	5	12	19	19	5
Permissible limits		80			80			400		

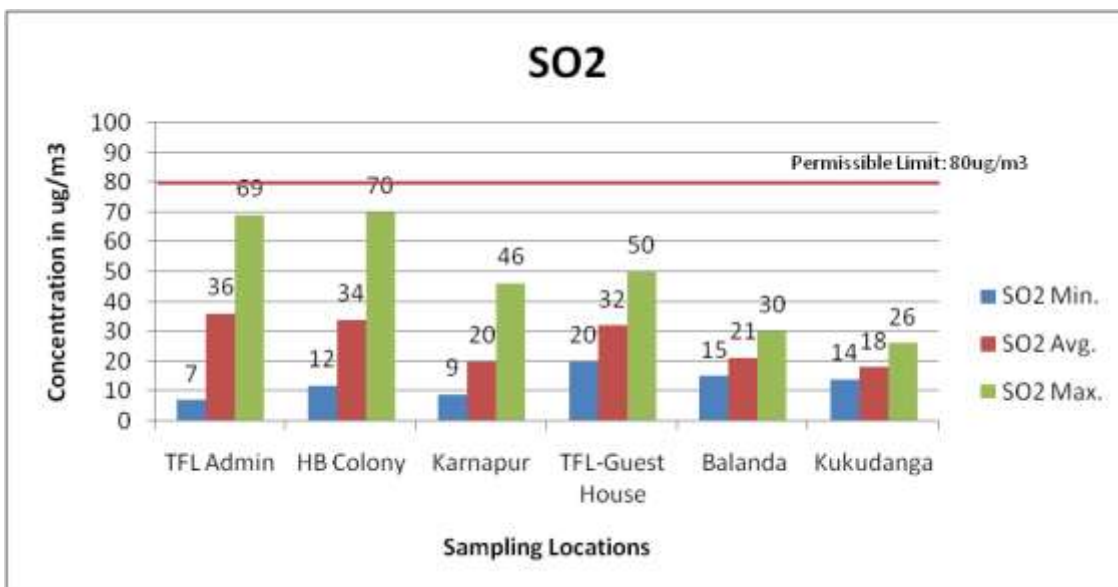


Figure 16 Concentration of SO₂ at Sampling sites (Post-Monsoon Season - November, 2018)

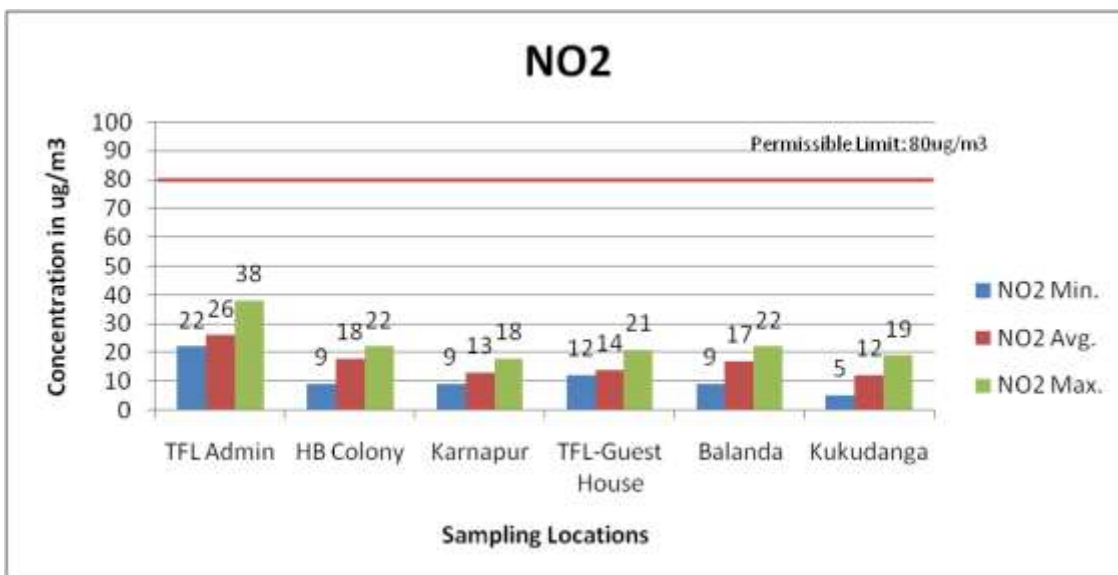
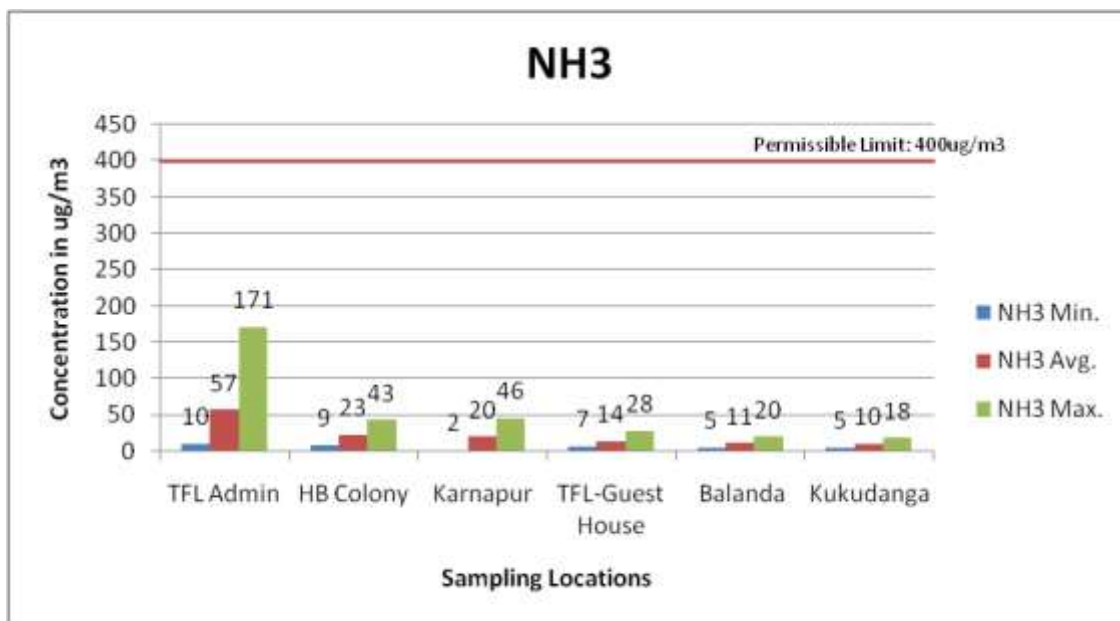


Figure 17 Concentration of NO₂ at Sampling sites (Post-Monsoon Season - November, 2018)



**Figure 18 Concentration of NH₃ at Sampling sites
(Post-Monsoon Season - November, 2018)**

**Table: 12 Concentrations of VOCs and HC in the Ambient Air
(Post-Monsoon Season - November, 2018)**

Sr. No.	Sampling Location	Benzene (µg/m ³)	Toluene (µg/m ³)	Xylene (µg/m ³)	HC ppm
1.	Administrative Building TFL	<0.1	<0.1	<0.1	ND
2.	Housing Board Colony, Bikrampur	<0.1	<0.1	<0.1	ND
3.	Village Karnapur	<0.1	<0.1	<0.1	ND
4.	TFL-Guest House	<0.1	<0.1	<0.1	ND
5.	Village Balanda	<0.1	<0.1	<0.1	ND
6.	Village Kukudanga	<0.1	<0.1	<0.1	ND
	Permissible limits	5 µg/m³			

December 2018

- ◆ The concentration of Sulphur dioxide (SO₂) varied from 16 to 22µg/m³. The concentration of Sulphur dioxide (SO₂) was observed minimum at Karnapur and maximum at TFL Admin Building. **(Figure 19 and Table 13).**
- ◆ The concentration of Nitrogen dioxide (NO₂) was observed in the range of 18 to 27µg/m³, the minimum concentration was found at TFL Guest House while maximum concentration was accounted at Karnapur. **(Figure 20 and Table 13).**
- ◆ The concentration of NH₃ varied from 13 to 52µg/m³, minimum concentration of Ammonia (NH₃) found at Kukudanga and maximum was found at TFL Admin building sampling site **(Figure 21 and Table 13).**
- ◆ VOCs, NMHC and MHC were undetectable on any of the sampling sites. **(Table 14)**

The sampling was carried out during the Winter season (December, 2018). Overall, all Air Quality Parameters studied in the study area were found to be well within the permissible limits.

Table 13 Air Quality Status within the Study Area (Winter Season - December, 2018)

Units: µg/m³

Average: 24 hrs.

Sr. No.	Sampling Location	SO ₂			NO ₂			NH ₃		
		Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
1	Administrative Building TFL	3	22	46	8	19	49	11	52	156
2	Housing Board Colony, Bikrampur	4	20	54	11	21	30	3	24	56
3	Village Karnapur	2	16	54	6	27	63	6	25	51
4	TFL-Guest House	6	22	41	6	18	50	10	24	55
5	Village Balanda	6	17	37	11	24	69	6	29	47
6	Village Kukudanga	6	20	46	9	19	38	2	13	25
Permissible limits		80			80			400		

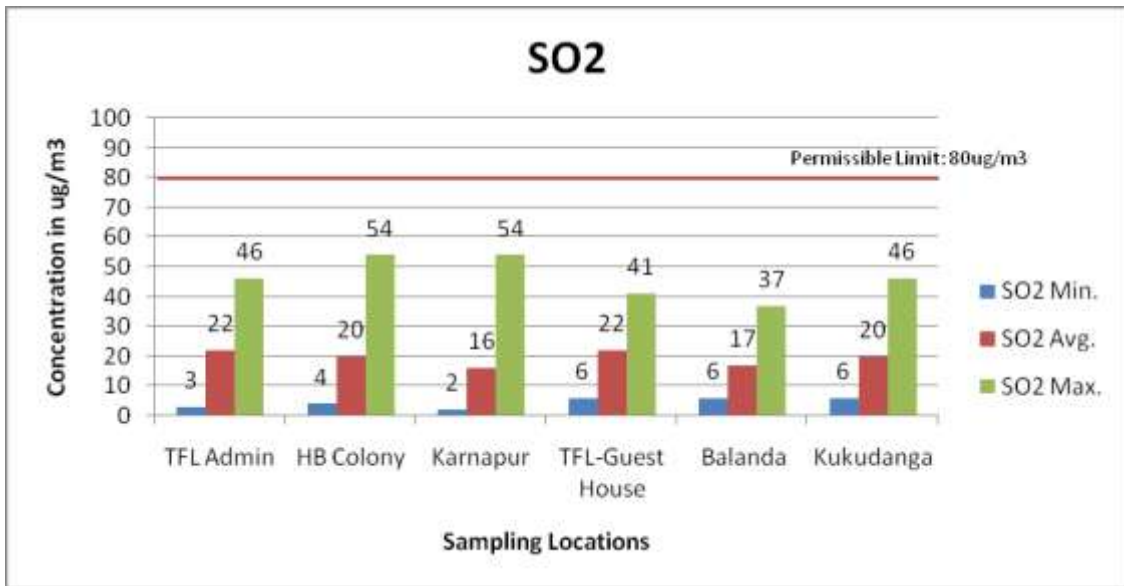


Figure 19 Concentration of SO₂ at Sampling sites (Winter Season - December, 2018)

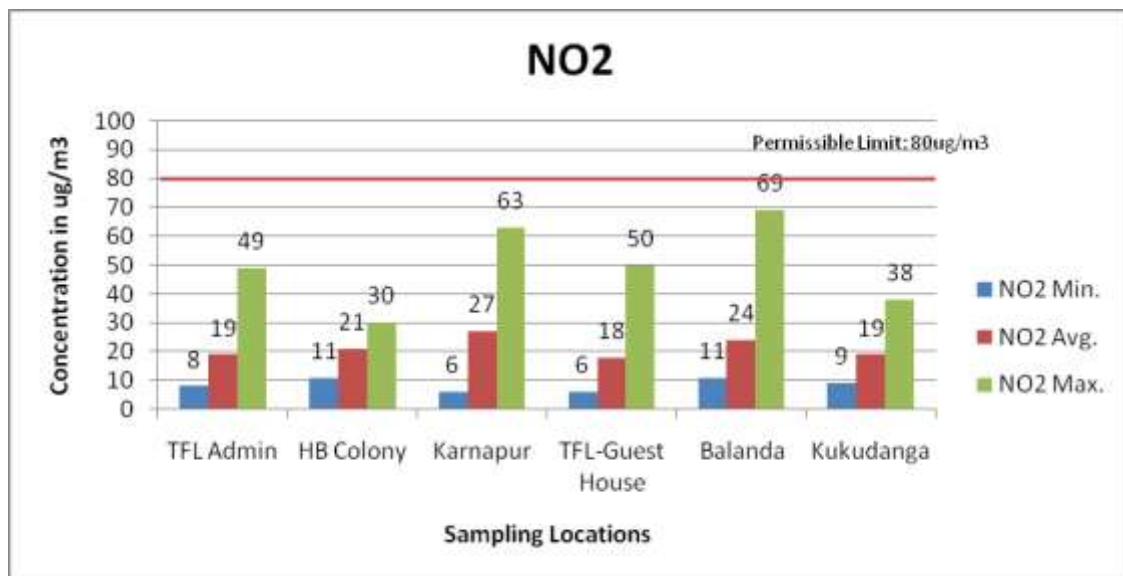


Figure 20 Concentration of NO₂ at Sampling sites (Winter Season - December, 2018)

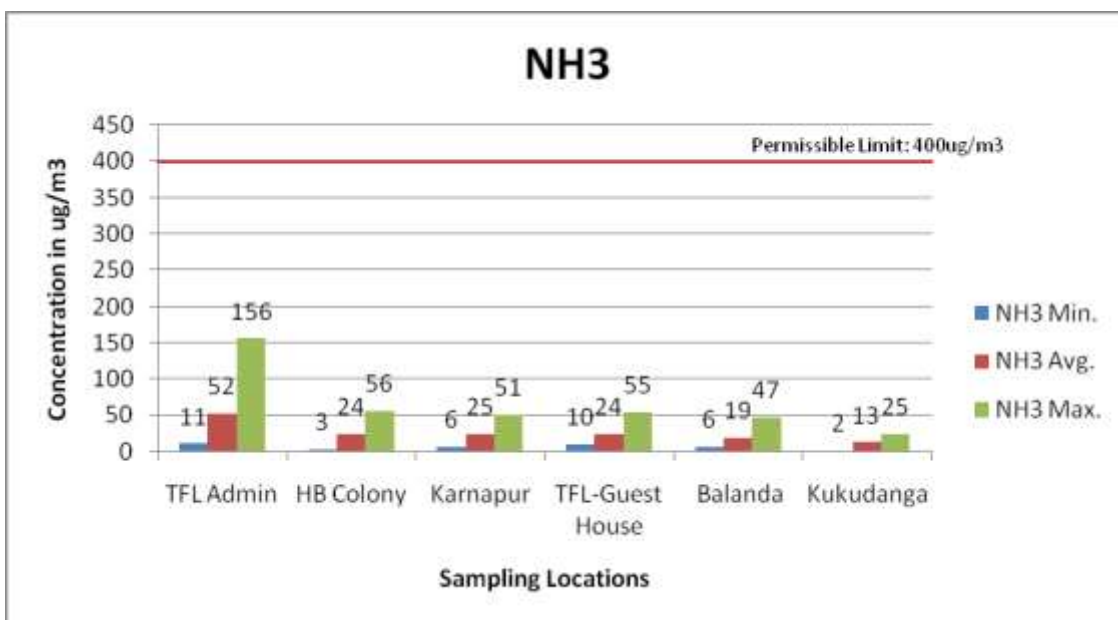


Figure 21 Concentration of NH₃ at Sampling sites (Winter Season - December, 2018)

Table: 14 Concentrations of VOCs and HC in the Ambient Air (Winter Season - December, 2018)

Sr. No.	Sampling Location	Benzene (µg/m ³)	Toluene (µg/m ³)	Xylene (µg/m ³)	HC ppm
1.	Administrative Building TFL	<0.1	<0.1	<0.1	ND
2.	Housing Board Colony, Bikrapur	<0.1	<0.1	<0.1	ND
3.	Village Karnapur	<0.1	<0.1	<0.1	ND
4.	TFL-Guest House	<0.1	<0.1	<0.1	ND
5.	Village Balanda	<0.1	<0.1	<0.1	ND
6.	Village Kukudanga	<0.1	<0.1	<0.1	ND
	Permissible limits	5 µg/m³			

January 2019

- ◆ The concentration of Sulphur dioxide (SO₂) varied from 11 to 20µg/m³. The concentration of Sulphur dioxide (SO₂) was observed minimum at Housing Board Colony and maximum at Karnapur. **(Figure 22 and Table 15).**
- ◆ The concentration of Nitrogen dioxide (NO₂) was observed in the range of 8 to 19µg/m³, the minimum concentration was found at TFL Guest House while maximum concentration was accounted at TFL Admin. **(Figure 23 and Table 15).**
- ◆ The concentration of NH₃ varied from 11 to 57µg/m³, minimum concentration of Ammonia (NH₃) found at Kukudanga and maximum was found at TFL Admin building sampling site **(Figure 24 and Table 15).**
- ◆ VOCs were undetectable in any of the sites; values of MHC and NMHC are given in the table **(Table 16)**

The sampling was carried out during the Post-Monsoon season (January 2019). Overall, all Air Quality Parameters studied in the study area were found to be well within the permissible limits.

**Table 15 Air Quality Status within the Study Area
(January 2019)**

Units: µg/m³

Average: 24 hrs.

Sr. No.	Sampling Location	SO ₂			NO ₂			NH ₃		
		Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
1	Administrative Building TFL	8	16	38	7	19	30	13	57	172
2	Housing Board Colony, Bikrampur	2	11	18	3	13	22	7	12	19
3	Village Karnapur	6	20	35	7	15	22	10	17	30
4	TFL-Guest House	7	16	22	3	8	12	10	15	22
5	Village Balanda	8	13	20	7	17	30	9	16	41
6	Village Kukudanga	7	17	25	4	13	22	4	11	18
Permissible limits		80			80			400		

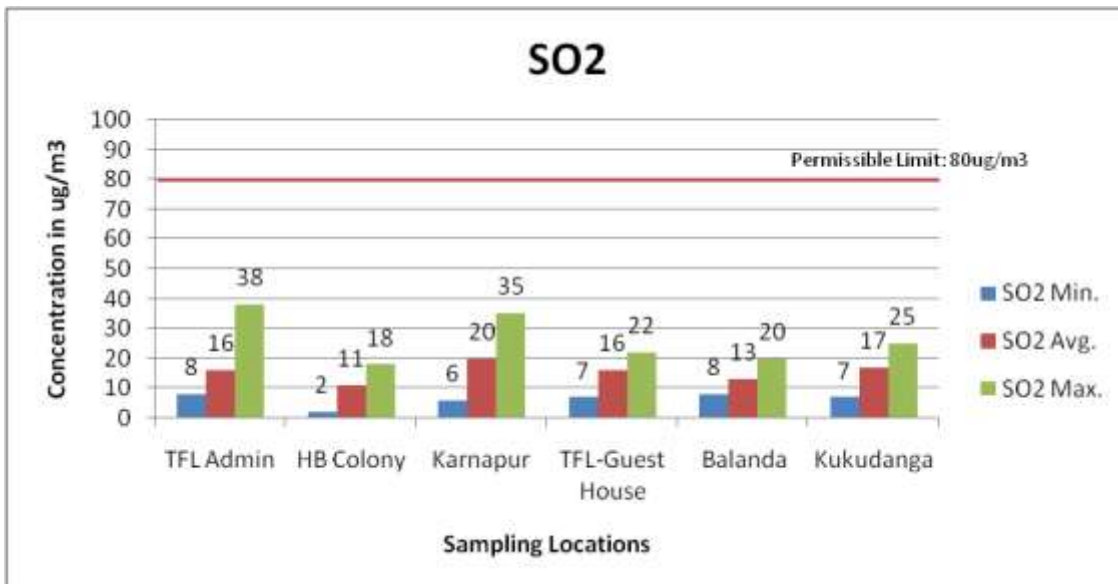


Figure 22 Concentration of SO₂ at Sampling sites (January 2019)

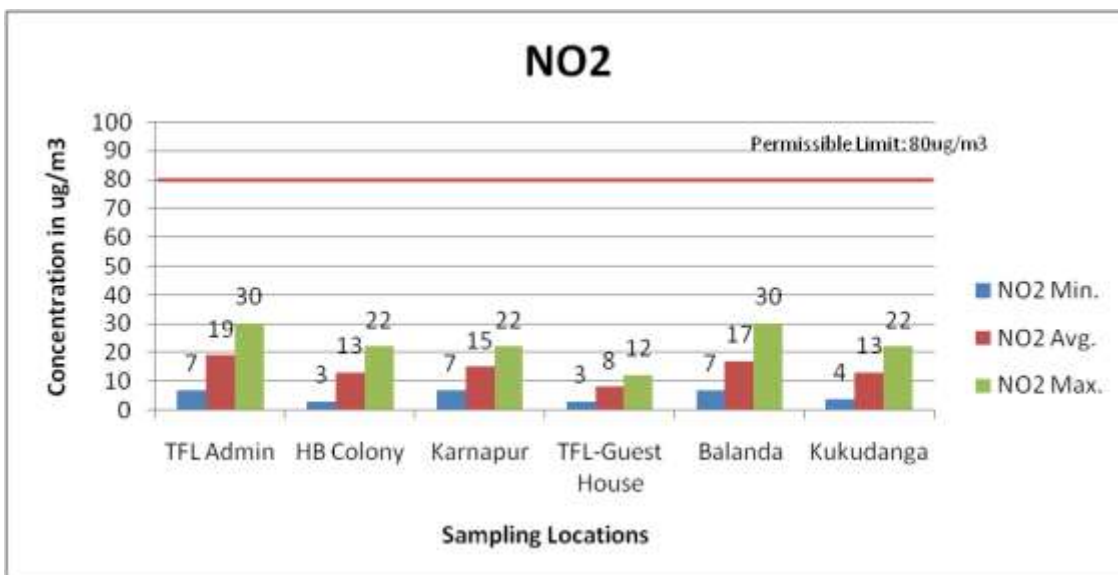


Figure 23 Concentration of NO₂ at Sampling sites (January 2019)

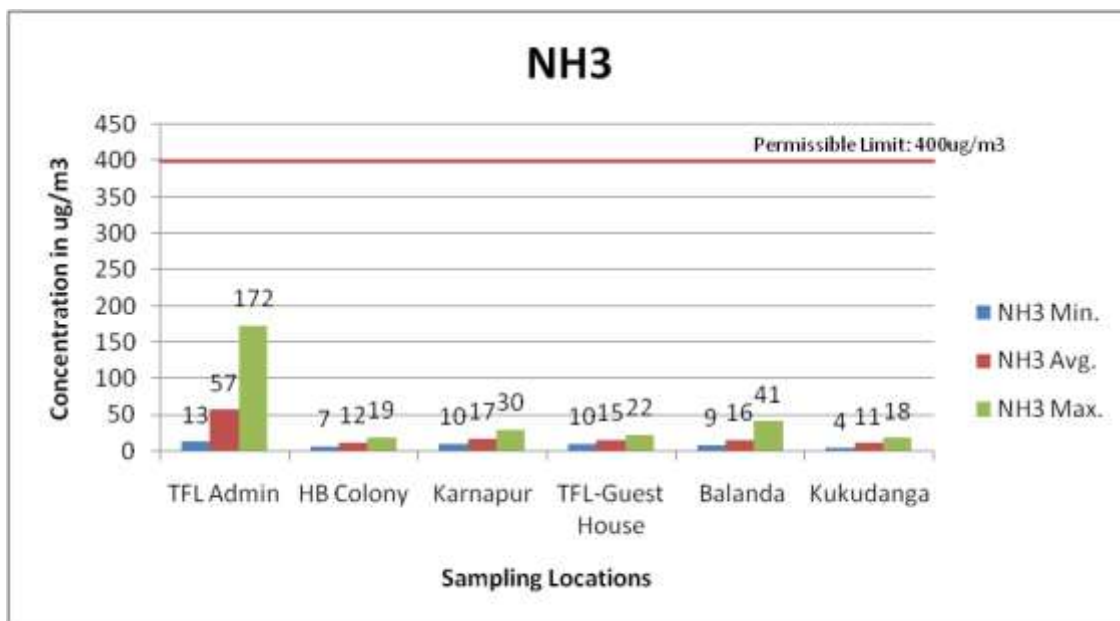


Figure 24 Concentration of NH₃ at Sampling sites (January 2019)

Table: 16 Concentrations of VOCs and HC in the Ambient Air (January 2019)

Sr. No.	Sampling Location	Benzene	Toluene	Xylene	MHC	NMHC
		(µg/m ³)	(µg/m ³)	(µg/m ³)	ppm	ppm
1.	Administrative Building TFL	<0.1	<0.1	<0.1	1.2	1.5
2.	Housing Board Colony, Bikrampur	<0.1	<0.1	<0.1	0.1	0.3
3.	Village Karnapur	<0.1	<0.1	<0.1	0.2	0.1
4.	TFL-Guest House	<0.1	<0.1	<0.1	0.3	0.4
5.	Village Balanda	<0.1	<0.1	<0.1	0.4	0.6
6.	Village Kukudanga	<0.1	<0.1	<0.1	0.2	0.1
Permissible limits		5 µg/m³				

February 2019

- ◆ The concentration of Sulphur dioxide (SO₂) varied from 46 to 71µg/m³. The concentration of Sulphur dioxide (SO₂) was observed minimum at Kukudanga and maximum at TFL Admin (**Figure 25 and Table 17**).
- ◆ The concentration of Nitrogen dioxide (NO₂) was observed in the range of 49 to 60µg/m³, the minimum concentration was found at Balanda while maximum concentration was accounted at TFL Admin (**Figure 26 and Table 17**).
- ◆ The concentration of NH₃ varied from 12 to 68µg/m³, minimum concentration of Ammonia (NH₃) found at TFL Guest house and maximum was found at TFL Admin building sampling site (**Figure 27 and Table 17**).
- ◆ VOCs were undetectable in any of the sites; values of MHC and NMHC are given in the table (**Table 18**)

The sampling was carried out during the Post-Monsoon season (February, 2019). Overall, all Air Quality Parameters studied in the study area were found to be well within the permissible limits.

**Table 17 : Air Quality Status within the Study Area
(Post-Monsoon Season – February 2019)**

Units: µg/m³

Average: 24 hrs.

Sr. No.	Sampling Location	SO ₂			NO ₂			NH ₃		
		Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
1	Administrative Building TFL	20	71	139	26	60	102	7	68	110
2	Housing Board Colony, Bikrampur	15	51	83	10	52	137	20	41	63
3	Village Karnapur	5	58	110	13	50	83	3	34	51
4	TFL-Guest House	2	57	122	12	50	119	2	12	37
5	Village Balanda	11	47	96	12	49	115	11	49	115
6	Village Kukudanga	11	46	98	17	51	114	6	28	92
Permissible limits		80			80			400		

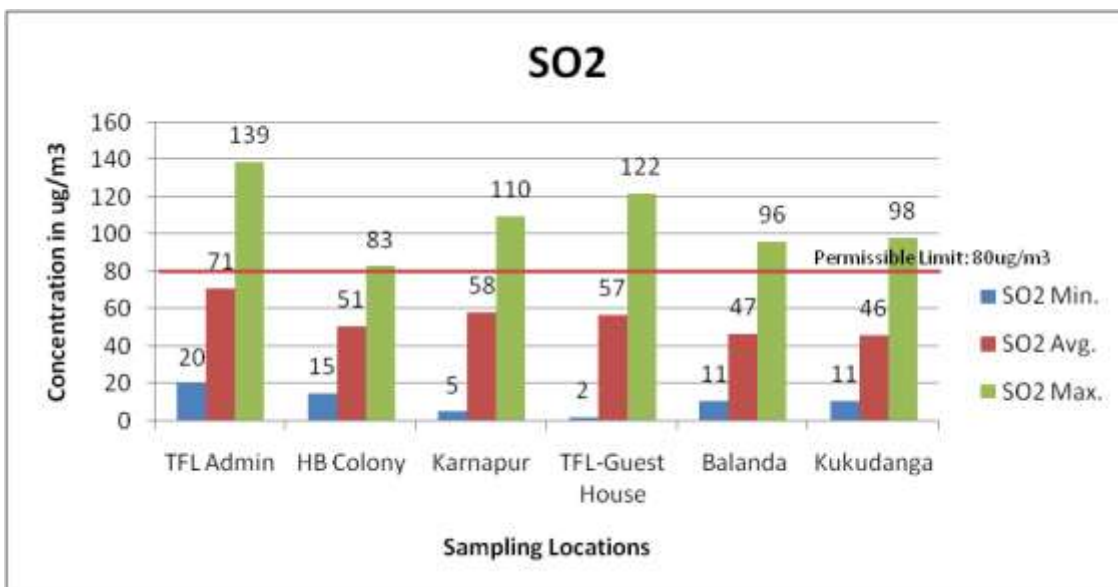


Figure 25 : Concentration of SO₂ at Sampling sites (Post-Monsoon Season – February 2019)

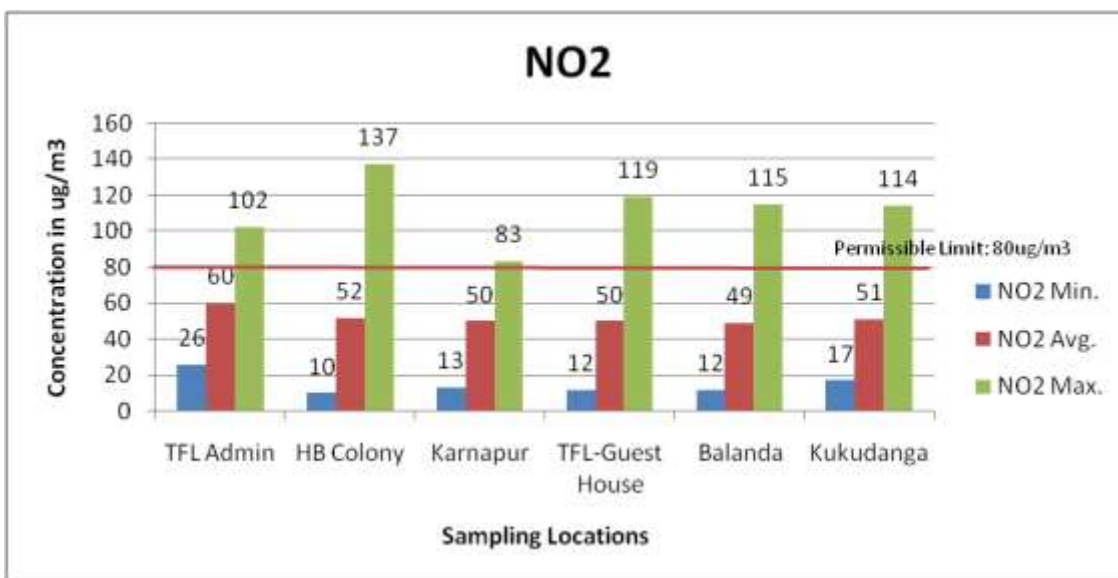
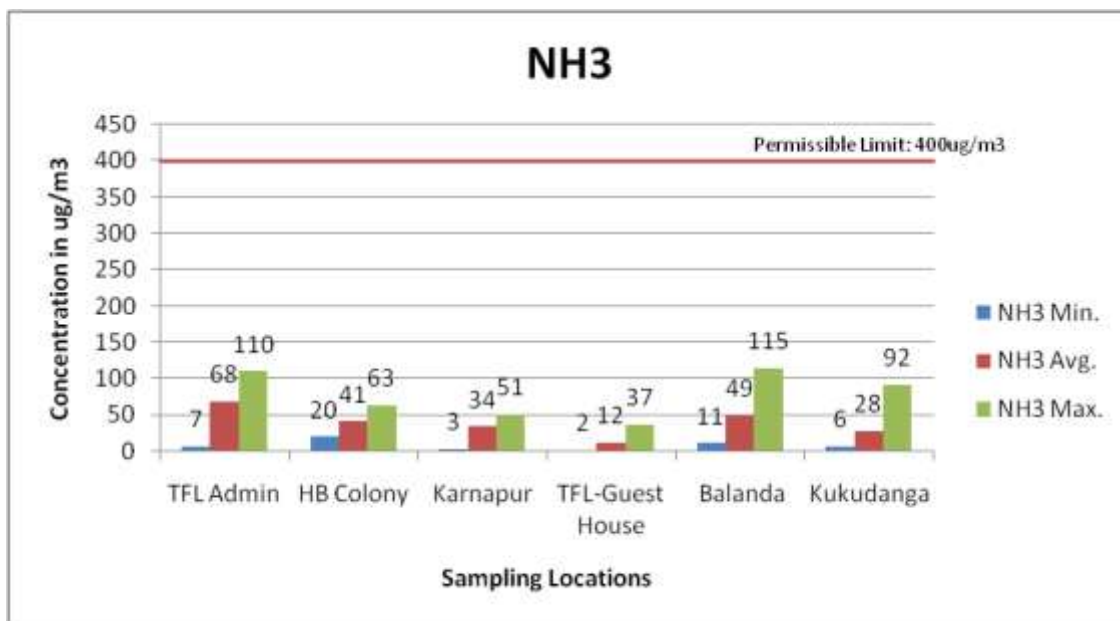


Figure 26 : Concentration of NO₂ at Sampling sites (Post-Monsoon Season – February 2019)



**Figure 27 : Concentration of NH₃ at Sampling sites
(Post-Monsoon Season – February 2019)**

**Table 18 : Concentrations of VOCs and HC in the Ambient Air
(Post-Monsoon Season – February 2019)**

Sr. No.	Sampling Location	Benzene	Toluene	Xylene	MHC	NMHC
		($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	ppm	ppm
1.	Administrative Building TFL	<0.1	<0.1	<0.1	1.3	1.7
2.	Housing Board Colony, Bikrampur	<0.1	<0.1	<0.1	0.3	0.2
3.	Village Karnapur	<0.1	<0.1	<0.1	0.2	0.1
4.	TFL-Guest House	<0.1	<0.1	<0.1	0.4	0.5
5.	Village Balanda	<0.1	<0.1	<0.1	0.4	0.5
6.	Village Kukudanga	<0.1	<0.1	<0.1	0.3	0.1
	Permissible limits	5 $\mu\text{g}/\text{m}^3$				

March 2019

- ◆ The concentration of Sulphur dioxide (SO₂) varied from 23 to 42µg/m³. The concentration of Sulphur dioxide (SO₂) was observed minimum at Karnapur and maximum at Balanda (**Figure 28 and Table 19**).
- ◆ The concentration of Nitrogen dioxide (NO₂) was observed in the range of 52 to 70µg/m³, the minimum concentration was found at Housing Board Colony, Kukudanga while maximum concentration was accounted at Balanda (**Figure 29 and Table 19**).
- ◆ The concentration of NH₃ varied from 27 to 62µg/m³, minimum concentration of Ammonia (NH₃) found at TFL Guest house and maximum was found at Kukudanga sampling site (**Figure 30 and Table 19**).
- ◆ VOCs were undetectable in any of the sites; values of MHC and NMHC are given in the table (**Table 20**)

The sampling was carried out during the Post-Monsoon season (March, 2019). Overall, all Air Quality Parameters studied in the study area were found to be well within the permissible limits.

Table 19: Air Quality Status within the Study Area (Post-Monsoon Season – March 2019)

Units: µg/m³

Average: 24 hrs.

Sr. No.	Sampling Location	SO ₂			NO ₂			NH ₃		
		Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
1	Administrative Building TFL	12	28	54	26	55	102	8	33	75
2	Housing Board Colony, Bikrampur	1	26	78	10	52	137	6	45	71
3	Village Karnapur	17	23	35	22	60	102	13	45	77
4	TFL-Guest House	2	29	47	20	61	192	9	27	51
5	Village Balanda	8	42	73	18	70	138	8	46	84
6	Village Kukudanga	8	26	46	11	52	119	26	62	143
Permissible limits		80			80			400		

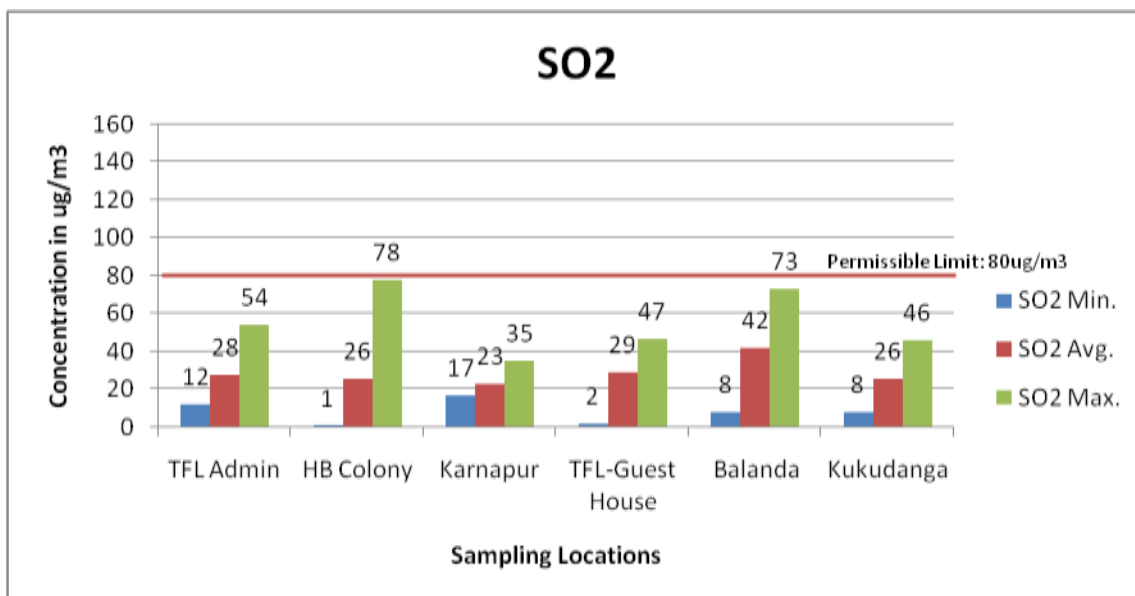


Figure 28: Concentration of SO₂ at Sampling sites (Post-Monsoon Season – March 2019)

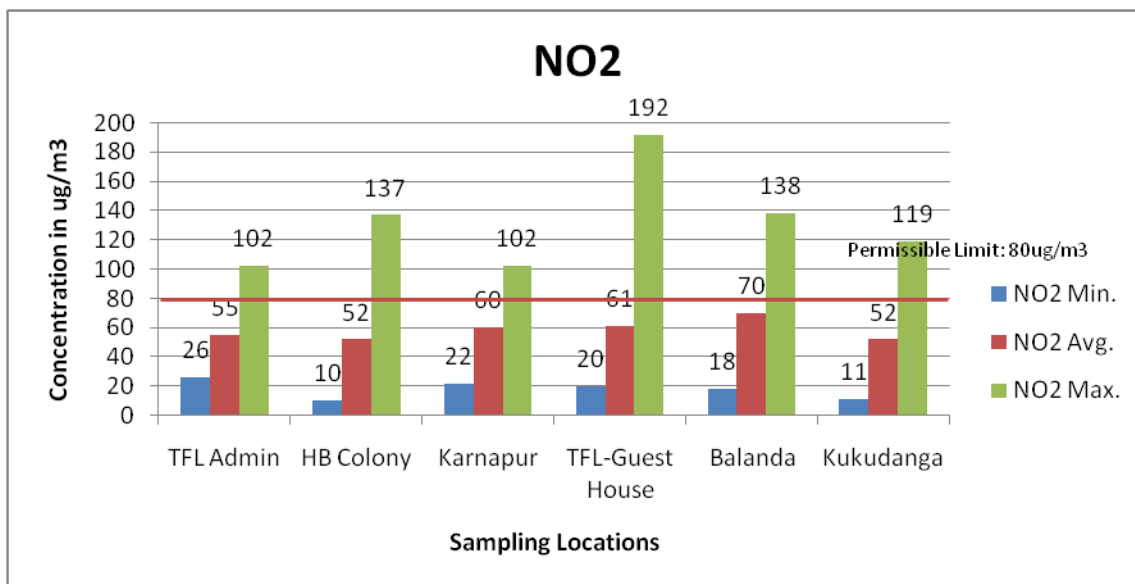


Figure 29: Concentration of NO₂ at Sampling sites (Post-Monsoon Season – March 2019)

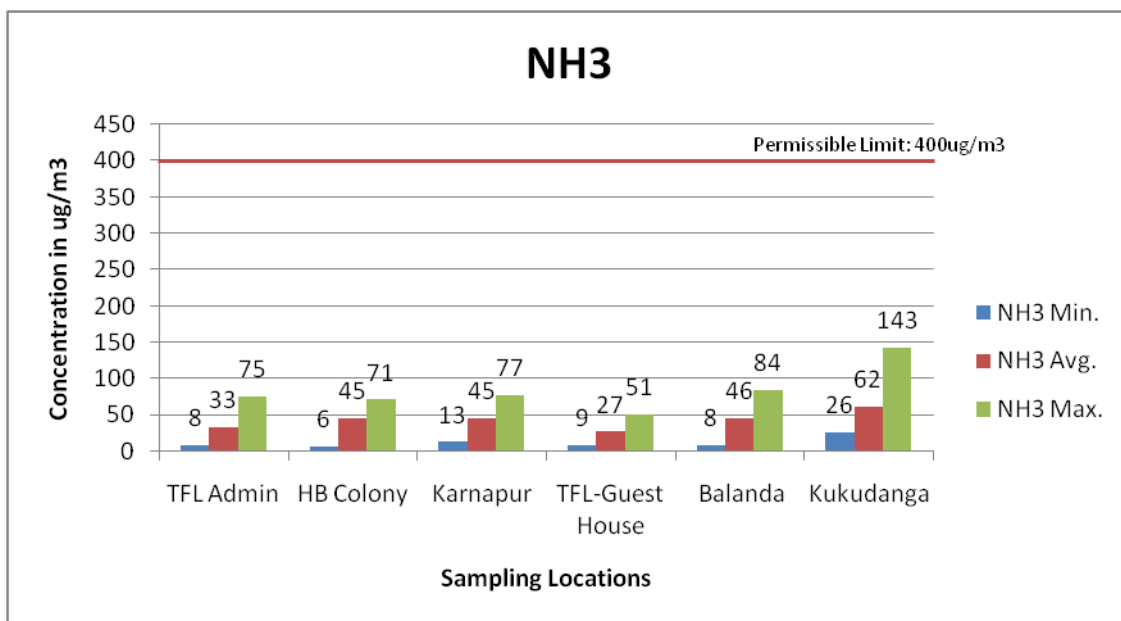


Figure 30: Concentration of NH₃ at Sampling sites (Post-Monsoon Season – March 2019)

Table 20: Concentrations of VOCs and HC in the Ambient Air (Post-Monsoon Season – March 2019)

Sr. No.	Sampling Location	Benzene	Toluene	Xylene	MHC	NMHC
		(µg/m ³)	(µg/m ³)	(µg/m ³)	ppm	ppm
1.	Administrative Building TFL	<0.1	<0.1	<0.1	1.0	1.2
2.	Housing Board Colony, Bikrampur	<0.1	<0.1	<0.1	0.1	0.3
3.	Village Karnapur	<0.1	<0.1	<0.1	0.1	0.3
4.	TFL-Guest House	<0.1	<0.1	<0.1	0.1	0.2
5.	Village Balanda	<0.1	<0.1	<0.1	0.2	0.2
6.	Village Kukudanga	<0.1	<0.1	<0.1	0.1	0.2
	Permissible limits	5µg/m ³				

Plate 1 Air Monitoring at Sampling Locations



A1: Technical Building TFL



A2: Housing Board Colony, Bikrampur



A3: Village Karnapur



A4: TFL-Guest House



A5: Village Balanda



A6: Village Kukudanga

ANNEXURE –III

The project proponent shall inform the public that the project has been accorded Advertisement of environmental clearance by the Ministry has been advertised in two local newspapers in which one is the vernacular language of the locality concerned.



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Bhubaneswar (English)
on 15.02.2018

ତାଳଚେର ଫର୍ଟିଲାଇଜର ଲିମିଟେଡ୍
 (କେନ୍ଦ୍ରୀୟ, ଆରସିଏପି, ବିଆଇଏଏଲ-ଓ ଏପିଆଇଏଏଲର ମିଳିତ ଉଦ୍ୟୋଗ)

ନୋଟିସ

କୋଇଲା ଖ୍ୟାସିପିକେସନ ପ୍ରକ୍ରିୟା ମାଧ୍ୟମରେ ବାର୍ଷିକ ୧.୨୭ ମିଲିୟନ ମେଟ୍ରିକ ଟନ୍ ନିମ୍ନ ଆକ୍ସିଜନ ସୂଚକ ସୁରିଆ ସାର ଉତ୍ପାଦନ ନିମନ୍ତେ ତାଳଚେର ଫର୍ଟିଲାଇଜର ଲିମିଟେଡ୍ ଏକ ଯୋଜନା ପ୍ରସ୍ତୁତ କରୁଛି । ଏଥି ନିମନ୍ତେ କେହି ପରିଦେଶ, ଜଙ୍ଗଲ ଓ ପାଣି ପାଗ ପରିବର୍ତ୍ତନ ମହାଲୟ ତରଫରୁ ଏହି ପ୍ରକଳ୍ପ ପାଇଁ ପରିଦେଶ ମାଲୁମା (File No. -J-11011 / 231 / 2013 - 1A -II(I) / dt.09.02.2018) ପ୍ରଦାନ କରାଯାଇଛି । ପରିଦେଶ ମାଲୁମା ଚିଠିର ନକଲ ରାଜ୍ୟ ପ୍ରଦୁଷଣ ନିୟନ୍ତ୍ରଣ ବୋର୍ଡ୍ / କମିଟି ନିକଟରେ ଉପଲବ୍ଧ । ଏହା ଛଡ଼ା ମହାଲୟର ସ୍ୱେଚ୍ଛ ସାକ୍ଷର <http://moef.nic.in> ରେ ମଧ୍ୟ ଏହାକୁ ଦେଖାଯାଇ ପାରିବ ।
 Corporate Identification No. : U24120OR2015PLC019575

Feb. 16 - 2018
Angul Edn.

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