

**CENTRAL POLLUTION CONTROL BOARD**

**NATIONAL AIR QUALITY MONITORING PROGRAMME (NAMP)**

**Inspection Report of Air Quality Monitoring Station in Belgaum, Karnataka**

<b>PART A: GENERAL</b>	
1. Name of the State	Karnataka
2. Name of the city/town	Belgaum
3. Name and address of State Pollution Control Board/Pollution Control Committee / Other Agency	Karnataka State Pollution Control Board, Regional Office, Belgaum, Autonagar industrial. Area #01, Kanabargi, Belgaum.
e-mail address	belgaum1@kspcb.gov.in
Website address	<a href="http://www.kspcb.gov.in">www.kspcb.gov.in</a>
Telephone no;	0831-2459121
Fax no.	0831-2459121
4. Name and designation of Regional Officer/ Contact person	Shri. Jagadeesh. I. H. Regional Officer
5. Name and designation of Station Incharge Contact telephone no., e-mail and fax	Smt. Sugandha. B. Kuri, Deputy Environmental Officer NAMP Incharge 0831-2459121

<b>PART B: EVALUATION OF MONITORING STATION:-</b>	
1 Name and detail address of the monitoring station	Karnataka State Pollution Control Board, Office building, Autonagar, #01, Kanabargi, Belgaum.
2. Type of Area Residential, rural and other areas/ Industrial/ Sensitive	Industrial area
In case of other areas, please specify whether traffic intersection, commercial area etc.	NA
In case of sensitive area, please specify details for declaring the area sensitive	NA
3. Whether any obstacles are present near the site/location such trees, buildings etc. if yes	No
i) distance from site	-
ii) Type of obstacle	-
If no, whether the site is open from all Sides/or three sides (indicate yes/no)	Site is open from all side
4. Type and sources of pollution :	Vehicular emission and Industrial emission
<b>a. Industrial Sources</b>	
(i) Point source such as stack of any Industry mentions the details and distance of point source from the site.	1 Km, M/s. Hindalco Industries Ltd.,
(ii) Aerial distance of any industrial estate from the existing site	Station is located at Industrial area.
(iii) If there is industrial area within the radius of 1km the details there off:	-
- Type of industries	Auto Parts and almost Small Scale Industries
- Product Manufactured	Auto Parts
- Raw Materials/ fuel used	No
- Expected quantity of emissions	No

- Whether DG sets used (give details)	No
<b>b. Vehicular Sources:</b>	
(a) Sources such as vehicular traffic or Traffic interactions etc. Mention the details and distance of source from the site.	(i) Vehicular traffic and traffic intersection. (ii) About 15 m distance of source from the site.
(b) Source of natural dust from Road, resuspension of dust/or other activity mention the details and distance from existing site	(i) Natural dust, Cement yard hotels and traffic intersection. (ii) Distance about 15 m
(c) Whether any kind of open burning takes place near the site (indicate yes or no and give details)	No
(d) Any other source such as engine gensets or information regarding sources of pollution	No
5. Description of the nearby locality including: existing site	Industrial and vehicular emission area.
(a) If there is commercial area within the radius of 1 km, the details may be furnished;	No
➤ Type of shops	
➤ Whether they use and kind of fuel & their quality	
➤ Whether they use any generator sets etc.	
(b) If there is any sensitive area due to following reasons (indicate yes or no and specify reason)	Yes
➤ 10 Kms all around the periphery of health resorts that are notified	In 10-15 Kms radius almost Belgaum city covers
➤ 10 Kms all around the periphery of biosphere reserves, sanctuaries and national parks, that are notified	No
➤ 5 Kms all around the periphery of an archeological monument declared to be of national importance or otherwise that are notified	No
➤ Areas which are delicate or sensitive to air pollution in terms of important agricultural / horticultural crops grown in that area and accordingly notified	No

➤ 5 Kms around the periphery of centers of tourism and/or pilgrim due to their religious, historical, scenic or other attractions, that are notified	No
6. Height of instrument above ground level (in m)	About 15 mts above ground level
7. Position of Monitoring Instrument/Equipment at the present site (kindly indicate whether the instrument is on building terrace/ on any kind of substrate /On any House Balcony /On any Confined place etc.)	Building terrace (2 <sup>nd</sup> Floor)
8. Whether any obstacle/or trees present near the present site that are above the height of Sampling devices (such as HVS/RDS etc.) Kindly indicate Yes/No, if yes mention the details.	No
9. Whether the distance of the instrument to any air flow obstacle i.e. buildings, is more than two times the height of the obstacle above the Sampler. (kindly indicate yes or no)	No
10. Whether the sampling equipment is provided with proper safety and security against loss or tampering (kindly indicate Yes or No, if yes give details)	Yes (Security Guard and Lock)
11. Whether the sampler is 20 m away from trees (kindly indicate yes or no)	Yes
12. Whether there is unrestricted airflow in three of four quadrants (kindly indicate yes or no)	No
13. Whether there are any nearby furnace or incinerator fumes. (kindly indicate yes or no)	No
14. Whether the station/location is away at-least 25 meter from domestic chimneys particularly if the chimneys are lower than the sampling point/stations (Kindly indicate yes or no).	Yes
15. Whether the station is away from absorbing surface. (Kindly indicate Yes or No)	Yes
16. Whether the present site is the representative of the area selected Yes/No, if no provide details	Yes

17. Whether the station is established in the area where considerable rebuilding or land use. Changes are foreseen in the near future. Yes/No., If yes provide details.	No
18. Whether the present site is fulfilling one or more of the following physical requirements (Kindly indicate yes or no)	
(i) Available for a long period;	Yes
(ii) Accessible any time through out the year Including rainy season	Yes
(iii) Electrical power of sufficient rating and their full availability.	Yes (some time power failure)
(iv) Vandal Proof.	Yes
(v) Protected from extreme of temperature especially in summer season	No
19. Whether the topographical and Micro Meteorological data of area should be taken into consideration for determining the distance of the sampler from the stack:  (kindly indicate NA / Yes / No, if yes provide details.	Not Applicable
20. Whether ten stack heights is being used as a guideline distance in case of elevated sources on a flat terrain. (kindly indicate NA / Yes / No) , If yes please elaborate	Not Applicable
21. Whether the station is fulfilling the meteorological and topographical considerations?	
a) Station very close to topographic features- (kindly indicate Mountains / valleys / Rivers / Terrain / lakes / and oceans/or none of these)	No
b) Whether the possibility of Katabatic (upslope) and anabatic (down slope) winds affecting the station due to Mountainous/ Rolling/just slightly terrain etc.? (Kindly indicate yes or no)	No
c) If yes sketch out the station with Mountain/terrain etc. including distance of station with these topographical features?	

<p>22. Whether the winds causing day time heating and night time cooling depending upon terrain and the time of onset and intensity of these winds are existing at the station? If yes, please elaborate the statement made above to justify the possibility of local winds into a preferred direction flow, which may cause mountain gap wind? If not the situation above then state not applicable (NA): Statement by the observer, if yes:-</p>	<p>Not Applicable</p>
<p>23. Whether the land-sea breeze circulation exists in the present station which dominates the local wind patterns and possibility of the same polluted air re-circulates over an area more than once either from the sea breeze circulation cell or from any wind changes occurring due to a combination of the Meteorological features? Not applicable/Yes/No., if yes please elaborate?</p>	<p>Not Applicable</p>
<p>24. Whether the station having nearby Mountainous/ or hilly terrain which can cause mesoscale precipitation patterns and may affect local pollution concentration through washout? If such situation exists, State the predictable patterns?</p>	<p>No</p>
<p>25. Whether the station in URBAN/sub urban/or Rural environs. In addition to this, whether the station is purely in residential/Industrial/ commercial and sensitive area? Please elaborate below:-</p>	<p>Industrial Area</p>

<b>PART C: FIELD INSTRUMENTS AND FACILITIES EVALUATION:</b>					
1. Type of available instrument, at site whether HVS/RDS etc. and their number ( including stand by)	HVS	-	nos (working)		
	HVS	-	nos (standby)		
	RDS	<b>02</b>	nos (working)		
	RDS	-	nos (standby)		
2. Type of available instrument, at laboratory whether HVS/ RDS etc. and their number (including stand by)	HVS	-	nos (standby)		
	RDS	<b>01</b>	nos (standby)		
3. Defective equipment	HVS	-	nos		
	RDS	-	nos		
<b>4. High Volume Sampler : Not available</b>					
<b>Make</b>	<b>Model</b>	<b>Year of Purchase</b>	<b>Performance (Satisfactory/ unsatisfactory)</b>	<b>Numbers available</b>	
<b>5. Respirable Dust Sampler :</b>					
<b>Make</b>	<b>Model</b>	<b>Year of Purchase</b>	<b>Performance (Satisfactory/ unsatisfactory)</b>	<b>Numbers available</b>	
<b>Envirotech</b>	<b>APM 460</b>	<b>2002</b>	<b>Satisfactory</b>	<b>03</b>	
6. Calibration status of each RDS/HVS/ and other equip./Inst. used:			Calibrated on 2-9-2011 two RDS Samplers and one Balance from Bhagawathi Ana Labs Ltd, Hyderabad.		
(a) Calibration of Orifice :		<b>Calibration done by supplier when supplied</b>			
<b>RDS/HVS (Mention make and model)</b>	<b>Agency that carried out calibration</b>	<b>Date of Calibration (DD/MM/YY)</b>	<b>Method of Calibration</b>	<b>Frequency of Calibration</b>	<b>Whether calibration equipment certified against primary standard (Mention primary standard)</b>
For calibration attach copy of graph, certificate and details.					

➤ Whether calibration done when Equipment is transported to a new location and in different climatic condition (Kindly indicate Yes or No)	No
➤ Calibration done when equipment is operated after interruption of several months: (Kindly indicate Yes or No)	No
➤ Calibration done when equipment is newly installed: (Whether factory calibrated) (Kindly indicate Yes or No)	No

**(b) Calibration of Time Totalizer : Calibration done by supplier when supplied**

RDS/HVS (Mention make and model)	Agency that carried out calibration	Date of Calibration (DD/MM/YY)	Method of Calibration	Frequency of Calibration	Whether calibration equipment certified against primary standard (Mention primary standard)
----------------------------------	-------------------------------------	--------------------------------	-----------------------	--------------------------	---

For calibration attach copy of graph, certificate and details.

**a. Calibration of Rotameter: Calibration done when instrument was supplied**

Rotameter	Agency that carried out calibration	Date of Calibration (DD/MM/YY)	Method of Calibration	Frequency of Calibration	Whether calibration equipment certified against primary standard (Mention primary standard)
-----------	-------------------------------------	--------------------------------	-----------------------	--------------------------	---

For calibration attach copy of graph, certificate and details.

**(d) Meteorological Instrument: Meteorological Instrument Not available.**

7. Trouble shooting details: Regular troubleshooting encountered such as: (Kindly indicate Yes or No)

➤ Neon lamp fails to glow	No
➤ Vacuum pump fails	No
➤ Blower speed is erratic indicated by varying flow rate.	No
➤ Odd sound of the blower	No
➤ Frequent fuse blow out	No
➤ Frequent brush Wear out	No
➤ Times of timer and timer totalizer do not tally	No



➤ Carbon brush is not going freely inside the brush holder	No
➤ Flow meter does not show flow when connected to inlet of impinger having visible Air bubble	No
➤ Whether flow is 1232 lpm	1.0 LPM
➤ Whether flow varies drastically	No
In case above mentioned problems are encountered then also kindly indicate the remedies taken to prevent above mentioned problems.	
Whether sampling is carried out for 8 –hours for SPM and RSPM and 4-hours for SO <sub>2</sub> and NO <sub>2</sub> . If No then kindly mention reasons	Yes
8 Whether reagent storage in field (Proper or improper)	Properly stored in ice-box.
9. In case reagent storage in field is improper then mention details	No
10. Whether on-site analysis is being done or samples were transported to the Central laboratory?	Samples were transport immediately to Regional Laboratory since the laboratory and station are in same building.
11. In case on site analysis is done mention facilities present on site	
12. In case samples transported to laboratory then mention following details.	No
(a)Distance of site to laboratory	Regional Laboratory and station are in same building.
(b) Whether ice box available (kindly indicate yes or no)	No
(c) Whether vehicle available to transport samples (kindly indicate yes or no)	No
(d) Whether samples are kept at site in ice box after sampling	No
<b>13. Filter paper</b>	
(a) Whether filter paper used is of good quality (having better mechanical stability, chemical stability, particle sampling efficiency, flow resistance, cost and availability etc.) (Kindly indicate yes or no)	Yes
(b) Make of filter paper	Whatman (GF/A)
(c) Whether Filter is mounted properly on the support screen with the rough side of the filter facing upwards. (Kindly indicate yes or no)	Yes

(d) Whether the wing nuts are tightened properly to avoid any leakage. (Kindly indicate yes or no)	Yes
Whether the wing nuts are tightened properly to avoid any leakage	Yes
(e) Whether filter paper is preweighed after conditioning in desiccator for 24 hrs (Kindly indicate yes or no) *Filter paper should not be oven dried as volatile matter will be lost	Yes
(f) Whether distilled water is used in manometer tube and water is changed every fortnightly and zero level is checked every time. (Kindly indicate yes or no)	Yes
(g) Whether Ice is kept in the sampling tray during sampling (Kindly indicate yes or no)	Yes

## PART D: LABORATORY EQUIPMENTS EVALUATION

### 1. Balance

Type (Single pan/double pan/digital/others)	Accuracy & Precision	Readability (gm/mg)	Make and model, Year of Purchase	Performance (Satisfactory/unsatisfactory)	Last Calibration done	Numbers Available
Single pan digital	0.001 gm	0.001 gm	Sartorius CP 423S 2002	Satisfactory	2015 and known weight calibration	01

### 2. Spectrophotometer

Make and model	Year of Purchase	Display (Analog/digital/others)	Performance (Satisfactory/unsatisfactory)	Last Calibration done	Numbers Available
Visible Spectrophotometer	2014	Digital	Satisfactory	2015	01

### 3. Hot Air Oven

Make and model	Year of Purchase	Temperature Range	Performance (Satisfactory/unsatisfactory)	Last Temp. Calibration done	Numbers Available
Research Instruments	2000	0-300°C	Satisfactory	2015	01

#### 4. Refrigerator

Make and model, Year of Purchase	Capacity	Cooling Status (inner chamber/freezer) (Satisfactory/unsatisfactory)	Performance (Satisfactory/unsatisfactory)	Numbers Available
LG	310 litres	Satisfactory	Satisfactory	01

#### 5. Desiccator

Make and model, Year of Purchase	Type (Glass/propylene/others)	Desiccant Used	Performance (Satisfactory/unsatisfactory)	Frequency of changing the desiccant	Numbers Available
Borosil	Glass	Fused CaCl <sub>2</sub>	Satisfactory	Once in a month	01

6. Availability of Distilled water briefly: (kindly indicate yes or no)	Yes
(a) Purchased from outside (kindly indicate yes or no)	No
➤ Electrical conductivity	(40 umhos/cm.....)
(b) Produced through own distillation assembly (Kindly indicate yes or no)	Yes
➤ Electrical conductivity	(less than 40 umhos/cm.)
➤ Produced through (Kindly indicate Single/Double distilled)	Metal Distilled
<b>7. Analytical Methods used :</b>	
<b>a) Sulphur dioxide (SO<sub>2</sub>)</b>	
Whether Modified West and Gaeke Method Is used (Kindly indicate yes or no) Others (please specify)	Yes
<b>b) Nitrogen dioxide (NO<sub>2</sub>)</b>	
Whether Sodium Arsenite Method Is used (Kindly indicate yes or no) Others (please specify)	Yes
<b>c) Respirable Suspended Particulate Matter (RSPM)</b>	
Whether Cyclonic Flow Technique Is used (Kindly indicate yes or no) Others (please specify)	Yes
<b>d) Suspended Particulate Matter (SPM)</b>	
Whether High Volume Sampling Method (Gravimetric) Is used (Kindly indicate yes or no) Others (please specify)	No
8. Kindly indicate yes or NO or as the case may be for following items:	
➤ Availability of all chemical	Yes

➤ Availability of Absorbing Media	Yes
➤ Please state date of preparation (AM)	04-11-2015
➤ Please state Assay performed if any for required chemicals	No
➤ Whether prepared absorbing Media Properly stored or not	Yes Properly Stored
➤ Whether stock solutions prepared? State their date of preparation	Regularly prepared as when required
➤ Whether working solutions prepared, state their date of preparation	Yes, Regularly
➤ Whether silica gel bottle is kept in weighing chamber to avoid error while weighing.	No
➤ Whether properly clean glassware are used.	Yes
➤ Whether one set of glassware is calibrated as per requirement.	No
➤ Whether all critical chemicals must are of analytical Grade	Yes
➤ Whether double distilled or nanopure water is used for preparation of reagents and analysis	No
➤ Whether glassware and storage bottles are rinsed with distilled water and chemicals respectively.	Yes
➤ Whether reagent bottles are properly marked by name, strength and date of preparation, expiry date and initial of chemist who has prepared the reagent.	Yes
➤ Whether desiccant in the desiccator are changed as per requirements	Yes
➤ Whether the chemicals whose strength changes with time are standardized before use.	No Freshly prepared
➤ Whether calibration graphs are made every time a new stock solution is prepared.	No
➤ Whether reagent bottles are made air tight before storage	Yes
➤ Whether key reagents are prepared fresh on the date of analysis.	Yes
➤ Whether storage of chemicals are done as per recommendations like away from sunlight etc.	Yes
➤ Whether the analytical balance has sensitivity of 0.1 mg or better.	Yes
➤ Whether sample are preserved during sampling	No
➤ Whether sample are preserved during transport	No
➤ Whether sample are preserved after receiving in laboratory.	No, Analysis will be Carried out Immediately after receiving the samples
➤ Whether immediate analysis after transportation is being done.	Yes
If all above points not followed, please give your comment	Monitoring and analysis

briefly	method is being done as per Central Pollution Control Board guidelines.
9. IF RSPM is not being measured, please state briefly reasons	RSPM is being monitored
10. Data generation, calculation and reporting as per Forms (A) to (E)	Yes
(a) Whether data calculations is correct (Kindly indicate yes or no)	Yes
Whether 104 observations is being generated in a year if not state reasons briefly and average observations in a week	Yes
b) Whether data reporting is correct (if improper, State reasons regarding delay etc)	Yes
➤ Whether the values are reported above the detection limit as per the method.	Yes
➤ Whether SPM/RSPM values which are very high are reported in round figures (without decimal place).	Yes
➤ Whether any outlier values found are checked for contamination of sample, sudden change of environmental conditions in the vicinity of the monitoring site etc. and discarded if necessary.	Yes
➤ Whether Bills as per Form E are sent alongwith data	Yes
c) Attached recent data sheets: (Photocopy)	Yes
<b>d) Computer and Other Facilities</b>	
➤ Whether calculations are performed using computer	No, By calculator
➤ Whether computer is available in the laboratory mention make and model	Model - HP, Make - 2013
➤ Whether internet and e-mail facility exist in the office	Yes
➤ Whether software of CPCB for data entry exist and data sent via e-mail mention e-mail add and website address	No
➤ Whether data entry operator is there for entering into computer	No
➤ Is data sent to Head Office and then to CPCB or directly to CPCB	To Central Laboratory and then to CPCB
➤ Whether data is entered using online entry in the software Environmental Data Bank of CPCB. If not then kindly mention reasons	Yes Monthly on EDB of CPCB New Delhi
➤ <b>In case above mentioned facilities of computer, internet, e-mail etc. are not available then kindly mention details</b>	-

## E. MANPOWER AND ADMINISTRATIVE EVALUATION

### (1) Sampling

Name and designation	Qualifications	Salary	Experience in sampling	Experience in Analysis	Whether Competent (indicate yes or no)
Shri Deepak Chandure	10 <sup>th</sup>	Not provided	5 years	No	Yes

### (2) Analysis, Data Reporting, Data Checking and Validation

Name and designation	Qualifications	Salary	Experience in sampling	Experience in Analysis	Whether Competent (indicate yes or no)
Sri. B. G. Jekinakatti, Assistant Scientific Officer	10 <sup>th</sup>	Not provided	15 Years	13 years	Yes

➤ During above assessment do you feel that personnel require further training on ambient air quality monitoring; please name the person with details and which areas of monitoring the training is required?	Above officials are required following training : (i) RDS calibration part. (ii) Chemical preparation, sample transportation, monitoring, analysis and compilation.
3. Do you feel any other problem with persons involved in Ambient Air Quality Monitoring work, please comment briefly:	Manpower shortage (2 SA are required and one Data Entry Operator)
4. Other administrative problem at Ambient Air Quality Monitoring Stations? Please state briefly para wise as mentioned below	
(i) Whether funds are received on time? Whether there is shortage of Funds, Whether SPCB is contributing its share as applicable. Mention problems if any.	No problem
(ii) Whether purchasing of chemicals etc is done centrally or by Regional Office Mention problems if any	No problem
(iii) In case purchasing is done by head office, then whether filter paper, chemical are received on time? Mention problems if any	No problem
5) Whether any defective instrument/equipment needs to be replaced?	Yes, Two RDS need to be replaced.
6) Whether you feel it is necessary to provide any more number of equipments? No, out of three RDS, three are used for NAMP purpose	Yes, three more RDS required as the equipments are too old.

7) Whether there is delay in procurement of spare parts etc. repairing of instrument?	No
8) Any other problems, remarks/ comments?	Required two more SA and one Data Entry Operator for smooth functioning of NAMP station.

**Observations:**

- The NAMP station at Belagavi was inspected on December 4, 2015. The RDS was running on the day of inspection.
- The NAMP station is located in industrial area. No major industries are operating in the area. No major traffic conjunction was observed at the time of inspection.
- The RDS is placed on the top of the KSPCB office (2<sup>nd</sup> floor) which is about 15mts above from Ground Level.
- The instrument was kept near to entrance wall which may be obstruction for free air flow.
- The RDS instrument is not calibrated since 2011.
- No ice or water was put in the impinger box
- The instruments such as Rotameter, Orifice and time totalizer are not calibrated since from the time of procurement.
- The staffs operating the instruments are not well trained on procedure, calibration etc.
- Poor Maintenance of the instrument.

**Recommendations**

- The instrument may be shifted away from the entrance wall to suitable point for free air flow.
- The calibration of the RDS instruments shall be done immediately as per norms.
- The ice cubes or water shall be filled in impinger box as per norms whenever the monitoring is carried out.
- The Rotameter, orifice and time totalizer needs to carry out as per norms.
- Training shall be provided to the staffs operates the instruments.
- Regular cleaning of instrument shall be carried so as to keep in good condition.

Anjana Kumari V  
Scientist C

**Photographs taken during inspection**



**RDS is placed near to the entrance wall**



**Photographs showing the surroundings of NAMP station is clear from obstacles**