



HARYANA STATE POLLUTION CONTROL BOARD
C-11, SECTOR-6, PANCHKULA
Ph-2577870-73 E-mail: hspcb scientist@gmail.com

No. HSPCB/Aircell/2019/

Dated:

INVITATION FOR EXPRESSION OF INTEREST (EOI) FOR SOURCE APPORTIONMENT AND EMISSION INVENTORY STUDY ON THE LEVELS AND SOURCES OF POLLUTION IN HARYANA

1. The Haryana State Pollution Control Board (HSPCB) intends to engage educational and research institutions of National and International repute, to carry out a Source Apportionment and emission Inventory Study on the level and Source of Pollution and prepare strategy for cost effective measures for abatement of air pollution in the areas of Gurugram, Faridabad, Sonapat and Panipat. The study will be for a period of one and half years.
2. The Board proposes to conduct the above study through reputed educational and research institutions and undertakings of the State / Central Government. Expression of Interest (Eoi) for carrying out the proposed study for the sites / indicating the interest in carrying out source apportionment and emission inventory study prescribing cost effective measures for abatement of air pollution in the above area from such institution are hereby invited.
3. The interested institutions may submit the Expression of Interest (Eoi) by providing required information as per the prescribed format, **which may be downloaded from the Website of the State Pollution Control Board (www.hspcb.gov.in.)**
4. The duly filled Eoi, supported with relevant documents, must reach the office of Member Secretary, State Pollution Control Board, Haryana, C-11, Sector-6, Panchkula on or before 10.12.2019, 03:00 PM. The envelope must be clearly superscripted as "EXPRESSION OF INTEREST FOR SOURCE APPORTIONMENT AND EMISSION INVENTORY STUDY ON THE LEVEL AND SOURCE OF POLLUTION"
5. The Eoi can be submitted through Registered Post / Speed Post. The HSPCB shall not be held responsible for any postal delay for non-receipt of Eoi within scheduled date and time.
6. Interested institutions are advised to visit the web site before submission of Eoi. Once Eoi received, it will be presumed that the institute is well aware of all procedure prescribed by the Board as indicated in the site.
7. The HSPCB reserves the right to reject any or all Eois without assigning any reasons thereof.

(S. Narayanan)
Member Secretary,
State Pollution Control Board, Haryana

Endst No.HSPCB/Aircell/2019/

dated

A Copy of above is forwarded to the Director General Public Relations and Cultural
Affair Department for publishing in the National leading newspapers widely circulated on or
before 11.11.2019 and will submit bills as per DAVP Rates.

Senior Scientist,
For Member Secretary

Endst No.HSPCB/Aircell/2019/2658

dated 06-11-2019

A Copy of above is forwarded to the following for kind information and necessary
action please:-

1. The Director, Environment and Climate Change department, Haryana, Chandigarh.
2. All the BIs in head Office and all the Regional Officers in the field.
- ✓ 3. The Nodal Officer IT branch for uploading the notice on website of the Board.
4. PS to Chairman/PA to Member Secretary.

Senior Scientist,
For Member Secretary

6.11.19
6.11.19

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EXPRESSION OF INTEREST (EoI)

DOCUMENT FOR

**ENGAGEMENT OF REPUTED EDUCATIONAL AND
RESEARCH INSTITUTIONS OF CENTRAL / STATE
GOVERNMENT**

FOR

SOURCE APPORTIONMENT AND EMISSION INVENTORY

STUDY

FOR

**GURUGRAM, FARIDABAD, SONEPAT AND PANIPAT IN
HARYANA**

**HARYANA STATE POLLUTION CONTROL BOARD,
C-11, SECTOR-6, PANCHKULA
www.hspcb.gov.in
email id : hspcb scientist@gmail.com**

To

The Member Secretary,
Haryana State Pollution Control
Board,
C-11, Sector-6, Panchkula.

**Sub: Expression of Interest for engagement “Source Apportionment
And Emission Inventory Study For Gurugram, Faridabad,
Sonapat and Panipat in Haryana.”**

Sir,

I/ We do submit herewith our EoI in prescribed format in sealed
cover as per requirement for the above stated study.

Yours
faithfully,

Signature _____

Name _____

Designation _____

Institution Name, Seal

& Address _____

GUIDANCE DOCUMENT FOR THE EDUCATIONAL AND RESEARCH INSTITUTIONS FOR SUBMISSION OF EXPRESSION OF INTEREST (EOI) FOR SOURCE APPORTIOMENT AND EMISSION INVENTORY STUDY IN HARYANA

Objective and Scope of Work

1.1 Background:

- An Original Application No. 21/2014 titled as Vardhman Kaushik Vs Union of India & Ors is pending in the Hon'ble National Green Tribunal (NGT).
- As per decision taken in the 9th meeting of State Level Committee in the matter of Vardhman Kaushik Vs Union of India & Ors constituted by the Hon'ble NGT held on 16.03.2018 under the chairmanship of Worthy Chief secretary, Haryana, it was decided that the Board may conduct a specific study on the levels and sources of pollution in Haryana through a reputed university and Principal Secretary (Higher Education) may be requested to coordinate the task.
- The Environment Department Directorate had made a reference to the Higher Education Haryana for seeking proposal from the universities for conducting the study vide memo endst. No. DEH/2018/Study/576 dated 29.05.2018 and subsequently vide memo endst. No. DEH/2018/Study/890 dated 04.07.2018 and memo endst. No. DEH/2018/Study/2087 dated 30.10.2018.
- The Director, Environment vide memo no. DEH/2019/2748 dated 02.01.2019 has forwarded the copy of research proposal for Monitoring Air Quality at Sonipat and Panipat District of Haryana submitted by Sh. Bhupinder Singh Assistant Professor in Environmental Sciences, Department of Basic and Applied Sciences, BPSMV, Khanpur Kalan, Sonipat.
- The Director, Environment vide memo no. DEH/2019/3113 dated 26.02.2019 has forwarded the proposal for Monitoring Air Quality in selected four cities adjoining to Delhi submitted by Co-ordinator & Principal Investigator, Department of Environmental Sciences, Maharishi Dayanand University, Rohtak.
- The Director, Environment vide memo no. DEH/2019/3307 dated 02.04.2019 has forwarded the proposal for Assessment of Ambient Air Quality in different sites of Kurukshetra submitted by Director, Institute of Environmental Studies, Kurukshetra University, Kurukshetra.

The matter was placed before the Technical Advisory Committee (TAC) of the Board and it was decided in the meeting held on 30.07.2019 that expression of interest may be called from the reputed university for carrying out the study in first phase in the Districts adjoining to Delhi i.e. Gurugram Faridabad, Sonipat and Panipat as the cost of the study will be more than Rs. 1 Lac.

1.2 Objective of the Study

Since, air quality in urban centers are affected by a variety of complex sources, detailed scientific studies are required for identification of major sources, assessing their contributions to urban air pollution and suggest mitigation measures taking into consideration the techno-economic feasibility and other social factors. Accordingly, this study has been initiated to promote and demonstrate a more rational & proactive approach to air quality management in urban areas.

1.3 Study objectives:

- To profile Ground Level Concentration (GLC) of air pollutants in different parts of the city *along with air shed of the city* including background, residential, commercial/mixed areas and source specific “hot spots” viz. kerbside/roadside, industrial zones, etc.
- To select “Emission Factors” (EF) for different categories of vehicles with due consideration to variations in fuel quality, technology, size and vintage of sources, control systems, etc.
- To select appropriate emission factors for other non-vehicular sources viz. industries, industrial & domestic fuel combustions, roadside dust, construction activities, generator sets, etc.
- To prepare inventory for different air pollutants, their emission rates & pollution loads from various sources along with spatial and temporal distribution in the city *including its air shed* covered under this project.
- To profile the source emission characteristics of different possible sources.
- To conduct source apportionment studies for PM10 and PM2.5 and prioritize the source categories for evolving cost-effective air pollution mitigation strategies/plans.
- To assess the impact of sources on ambient air quality under different management/interventions/control options and draw a roadmap of short term and long term measures as considered appropriate and cost effective to ensure “Cleaner air in urban areas”.

1.4 Scope of the Project

The proposed study is being executed under *Comprehensive Action Plan for Clean Air for Cities of Gurugram, Faridabad, Sonapat and Panipat in Haryana*. Since, implementation of same interventions in two cities having different meteorology, topography and different typology of air polluting sources is unlikely to give same results, the choice of interventions to control urban air pollution has to be city-specific, drawn on the basis of scientific study with adequate & representative set of quality data/information.

The scope of the study shall focus on following:

- The overall project scope includes city-specific air quality monitoring,

complete characterization of ambient dust (PM10 and PM2.5), emission inventory, source profiling, source apportionment using dispersion & chemical mass balance models.

- To address all the expected anthropogenic emission sources in urban areas, it is planned to include many non-criteria pollutants in the study for understanding the extent of problem and comparison with earlier database. The major air pollutants covered in this project include SO₂, NO_x, CO, Benzene, Aldehydes, Alkenes, NMHC, THC, PAH, PM₁₀, PM_{2.5}.
- The ambient air monitoring will be carried out over a period covering all three seasons in a year to get representative data on seasonal variations in meteorology as well as activities that have bearing on air quality. The purpose of ambient air quality monitoring is not compliance verification. Therefore, it is proposed to carry out continuous monitoring for one month in each season for three seasons covering the whole year at all the monitoring locations.
- Air monitoring stations will be installed at locations such as kerbside, residential, industrial and background (away from all the sources and in upwind direction). Each city will have *at least five to seven* air monitoring stations. However, the number of monitoring stations can be extended to more depending upon the activity profile of a particular city.
- In order to catch the diurnal variations of sources as well as the typical meteorological changes, it is proposed to conduct 8-hourly monitoring (06.00 to 14.00s, 14.00-22.00, 22.00-06.00 hrs.) in a day. The sampling shall be done continuously for 30 days in a season. Thus for three seasons there would be 90 sampling days. Thus, total 90 sampling days would cover the all days of week to give a fair representation of three seasons of a year.
- Monitoring of meteorological parameters would be carried out simultaneously at each station at same height of ambient air monitoring to ensure proper representation of the activities of the surrounding area for a given monitoring location. Additional meteorological data for the study period will also be collected from India Meteorological Department (IMD).
- A detailed emission inventory would be carried out for *line, point* and *area* sources. Data on emission inventory, available through secondary sources, will be collected. Besides, primary surveys shall be carried out for identification & spatial distribution of sources and preparation of detailed emission inventory for zone of influence (2km x 2km area) around each ambient air quality monitoring location. City level emission inventory, available through secondary sources, shall be refined based on the data generated through primary surveys carried out within the

zone of influence around each monitoring location.

- In order to get a wider cross section of vehicles in-use or on-road and the actual distance traveled by each sample vehicle, inspection & maintenance practices being adopted etc., a systematic survey of vehicle population will be undertaken in the city. Also, special emphasis will be laid on the emissions from vehicles of pre Euro/India 2000 for assessing cost-effective solutions as these represent major segment in total vehicle population.
- Emission factors developed by ARAI for each representative vehicles considering vehicle technology, age, fuel, traffic conditions and prevailing Inspection & Maintenance practices including influence of fuel quality with or without tail pipe treatment, will be used for estimating vehicular emission.
- Emission inventory of industrial and other sources will be prepared through secondary sources. Primary surveys may be also be conducted to crosscheck and validate the secondary data.
- With regard to emission factors for point sources, firstly the database available on emission characteristics with Pollution Control Boards and other sources (particularly for small-scale industries) would be scanned. For area sources, certain database generated in a few US-EPA studies (for India, Bangladesh and other countries of the region) would also be reviewed. For other source types, for which information is not available, the factor developed by US-EPA, EU, WHO would be scanned and then their normalization for Indian conditions have to be done.
- The Emission inventory (EI) data will be analyzed using appropriate technique like IPIECA tool, IVE model or other equivalent technique being used by reputed organizations like CARB, US EPA or EPEFE.
- Source apportionment analysis will be carried out for PM10 and PM2.5 using receptor model like CMB model. For this purpose, detailed analysis of PM10 and PM2.5 will be carried out.
- *The study on source profiling of various polluting sources in Indian context will be considered to be used as input to CMB model for source apportionment study.*
- With regard to dispersion modeling and intervention analysis, refined city-level emission inventory will be used.
- On completion of data collection, validation and interpretation of the assimilated information, a detailed road map will be drawn considering all possible measures for air quality improvement. These measures will be classified into short and long term with due priority to low cost measures that give maximum benefits.

1.5 Study Framework

The framework of the proposed for the SA & EI study is shown as Fig. 1

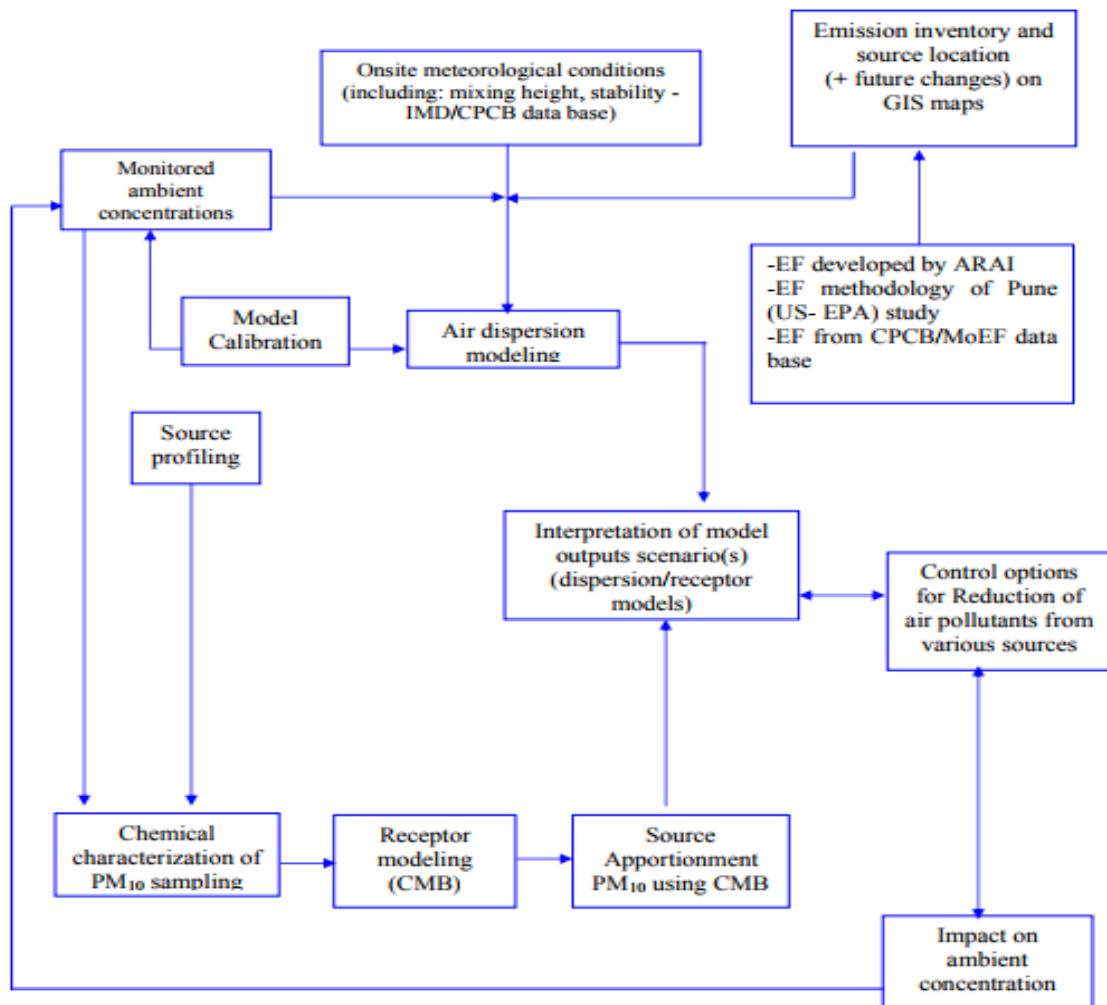


Fig: 1: The framework proposed for the SA & EI study

1.6 Expected deliverables of the assignment-

Each assignment shall be for a period of 18 months and the delivery schedule shall be as follows:-

1.6.1 Interim Report after completing field visits and monitoring of environmental parameters- 15 months

1.6.2 Draft final report - 17 months

1.6.3 Final report after incorporating modifications suggested by the Board - 18 months

2.1 Area details

The study area shall be the city/ municipal limit of respective city and including its air shed.

3.1 Instruction to reputed educational and research institution

- Reputed educational and research institutions are requested to submit Expression of Interest (EOI) for carrying out the proposed study of “**Source Apportioment And Emission Inventory (SA & EI) Study for Gurugram, Faridabad, Sonapat and Panipat City In Haryana**”. The EOI shall indicate their interest in carrying out SA & EI and measures for cost effective abatement of air pollution in the study area.
- Interested educational and research institutions may submit the Expression of Interest (EOI) by providing required information as per the **prescribed format, which may be downloaded from the Website of the State Pollution Control Board (www.hspcb.gov.in.)**.
- The EOI filled in as per the prescribed format and supported with relevant documents must reach the Office of Member Secretary, Haryana State Pollution Control Board, C-11, Sector-6, Panchkula on or before 10-12-2019, 3.00 P.M. The envelope must be clearly superscripted as “**EXPRESSION OF INTEREST FOR SOURCE APPORTIOMENT AND EMISSION INVENTORY STUDY FOR GURUGRAM, FARIDABAD, SONEPAT AND PANIPAT IN HARYANA.**”
- The EOI can also be submitted through Registered Post/ Speed Post. But the authority shall not be held responsible for any postal delay for non-receipt of EOI within scheduled date and time.
- Interested educational and research institutions are advised to visit the site before submission of EOI. Once EOI received; it will be presumed that the institute has visited the site and collected relevant information for submission of his EOI.
- The HSPCB reserves the right to reject any or all Eols without assigning any reasons thereof.
- The EOIs will be evaluated by an Evaluation Committee (EC) constituted for the specific purpose. The scores will be assigned to the response of each institution based on the weightage assigned to each of the criteria in EOI. The weightage criteria will be followed as per following Table.

Table-1: The scoring criteria

The scoring criteria	SI No	Sub Criteria	Marks	Total Marks
Past Experience of the Institute	1.	Past experience of studies of similar nature	36 (Upto 05 studies = 12) (05 to 10 studies =24) (More than 10 studies=36)	
	2.	Sector Past experience of studies in related sector	18 (Upto 05 studies = 6) (05 to 10 studies =12) (More than 10 studies =18)	
	3.	Studies carried out in India	06	
	Total			
Experience of Key Personnel	1.	Qualification	07	
	2.	Relevant Experience	18	
	Total			
Facility available for conducting such studies	1.	Rating of the educational and research institution	15	
	Total			
Grand Total Marks				100

- The assignment of marks within each criteria and final qualifying marks will be decided by the Evaluation Committee
- The shortlisted educational and research institutions for final selection process will be called for submission of technical and financial bids through Request for Proposals (RFPs)

4. Eligibility/ prequalification Criteria of short listing educational and research institution

- Educational or research institute like IIT, NIT or CSIR laboratory or any other similar institutions recognized by Govt. of Haryana / Govt of India.
- The institution must have similar type of experience in conducting Source Apportionment & Emission Inventory (SA & EI) or other such Air Pollution Control related and metrological studies.
- The institution should have capacity to undertake all type of measurement on atmospheric phenomena, Climate and weather monitoring facility survey of area, modeling studies and other related measurement towards execution of

the project.

- The institutions should have qualified & experienced Environmental Engineers/ Meteorologists/ Atmospheric Experts, Surveyor etc. to conduct the field work as well as preparation of SA & EI. The educational qualification of functional experts, area of specialization and technical skill, experience and expertise in relevant field will be criteria for selection of institution.

5.1 Format for submission of Expression of Interest (EoI) for Source Apportionment and Emission Inventory Study in Gurugram, Faridabad, Sonapat and Panipat City in Haryana.

Name of the Educational /Research Institute		:		
Year of Registration/ Incorporation/ Establishment of the Institute		:		
Address of communication		:		
Phone	Fax	E-mail	Website	
Core area of specialization (<input type="checkbox"/> in appropriate box)		:		
		<input type="checkbox"/> Meteorological and tropical weather <input type="checkbox"/> study Climatological studies <input type="checkbox"/> Source Apportionment and source profiling <input type="checkbox"/> Study Industrial Process Analysis <input type="checkbox"/> Emission Inventory Study <input type="checkbox"/> Analysis and evaluation of air pollution <input type="checkbox"/> models Any other similar studies		
Key persons for above areas of specialization (PIs enclose separate sheets if space provided is inadequate)		:		
Name	Highest Educational qualification	Area of specialization	Experience	Year of association with the institute

Project executed by the Institute on Source Apportionment, Emission Inventory ,study (during last ten years) (PIs enclose separate sheets if space provided is inadequate)				
Name of the project	Description of project	Name of the Client	Date of completion / Or on going	
The Bio-data of the principal investigator of the above projects and research papers published in peer reviewed journals.				
Details of facility available to conduct such type of studies (please present brief description of offices, laboratory etc.)				
I hereby declare that the above information is true to the best of my knowledge and I am authorized by my firm to fill up and submit on its behalf.				
				Authorized Signatory