

INTERIM STATUS REPORT
IN ORIGINAL APPLICATION NO. 667/2018
(MAHENDRA SINGH VERSUS STATE OF HARYANA
AND ORS.)

WITH ORIGINAL APPLICATION NO. 679/2018
(TEJPAL VERSUS STATE OF HARYANA AND ORS.),
IN ORIGINAL APPLICATION NO. 599/2019
(BISHAMBER SINGH VERSUS STATE OF HARYANA
AND ORS.)

AS PER HON'BLE NGT ORDER

DATED 15.11.2021

Submitted to
Hon'ble National Green Tribunal
Principal Bench, New Delhi

Interim Status Report in compliance with the Hon'ble National Green Tribunal, Principal Bench, New Delhi order dated 15.11.2021 in the matter of OA No. 667/2018 (Mahendra Singh Vs. State of Haryana and Ors) with OA No. 679/2018 (Tejpal Vs. State of Haryana and Ors) and OA No. 599/2019 (Bishamber Singh Vs. State of Haryana and Ors).

Hon'ble NGT in its order dated 15.11.2021 in (1) OA No. 667/2018 titled as Mahendra Singh Vs. State of Haryana and Ors. (2) OA No. 679/2018 titled as Tejpal Vs. State of Haryana and Ors), (3) OA No. 599/2019, titled as Bishamber Singh V/s State of Haryana & Ors, directed as follows:

"Let a six-member joint Committee of CPCB, State PCB, District Magistrate, Mahendragarh, jurisdictional Conservator of Forest, nominee of IIT Delhi with expertise on the subject of air pollution and a Pulmonologist, nominated by DG Health, Haryana meet within two weeks and ponder over the issue. The CPCB and the State PCB will be nodal agency for coordination and compliance. They may interact with the stakeholders, including the representatives of the stone crushers, who may be informed about proceedings before this Tribunal by the State PCB, in coordination with any other concerned authorities, in an appropriate manner by e-mail or otherwise. Any expenses to be incurred will be borne by the State PCB, subject to further orders. The District Magistrate may provide logistics for execution of the order. The Committee may give a report about the number of stone crushers and mineral grinding units which can be allowed and subject to what conditions, having regard to air pollution load and adverse impact on public health. The report may be furnished within three months by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of image PDF which may also be uploaded on the website of the State PCB for information of all the affected stone crushers who will be at liberty to file their comments, if any, to the report before this Tribunal within 15 days of uploading of the report."

In compliance of order a committee of the following members constituted:

1. Sh. Suneel Dave, Regional, Director, CPCB, Chandigarh
2. Sh. Ajay Kumar, Deputy Commissioner, Mahendragarh
3. Smt. Vasvi Tyagi, Chief Conservator of Forest, South Circle, Gurugram assisted by Sh. Rohtash Kumar, Divisional Forest Officer, Mahendragarh.
4. Dr. Harsha Kota, Associate Professor, Department of Civil Engineering, Indian Institute of Technology, Delhi.
5. Dr. Pawan Kumar Singh, Assistant Professor, PGIMS, Rohtak on behalf of the Directorate General of Health Services, Haryana.
6. Sh. Dinesh Yadav, Regional Officer, HSPCB, Dharuhera Region

During the course of time the following officers have been representative by their respective successor due to transfers:

1. Sh. Jai Krishan Abhir, IAS, Deputy Commissioner, Mahendragarh at Narnaul.
2. Sh. Sandeep Singh, Regional Officer, HSPCB, Mahendragarh Region at Dharuhera.

Accordingly, the joint meeting of six members committee was held on dated 30.11.2021 in compliance of the said order in the office of Deputy Commissioner Camp Office, Narnaul. The minutes of meeting (Annexure-I) was communicated to all concerned vide letter dated 22.12.2021. The committee has conducted field visit of the stone crusher and mineral grinding units to verify the compliance according to the Notification dated 11.05.2016.

In order to review the progress of the activities that was to be undertaken by the various departments and as mentioned in the minutes of meeting held on 30.11.2021. The next meeting was review through video conferencing on 30.03.2022 wherein following points discussed:

1. Executive Engineer, PHED, Narnaul was asked to submit the details of stone crushers who have made agreement for the procurement of the treated sewage from STP's.
2. SDM Narnaul along with PWD, B&R Department, Narnaul were requested to provide the feasibility report and the estimate for concrete roads as per the provisions and budget allocation.
3. Divisional Forest Officer was to verify green belt provided by the units. Divisional Forest Officer, Narnaul, Distt. Mahendragarh intimated that they have conducted the inspection of 87 Nos. of stone crushers regarding the tree plantation including size and species of the tree plantation at stone crushers. DFO informed that they did not observe the green belt (tree plantation in two rows) of sufficient size to be capable for curtailment of dust emission from the stone crushers. As per Notification dated 11.05.2016, *"All stone crushing units shall provide a green belt along the periphery having avenue plantation of two rows after approval of plantation plan by the Divisional Forest Officer concerned. Till plantation within the premises is fully developed, the project proponent shall erect a barrier / barricade along the periphery to contain the dust emissions. Such barricade should completely enclosed the premises from all sides and may be either a boundary wall or of flexible cloth (tarpaulin etc.) or a combination of two. The height of the barricade shall not be less than the height of the highest tip of the conveyor belts."*
4. Assistant Professor, PGIMS was to provide the details of effect on the workers engaged in stone crushing unit and surrounding villagers and for such kind of study digital X ray of 250-300 patients was to be conducted to identify silicosis patients and other related diseases/health issues. Furthermore, Civil Surgeon added that digital X-Ray can be got done in Civil Hospital, Narnaul.
5. IIT Delhi has been appointed as a technical advisor/consultant to conduct a study and prepare inventories for the pollution from the different sources and prepare source apportioned study of air pollution in District Mahendragarh and to find out carrying capacity.

The detail of the various works allotted to the different departments/agencies and their progress is as under:

<p>Status of emission inventory by IIT</p>	<p>Sh. Harsha Kota, Professor IIT, Delhi advised that there is a need to develop an emission inventory for this area to understand the contributions of different sources to the PM10 concentrations so that the necessary actions can be taken to ensure that the air quality standards prescribed by CPCB are met and also for developing the exhaustive emission inventory for the selected villages of the District; i) Inventory of source of pollution of whole of the District needs to be carried out. ii) Then AAQ monitoring needs to be carried out. Monitoring of all the source of pollution i.e. vehicle plying, hot spots, road dust, transportation, dust emission etc. needs to be carried out. iii) After that carrying capacity will be calculated. After that Sh. Harsha Kota, Professor IIT, Delhi submit the proposal for preparation of exhaustive emission inventory of PM10 from various sources of District Mahendragarh. Copy of proposal for emission inventory is attached as Annexure-II.</p>	<p>HSPCB granted the sanction of Rs. 12 Lacs vide letter No. I/99859/2022 dated 05.03.2022 in the name of Sh. Harsha Kota, Professor IIT, Delhi and requested IIT, Delhi for development of emission inventory for eighteen villages of District Mahendragarh, Haryana of PM10 from various sources of District Mahendragarh and preparation of action plans for these villages. Thereafter, HSPCB vide its letter No. I/110388/2022 dated 29.04.2022 has released the Rs. 12 Lacs in favour of Indian Institute of Technology, IIT CAMPUS, IRD UNIT, HAUZ KHAS, NEW DELHI.</p> <p>Further, the following progress has been made so far:</p> <ol style="list-style-type: none"> 1. IITD has collected the road dust samples from over 20 locations identified in Mahendragarh. The samples has already been analysed for the silt loading. The remaining road dust samples has been collected by HSPCB and has been provided to IITD. 2. The domestic survey has also been completed and the digitized data has been shared with IITD . 3. The petrol pump survey has also been completed and has been shared with IIT Delhi. 4. Currently HSPCB is preparing the industry data, weighing balance data, vehicle count data etc. and it will be shared soon with IIT Delhi. The report is being simultaneously
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		prepared by IITD.
Status of health impact	The joint committee discussed the health issues. Pulmonologist has provided details of effect on the employees working in stone crushing unit and surrounding villagers and for such kind of study digital X ray of 250-300 patients was to be conducted to identify silicosis patients and other related diseases	Chief Medical Officer, Narnaul has intimated that in compliance of NGT order, Health camps were organized by Health Department District Mahendergarh in 70 crushers sites and adjacent 11 villages to know the effect of dust/population on employees and villagers mainly respiratory disease, Anaemia, HB and Diabetes mellitus during period 24/06/2022 to 02/07/2022. Copy of CMO, Narnaul report dated 06.07.2022 is attached as Annexure-III .
Status of Green Belt	The Divisional Forest Officer have to verify their necessary permission and green belt provided by the unit to the said site in question as per their applicable Laws/ Acts/ Notifications/ any orders amended from time to time in this regard and will compile report in this regard. Divisional Forest Officer, Narnaul, Distt. Mohindergarh intimated that they have conducted the inspection of 87 Nos. of stone crushers regarding the tree plantation including size and species of the tree plantation at stone crushers. DFO informed that they did not observed the green belt (tree plantation in two rows) of sufficient size to be capable for curtailment of dust emission from the stone crushers. As per Notification dated 11.05.2016, "All stone crushing units shall provide a green belt along the periphery having avenue plantation of two rows after approval of plantation plan by the Divisional Forest Officer concerned. Till plantation within the premises is fully developed, the project proponent shall erect a barrier / barricade along the periphery to contain the dust emissions. Such barricade should completely enclosed the premises from all sides and may be either a boundary wall or of flexible cloth (tarpaulin etc.) or a combination of	DFO has submitted status report vide letter No. 1572 dated 21.06.2022 that 20 nos. of units were inspected by them, and the units have not submitted any action plan to forest department. Forest Department can take action only after submitting the plantation plan but no plantation/action plan has been submitted by any unit to Forest Department.

	two. The height of the barricade shall not be less than the height of the highest tip of the conveyor belts."	
Status of reused of treated water	The detail of stone crushers who have made agreement with STP, PHED Narnaul have been procured and detail of the individual stone crushers procuring treated effluent from STP have also been asked from Executive Engineer, PHED	Executive Engineer, PHED, Narnaul has submitted status of water procured by various units stone crushing, mines and mineral grinding units October, 2021 to June, 2022. Further, Executive Engineer, PHED has requested to submit the month wise quantity of treated sewage taken by individual units.
The status of stone crushing units	The status of stone crushing units has been further updated as on date (at the time of reporting) i.e. complying and non-complying units alongwith their consent status and action taken against the non-complying units observed during inspection as per policy of the Board.	The HSPCB is regularly monitoring the stone crusher and mineral grinding unit and complete report will be submitted with the final report.

Keeping in view of above facts and progress made by different department/agencies, 03 months more time is required for the submission of final action taken report including all the aspects w.r.t. studies, actions and final conclusion.

Signed

Dr. Sri Harsha Kota, Professor
IIT, New Delhi

Approved & Signed

Suneel Dave
Regional Director, CPCB, Chandigarh

[Signature]

Sandeep Singh, Regional Officer,
HSPCB, Mahendragarh Region at Dharuhera
(Additional Charge)

Signed

Rohtash, Divisional
Forest Officer, Distt. Mohindergarh

[Signature]

Sh. Jai Krishan Abhir, IAS
Deputy Commissioner,
Mahendragarh at Narnaul

[Signature]

Ashok Kumar, Civil Surgeon
Health Pulmonologist, Narnaul

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The status of stone crushing units	The status of stone crushing units has been further updated as on date (at the time of reporting) i.e. complying and non-complying units alongwith their consent status and action taken against the non-complying units observed during inspection as per policy of the Board.	The HSPCB is regularly monitoring the stone crusher and mineral grinding unit and complete report will be submitted with the final report.

Keeping in view of above facts and progress made by different department/agencies, 03 months more time is required for the submission of final action taken report including all the aspects w.r.t. studies, actions and final conclusion.

K. Sri Harsha
Dr. Sri Harsha Kota, Professor
IIT, New Delhi

Suneel Dave
Regional Director, CPCB, Chandigarh

Sandeep Singh, Regional Officer,
HSPCB, Mahendragarh Region at Dharuhera
(Additional Charge)

Rohtash, Divisional
Forest Officer, Distt. Mohindergarh

Sh. Jai Krishan Abhir, IAS
Deputy Commissioner,
Mahendragarh at Narnaul

Ashok Kumar, Civil Surgeon
Health Pulmonologist, Narnaul

crushing units	time of reporting) i.e. complying and non-complying units alongwith their consent status and action taken against the non-complying units observed during inspection as per policy of the Board.	mineral grinding unit and complete report will be submitted with the final report.
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Keeping in view of above facts and progress made by different department/agencies, 03 months more time is required for the submission of final action taken report including all the aspects w.r.t. studies, actions and final conclusion.

Dr. Sri Harsha Kota, Professor
IIT, New Delhi

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Regional Director, CPCB, Chandigarh

Sandeep Singh, Regional Officer,
HSPCB, Mahendragarh Region at Dharuhera
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Rohtash, Divisional
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Deputy Commissioner,
Mahendragarh at Narnaul

Ashok Kumar, Civil Surgeon
Health Pulmonologist, Narnaul



Interim Status Report

1 message

Suneel Dave <sdave.cpcb@gmail.com>

To: Dharuhera Region Hspcb <hspcbrodr@gmail.com>

Fri, 8 Jul 2022 at 12:32

Okay.
Consented this report.
Thanks

Sent from my iPhone

I/83823/2021

Annexure-I

Haryana State Pollution Control Board

REGIONAL OFFICE, LALA NEMI CHAND SINGHAL ENCLAVE, SOHNA ROAD

NEAR PUNJAB NATIONAL BANK, DHARUHERA

Tele Fax: 01274-244241

E-Mail: hspcbrodr@gmail.com

To

1. The Deputy Commissioner
Mohindergarh at Narnaul
2. The Regional Director
CPCB, Regional Directorate, Chandigarh
3. The Associate Professor,
IIT, New Delhi
4. The Chief Medical Officer,
Narnaul, District Mohindergarh
5. The Superintendent Engineer,
Public Health Engineering Department
Narnaul, District Mohindergarh
6. The Divisional Forest Officer,
Forest Department, Narnaul, District Mohindergarh
7. The Executive Engineer
PWD B&R, Narnaul, District Mohindergarh

Sub.- Minutes of the meeting held on 30.11.2021 of Joint Committee constituted in compliance of NGT order dated 15.11.2021, (1) OA No. 667/2018 titled as Mahendra Singh Vs. State of Haryana and Ors. (2) OA No. 679/2018 titled as Tejpal Vs. State of Haryana and Ors), (3) OA No. 599/2019, titled as Bishamber Singh V/s State of Haryana & Ors.

Kindly refer to the subject noted above, please find enclosed herewith the minutes of the meeting held on 30.11.2021 of Joint Committee constituted in compliance of NGT order dated 15.11.2021, (1) OA No. 667/2018 titled as Mahendra Singh Vs. State of Haryana and Ors. (2) OA No. 679/2018 titled as Tejpal Vs. State of Haryana and Ors), (3) OA No. 599/2019, titled as Bishamber Singh V/s State of Haryana & Ors.at DC Camp office, Narnaul, District Mohindergarh. The next date of hearing is fixed for 07.04.2022.

Submitted for you kind information and necessary action, please.

DA/- Minutes of Meeting

CC:-

A copy of above is forwarded to the Chairman, HSPCB, Panchkula for kind information and necessary action please.

Signed by Mohit Moudgil

Date: 22-12-2021 10:55:58

Reason: Approved

**Regional Officer
Dharuhera Region**

Minutes of the meeting held on 30.11.2021 of Joint Committee constituted in compliance of NGT order dated 15.11.2021, (1) OA No. 667/2018 titled as Mahendra Singh Vs. State of Haryana and Ors. (2) OA No. 679/2018 titled as Tejpal Vs. State of Haryana and Ors), (3) OA No. 599/2019, titled as Bishamber Singh V/s State of Haryana & Ors.

The Hon'ble NGT vide order dated 15.11.2021 in the matter of (1) OA No. 667/2018 titled as Mahendra Singh Vs. State of Haryana and Ors. (2) OA No. 679/2018 titled as Tejpal Vs. State of Haryana and Ors)., (3) OA No. 599/2019, titled as Bishamber Singh V/s State of Haryana & Ors. directed in para No. 16 that :

“Let a six-member joint Committee of CPCB, State PCB, District Magistrate, Mahindragarh, jurisdictional Conservator of Forest, nominee of IIT Delhi with expertise on the subject of air pollution and a Pulmonologist, nominated by DG Health, Haryana meet within two weeks and ponder over the issue. The CPCB and the State PCB will be nodal agency for coordination and compliance. They may interact with the stakeholders, including the representatives of the stone crushers, who may be informed about proceedings before this Tribunal by the State PCB, in coordination with any other concerned authorities, in an appropriate manner by e-mail or otherwise. Any expenses to be incurred will be borne by the State PCB, subject to further orders. The District Magistrate may provide logistics for execution of the order. The Committee may give a report about the number of stone crushers and mineral grinding units which can be allowed and subject to what conditions, having regard to air pollution load and adverse impact on public health. The report may be furnished within three months by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF which may also be uploaded on the website of the State PCB for information of all the affected stone crushers who will be at liberty to file their comments, if any, to the report before this Tribunal within 15 days of uploading of the report.”

Accordingly, a meeting of six members committee as per the direction Hon'ble NGT was held on dated 30.11.2021 in compliance of Hon'ble NGT order dated 15.11.2021 in the matter of (1) OA No. 667/2018 titled as Mahendra Singh Vs. State of Haryana and Ors. (2) OA No. 679/2018 titled as Tejpal Vs. State of Haryana and Ors)., (3) OA No. 599/2019, titled as Bishamber Singh V/s State of Haryana & Ors. Mohindergarh at Deputy Commissioner Camp Office Narnaul to submit the

compliance report well within the stipulated time period to Hon'ble National Green Tribunal, New Delhi. The list of officers attending the meeting is enclosed as **Annexure- A**.

Sh. Mohit Moudgil, Regional Officer, HSPCB has briefed the status of stone crushing and mineral grinding units established/operated along with the study of carrying capacity previously conducted in compliance of Hon'ble NGT order dated 03.12.2020 in (1) OA No. 667/2018 titled as Mahendra Singh Vs. State of Haryana and Ors. (2) OA No. 679/2018 titled as Tejpal Vs. State of Haryana and Ors), (3) OA No. 599/2019, titled as Bishamber Singh V/s State of Haryana & Ors.

During meeting, the following discussions were held:-

1. Representative of IIT Delhi and CPCB advised that there is a need to develop an emission inventory for this area to understand the contributions of different sources to the PM10 concentrations so that the necessary actions can be taken to ensure that the air quality standards prescribed by CPCB are met and also for developing the exhaustive emission inventory for the selected villages of the District; i) Inventory of source of pollution of whole of the District needs to be carried out. ii) Then AAQ monitoring needs to be carried out. Monitoring of all the source of pollution i.e. vehicle plying, hot spots, road dust, transportation, dust emission etc. needs to be carried out. iii) After that carrying capacity will be calculated.
2. The joint committee discussed the issue that whether all the stone crushers are using treated water for sprinkling purpose from STP of PHED, if doing so then it would be ideal condition or from other sources.
3. PWD, B&R Department, Narnaul should work upon to make the concrete roads as per their provisions in and around stone crushing zones and nearby villages to suppress the dust emission.
4. Representative of IIT Delhi deliberated upon that why the stone crushing units / association not contributing in making the roads in and around the stone crushing zones. If they don't contribute then they should reduce their crushing capacity accordingly.
5. The joint committee discussed the health issues. Pulmonologist emphasized to identify the source of pollution and their effect on the employees working in stone crushing unit and surrounding villagers. He informed that, they have carried out study previously. For carrying out such kind of study, digital X ray machine is required for identifying silicosis patients. For

such kind of study 250-300 patients are required to get better results. They can get help from Medanta Hospital mobile support. In this Civil Surgeon added that digital X-Ray can be got done in Civil Hospital, Narnaul.

6. The Divisional Forest Officer needs to verify their necessary permission and green belt provided by the unit to the said site in question as per their applicable Laws/ Acts/ Notifications/ any orders amended from time to time in this regard and will compile report in this regard.
7. The joint committee visited the stone crushing zones and mineral grinding unit and interacted with various stake holders.
8. The Deputy Commissioner asked the members to develop the road map for further course of action in order to comply with the various directions in the NGT order which will be discussed in the next meeting, to be scheduled soon.

The meeting ended with the vote of thanks to be chair

Attendance Sheet Meeting held on
Dated- 30-11-2021

[illegible]

DEVELOPMENT OF EMISSION INVENTORY FOR EIGHTEEN VILLAGES OF MAHENDRAGARH DISTRICT IN HARYANA

by

Dr. Sri Harsha Kota

Department of Civil Engineering, IIT Delhi

Introduction:

Air pollution is a matter of serious concern for developed, developing and underdeveloped nations as it is a local as well as a global issue. Air pollution can be described as contamination of the atmosphere by gaseous, liquid, or solid wastes or by-products which endanger human health and welfare of plants and animals, attack materials, reduce visibility or produce undesirable odours. The most important components of emissions to air include carbon dioxide, carbon monoxide, sulphur oxides (SO_x), methane, non-methane volatile organic compounds and nitrogen oxides (NO_x), Particulate matter (PM), ions and heavy metals associated with PM. While some pollutants are released by natural sources like volcanoes, coniferous forests, and hot springs, most of them are emitted by the burning of fossil fuels, industrial sources, power and heat generation, waste disposal and the operation of internal combustion engines, etc. The increased air pollution levels can be mainly attributed to rapid industrialization and urbanization. Most cities in the country are facing the problem of air pollution. Indian cities have experienced a phenomenal increase in population, industry, and vehicles. Given the current rapid rate of economic development of India, the further degradation of air quality is likely to occur in future and hence preventive measures become imperative. It becomes extremely necessary to make use of scientific tools available for decision making. Air pollutant emission inventory (EI) and air quality modelling are some of these tools. Emission Inventory provides the fundamental knowledge for understanding local and regional air pollution, its transport, and impacts. Emission Inventory is a structured collection of information about emissions of pollutants in a specified area. Emission inventories with highly resolved temporal and spatial information are urgently needed to combat the increasing urban and regional air pollution. An exhaustive and quality emission inventory should be able to provide a reliable estimate of total emissions of different pollutants, their spatial and temporal distribution, identification, and characterization of main sources and tracking progress towards air pollution

control. In addition, emission inventory can be used for air quality modelling for developing air pollution control strategies for attaining air quality standards. Policymakers and researchers face challenges in forming effective air quality management strategies in absence of a structured emission inventory. This information on emission inventory is an essential input to air quality models for developing strategies and policies. The goal of emission inventory development is to identify and achieve emission patterns for deriving pollution control policies.

Need for the study:

Air pollution in the Indo Gangetic plains is one of the biggest challenges that require immediate attention. Mahendragarh district in Haryana has been an area of concern and is facing high concentrations of particulates. The area also has many stone crushers that have been a cause of concern. However, due to the lack of air quality monitoring stations in these regions, there is no available data of the pollutant concentrations in these regions. Also, high concentrations of particulates may cause serious health problems in the people living in this area. Thus, there is a need to develop an emission inventory for this area to understand the contributions of different sources to the PM₁₀ concentrations so that the necessary actions can be taken to ensure that the air quality standards prescribed by CPCB are met.

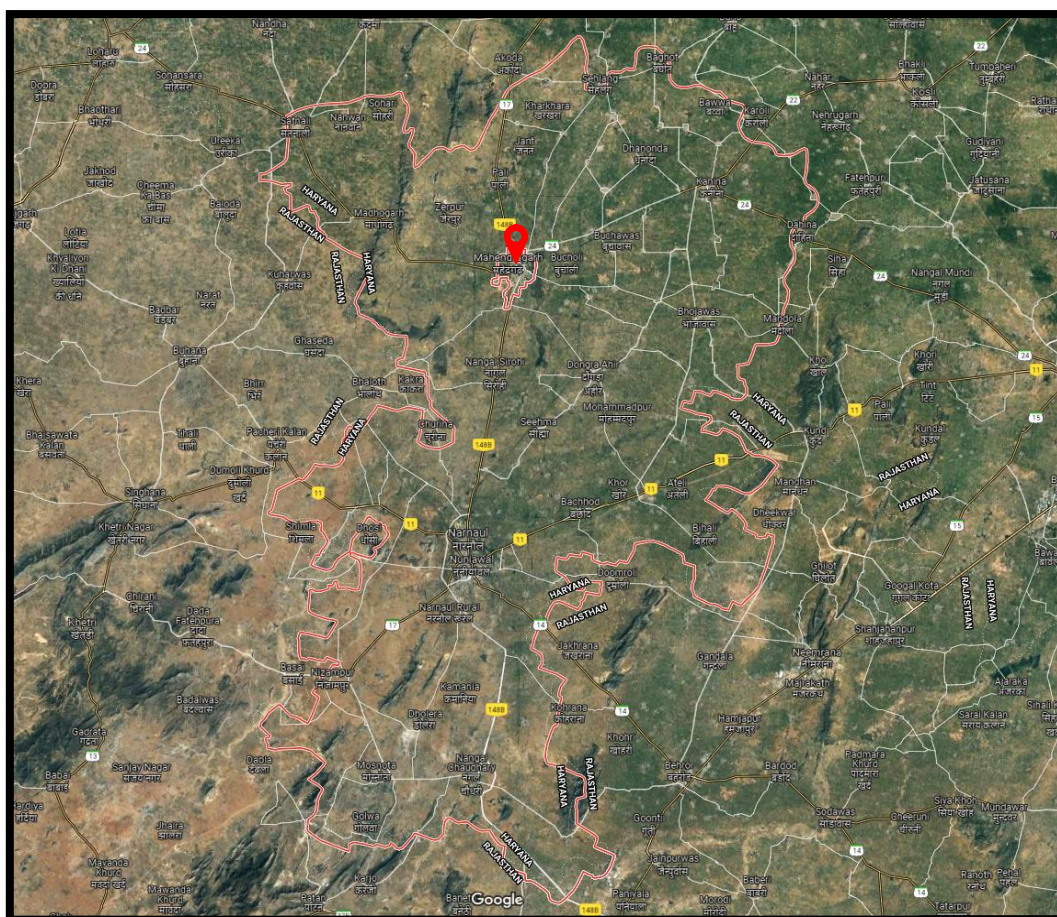


Figure 1. Map of Mahendragarh district

Objectives of the study:

The main objective of the proposed project is to estimate the emissions of various sources such as vehicles, road dust, industry, stone crushers etc. to the total PM_{10} emissions in villages of Garhi, Zerpur, Kultajpur, Lutufpur, Faizabad, Mandlana, Raghunathpura, Karota, Gangutana, Bakhrija, Begopur, Dholera, Jainpur, Khatoli Ahir, Berundla, Panchnota, Khatoli Jat and Bayal in the Mahendragarh district. It is proposed to meet this main objective through the following sub-objectives:

- i. Preparation of an exhaustive emission inventory of PM_{10} from various sources for the selected villages in the Mahendragarh district of Haryana.
- ii. Preparation of action plans for these villages of Mahendragarh district.

Methodology:

The source activities for air pollution in this region can be broadly classified as transport (motor vehicles), commercial activities, industrial activities, domestic activities, and fugitive sources. Clusters of small and medium scale industries are significant contributors to the air pollution of which, stone crushers are one of the most prevailing sources of air pollution in this region. Diesel driven tractors are the dominant sources of transportation in the region.

In addition to industrial and automobile pollution, there are emissions from domestic cooking using fuels like wood, coal, biomass etc. Garbage burning may be a common practice and can be an important contributor to air pollution. The road condition may cause non-exhaust road dust emission in a significant amount as many roads in the Mahendragarh area are unpaved. An overall project methodology is presented in Figure 2.

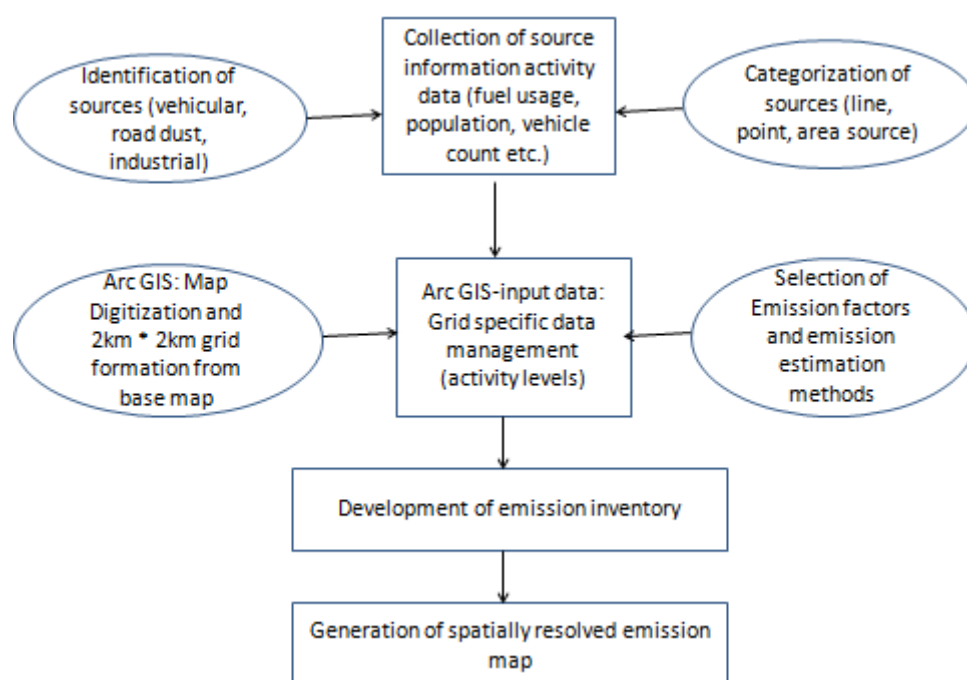


Figure 2. Overall Methodology for Emission Inventory

ArcGIS will be used for the digitization of the emission inventory for this study because it is user friendly and is frequently used by the local authorities and research institutions for air pollution management. The topographical map, of cities, will be geo-coded as the base maps in the form of polygons for geo-referencing the other maps. The other maps (e.g., land use, road, and railway intersection) and ward boundary will be geo-referenced. Various thematic layers of gridded maps will be generated in GIS (e.g., road maps, population map).

Based on primary data from field surveys, major sources of air pollutants will be classified as:

- (1) Industries
- (2) Stone crushers
- (3) Mineral grinding
- (4) Vehicles
- (5) Domestic fuel burning,
- (6) Open burning (agricultural residue and garbage burning),
- (7) Hotel and restaurant fuel use,
- (8) Diesel generator (DG) sets
- (9) Road dust
- (10) Other sources (e.g., other fugitive sources).

The methodology can be divided into two phases:

1. Phase 1:

The primary and the secondary data including the field survey data will be provided to IIT Delhi by Haryana State Pollution Control Board (HSPCB). All the requisite survey forms for each source will be provided by IIT Delhi.

The following data is to be provided to IIT Delhi for this phase:

- Boundary maps of the selected villages in Mahendragarh district to be provided.
- Collection of activity data for industrial and domestic emissions including fugitive and non-point sources.
- Traffic survey at roads selected by IIT Delhi.
- Road dust sampling at roads selected by IIT Delhi.
- Secondary data such the meteorological data.

2. Phase 2:

Digitization of all the data and maps provided by HSPCB and preparation of gridded PM₁₀ emission inventory of the selected villages of Mahendragarh district will be carried out in this phase. The emission inventory developed in this phase of the project will help in estimating the contribution of different sources to the PM₁₀ of these areas.

3. Phase 3:

Using the developed emission inventory, action plans would be formulated to reduce the excess current pollution load, if any. Different scenarios used in these action plans include but are not limited to:

- i. Operating time and frequency of stone crushers to limit the impact on air quality.
- ii. Converting all the unpaved roads to paved roads.

Project deliverables/Expected outcomes:

- (i) An exhaustive emission inventory for the selected villages of Mahendragarh will be developed.

Duration:

The proposed duration is three months. Zero date of the project is the date on which funds are received from HSPCB.

Timeline:

S. No.	Description	Month 0	Month 1	Month 2
1.	Conducting surveys and data collection by HSPCB			
3.	Digitization of maps and data collected			
4.	Preparation of emission inventory			
7.	Final report submission			

Note: The timeline starts from the zero date (date of receiving funds from HSPCB).

Budget:

12 Lakhs INR (Exclusive of applicable GST)

Health Camp Summary

Health camps were organized by Health Department District Mahendergarh in 70 crushers sites and adjacent 11 villages to know the effect of dust/population on employees and villagers mainly respiratory disease, Anaemia, HB and Diabetes mellitus during period 24/06/2022 to 02/07/2022.

Observations:

Total 657 persons were examined out of which 642 were males and 15 females. General Health status of all was good.

- Anaemia: Out of 657, 553 persons were normal, 86 Mild Anaemia, 17 Moderate Anaemia and 01 Severe Anaemia.
- Blood Pressure: Out of 657, 551 have normal BP, 106 have high blood pressure.
- Diabetes Mellitus: Out of 657, 610 have normal Blood sugar, 47 Diabetic/prediabetic.
- Respiratory system: Out of 657 spirometry test 637 have normal value and 20 have abnormal spirometry test. 255 persons were sent for x-ray, out of which 244 have normal x-ray, 11 have abnormal x-ray findings. Out of 11 abnormal x-ray 05 have finding suggestive of pneumoconiosis, 05 have old tubercular lesions in x-ray and 01 was diagnose as new pulmonary tuberculosis patient.

Conclusion:

It is observed that these 657 persons are exposed in dusty environment of crushers for a variable period. Out of 657 persons, 20(3%) have abnormal spirometry finding and 05(0.75%) have abnormal chest x-ray suggestive of pneumoconiosis. This could be because of effect of dust/environmental pollution on respiratory system.

Anaemia found in 104(16%), High Blood Pressure found in 106(16%), High Blood Sugar found in 47(7%). This could be because of dietary habit, life style, age and hereditary factor. Pulmonary T.B found in 1(0.15%) is infective disease.


Civil Surgeon
Narnaul

REPORT OF HELATH CHECK - UP CAMP AT CRUSHER ZONES AND ADJACENT VILLAGES, Distt. MAHENDERGARH

Health Camp Organized	Total Number of Crushers visited	Total Number of villages covers	Total Number of person screened	Hb test done in camp	BP done in camp	Blood Sugar test done in camp		X Rays done				Sputum Examination	Spirometry Test Done																					
															Abnormal X ray Detail																			
24-06-2022, 25-06-2022, 27-06-2022 & 30-06-2022 to 02-07-2022	70	11	657	657	657	657	610	Normal	244	Normal	11	Abnormal	11	18	657																			
																Normal	551	610	5	Pneumoconiosis	5	Positive	1	Normal	637									
																										Mild Anaemia	86	5	Old Koch's	5	Negative	17	Abnormal	20

List of Villages Covered

Sr. No.	Name of Village
1	Bigopur
2	Dholera
3	Gangutana
4	Jainpur
5	Bakhrjia
6	Khatoli Ahir
7	Kultajpur
8	Lutafpur
9	Bayal
10	Berundla
11	Dokhera

Signature
Civil Surgeon (T) Narnaul