



Assessment of Ambient Air Quality at Foundry Industrial Cluster- Eastern Ahmedabad- A case Study

¹Ashok Kumar Chauhan, ²Prof Kalpana Saini, ³Prof S M Usman

¹Student M.Tech. (Sem.-IV), ²HOD, Environmental Engineering Department, Swarnim Startup & Innovation University,

³External Guide, usm2chem@gmail.com

¹ Masters of Engineering Environmental Engineering Department,

¹Swarnim Startup & Innovation University, Gandhinagar, India

Abstract : With an increased pace of industrialization especially in developing countries, environmental problems have also increased. At the same time, with growing population and economic development, there has been a rapid rise in air pollution sources. Due to this, a number of pollutants are released in the ambient air deteriorating its quality. This study has been undertaken to investigate the eastern part of Ahmedabad, specifically at Sonini Chali, Odhav area has substantially foundry units in unorganized manner in Ahmedabad Municipal Corporation jurisdiction. The analytical framework contains ambient air quality and calculated AQI.

I. INTRODUCTION

Air pollution due to anthropogenic sources, is a matter of concern in whole world. The urban areas may be viewed as dense sources of enormous anthropogenic emissions of pollutants, which can alter the atmospheric composition, chemistry and life cycles in it's down wind regimes, extending over several hundred of kilometers.

Moreover, worldwide epidemiological study on the effect of air pollution has revealed that gaseous pollutants and particulate matter has enough potential to cause severe health effect like respiratory, cardiovascular diseases and cardio pulmonary mortality.

Modernization and industrialization of developing countries has led to the increased use of fossil fuels and their derivatives. As such, developing countries are confronted with the great challenge of controlling the atmospheric pollution especially in the rapidly growing megacities.

The India, a developing country, is one of the first ten industrial countries of the world. Because of the enhanced anthropogenic activities in India, air pollution problems have become a topic of intense debate at all platforms. The World Health Organization estimates that about two million people die prematurely every year as a result of air pollution, while many more suffer from breathing ailments, heart disease, lung infections and even cancer.

Air pollution in India has increased rapidly because of intensive population growth, increase in the numbers of vehicles, use of fuels with poor environmental performance, badly mentioned transportation systems, poor land use pattern, industrialization, and above all, ineffective environmental regulations. In every city, the levels are getting worse because of rapid industrialization, growing number of vehicles, energy consumption, and burning of wastes. Several cities face severe air pollution problems, with annual average levels of total suspended particulates (TSP) at least three times as high as the WHO standards.

As we know, Pollution is the biggest concern of any country, especially developing countries, like ours. Amongst all types of pollutions, Air Pollution is said to be a 'Silent Killer'. Thousands of people are trying to be survived from the adverse health effects due to air pollution, which have become a major and global issue now-a-days and people are continuously finding ways for escaping from the jaw of this Silent Killer. In India, current air quality is at alarming level, all parameters i.e. SO_x, NO_x, PM₁₀, PM_{2.5} etc. are beyond the limits prescribed by CPCB, so focus on the quality of ambient air is need of the hours today.

With an increased pace of industrialization especially in developing countries, environmental problems have also increased. At the same time, with growing population and economic development, there has been a rapid rise in air pollution sources. Due to this, a number of pollutants are released in the ambient air deteriorating its quality. The health effects caused by air pollution may include difficulty in breathing, wheezing, coughing and aggravation of existing respiratory and cardiac conditions.

II. AIM OF THE STUDY

Assessment Of Ambient Air Quality At Foundry Industrial Cluster- Eastern Ahmedabad- A Case Study

III. OBJECTIVE OF THE STUDY

- Monitoring (sampling and analysis) of air quality.
- To prepare inventory for the various air pollutants, their emission rates and pollutants loads from various sources along with spatial and temporal distribution in the Soni ni Chal areas.
- To assess the impact of sources on ambient air quality under different management/interventions/ control options.

IV. NEED OF THE STUDY

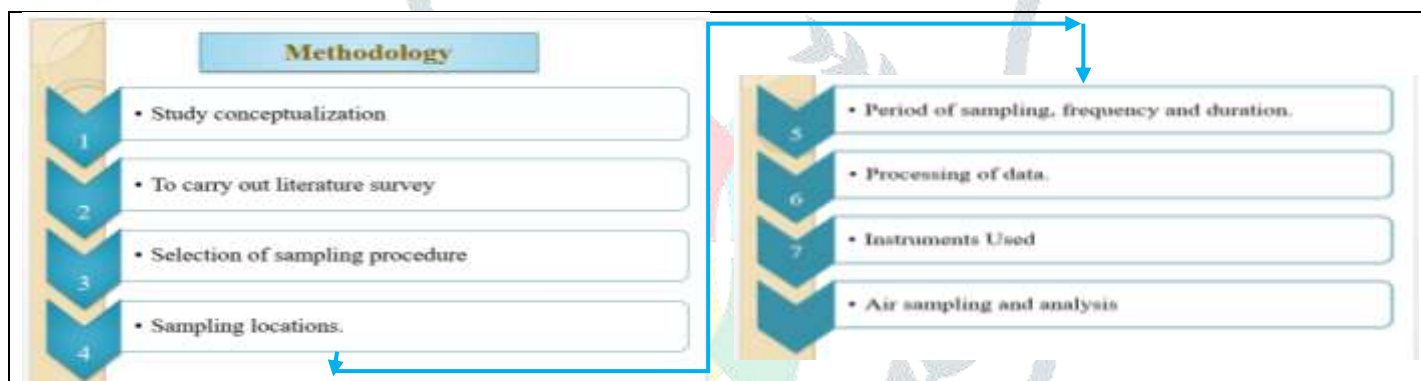
Assessment of Ambient Air Quality at Foundry Industrial Cluster- Eastern Ahmedabad. The eastern part of Ahmedabad, specifically at Soni ni Chal area has substantially foundry units in unorganized manner in Ahmedabad Municipal Corporation jurisdiction. The predominant industries operating in the eastern Ahmedabad particularly at selected areas are foundry along with engineering units and plastic recycling units.

This visible Air pollution is mainly caused by Foundry Units cluster. This foundry units cluster area is having around 35 units. Those are mainly Aluminum Ingot mfg from Dross. This area is surrounded by residential zone and nearby A school.

V. SCOPE OF THE STUDY

- The overall scope of the present case study is to assess the Ambient Air Quality at Foundry Industrial Cluster at Eastern Ahmedabad by way of carrying out real time sampling and analysis of PM 10, SO₂, NO_x
- The project investigates the concentration of the pollutants PM 10, Sulphur Dioxide, and Nitrogen Dioxide from various sources like automobiles, industries over the ambient air quality of the foundry cluster of eastern Ahmedabad.
- The ambient air quality monitoring will be undertaken at around 5 locations in Soni ni Chal area, eastern Ahmedabad ..
- The air pollutants that will be studied in this study, include SPM, PM₁₀, SO₂, NO_x and elements; as part of PM₁₀.
- Ambient air quality monitoring will be carried out in the range of 3 to 10 meters height from the ground level.
- In order to capture diurnal variations of air quality due to variation in the activities and meteorological settings, three standard time slots viz. (1) 06.00 to 14.00 hrs; (2) 14.00 to 22.00 hrs;
- 22.00 to 06.00 hrs have been decided. Data reporting will be however, for 24 hourly averaging period.

VI. METHODOLOGY



VII. MATERIALS AND METHODS

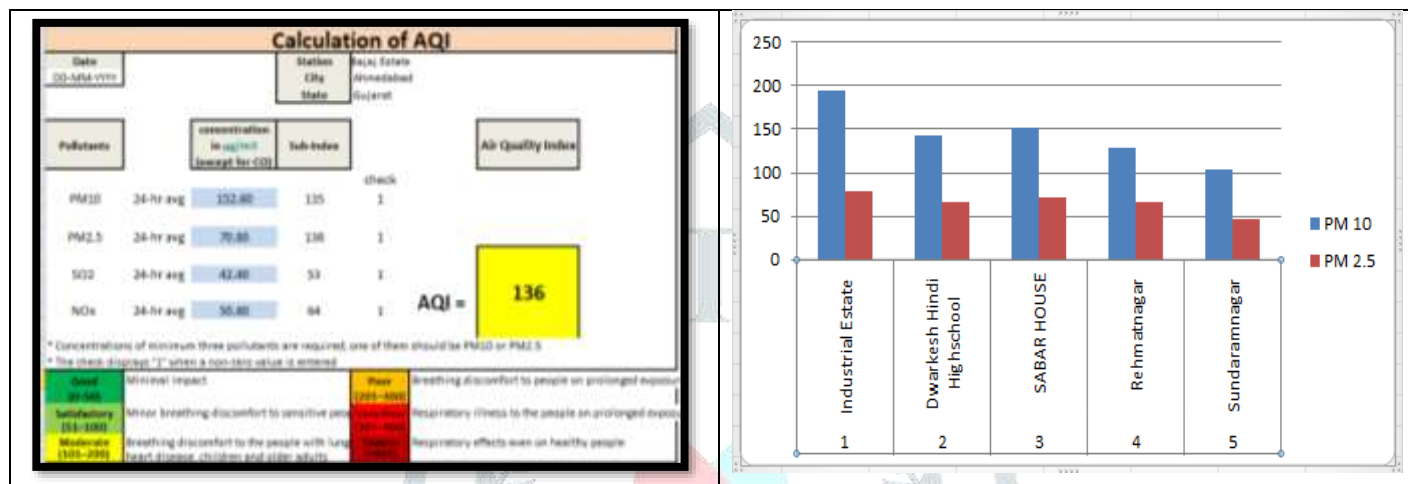
Five 5 sampling sites are selected including 2 industrial, 2 residential, 1 Educational Institute within the study area on the basis of different parameters.

	<ul style="list-style-type: none"> • Sample Location-1 : Within Industrial Estate • Sample Location-2 : Dwarkesh Hindi Highschool • Sample Location-3 : Ind. Estate Main Gate • Sample Location-4 : Rehmatnagar • Sample Location-5 : Sundaramnagar
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Result & Discussion

Measurement of Pollutants concentration After selection of sampling site, monitoring of 4 pollutants i.e. PM 10, PM 2.5, SO₂ & NO₂ was done. Concentrations of different pollutants at different sampling sites were listed in table

Site Code	Sampling Site	Type of Site	Concentrations (ug/m ³)				AQI IND
			PM10	PM2.5	SO ₂	NO ₂	
L1	Industrial Estate	Industrial sites	194.85	79.23	48.21	48.37	164
L2	Dwarkesh Hindi Highschool	Residential Site	142.60	65.4	40.24	45.38	128
L3	SABAR HOUSE Industrial Estate Main Gate	Industrial sites	152.60	70.8	42.4	50.80	136
L4	Rehmatnagar	Residential Site	127.89	66.64	37.02	23.51	122
L5	Sundaramnagar	Residential Site	103.95	47.32	33.54	28.79	103



VIII. CONCLUSION

1. Study for Air Quality Index for The industrial estate was done so that air pollution levels can be known which affecting health of local people. Total 5 sites were selected out of which, 2 were industrial, 3 residential site.
2. IND-AQI values are calculated for each site to check different levels of pollution among different sampling sites within study area.
3. Highest AQI value is found to be 164 at the Industrial Area
4. Residential Site which comes under poor category which may have detrimental effects on human health and members of sensitive groups may experience more serious health effects.
5. It has found that no any foundry unit have APCM and mainly this Air Pollution having high PM (PM 2.5 & 10)
6. Suction Hood, Gravity settling Chamber and Cyclone Separator required to be installed.

IX. REFERENCE

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