

RNI MAHIMAR

36829-2010

ISSN- 2229-4929

Peer Reviewed

Akshar Wangmay

International Research Journal
UGC-CARE LISTED

Special Issue - III

Multidisciplinary Perspectives on Health, Society,
Environment & Sustainable Development

December 2020

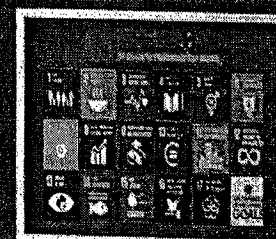
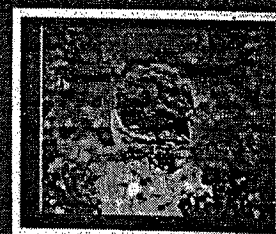
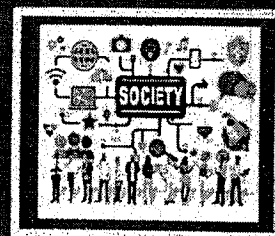
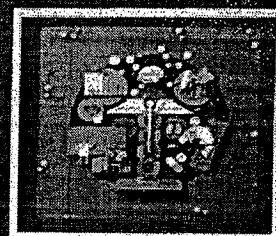
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Address
'Pranav', Rukmenagar,
Thodga Road, Ahmadpur, Dist- Latur 413515 (MS)



The Geographical Study of Air Pollution and Air Quality of Thane District

Mahajan Dipak Hilal¹ Dr. Suresh J. Phule²

¹Research Scholar, Department of Geography, Rajarshi Shahu Mahavidyalay, (Autonomous), Latur, Maharashtra.

²Research Guide, Department of Geography, Rajarshi Shahu Mahavidyalay, (Autonomous), Latur, Maharashtra.

Abstract :

The industrial city of Maharashtra, Thane has been recognized as the most polluting industries in state. The programme launched by the Maharashtra Pollution Control Board (MPCB) in 2017, discloses information on industrial particulate matter (PM) emissions, a widespread air pollutant (The Indian Express, Sunday, 8, 2020). Thane has the highest number of polluting industries in the state at 48, followed by Aurangabad with 20 units, according to data released by the government's 'star rating' programme to evaluate air pollution.

We are aware of the ill effects of environmental pollutants and toxicant on health status of human as well as other living organisms and the environment. The most vulnerable to the toxic effects of the pollutants are children and old people. Diseases like cancer and asthma etc. are increasing in population. Pollution is indeed responsible for such increasing incidences of diseases.

Key Words: Pollution, Pollutants, Environment, Air quality.

Introduction:

Urban development in India is presently going through a very dynamic stage. The percentage of population in urban centers itself having increased from 17.92 % in the 1960 to about 34.47 % in 2019 (macro trends.net, source World Bank). The rapid expansion of cities has brought to the fore acute problems of atmospheric pollution. Air pollution in Maharashtra has been aggravated over the years by developments that typically occur as economies become industrialized.

Objectives:

1. To study about air pollution in Thane district.
2. To study about role of industries in air pollution of Thane district.
3. To know about various air pollutants emitted by industries in Thane district.
4. To take overview on industrial pollution in Thane district.

Hypothesis: Air pollution is harmful to environment and human being.

Methodology:

Secondary data source is used to collect the data relating industrial air pollution in Thane district. Mostly Maharashtra Pollution Control Board's website is used to collect latest data of air quality. Data interpretation (charts and graphs) done manually (using MS Office Word & Excel) on the collected data. News papers and yearly magazines also used for collect the data. Sampled data collected by seven air quality monitoring stations which are located in industrial region of Thane district.

Location of Study Region:

Thane, the northern-most district of Konkan, lies adjoining the Arabian Sea in the North-West of Maharashtra States. It extends between 18°42' and 20°20' North latitude and 72°45' and 73°48' East longitude. Its northern limits adjoin the Union territories of Dadra Nagar Haveli and the State of Gujarat while the district of Nasik and Ahmednagar to its East, Pune to the South-East, Raigad to the South and Mumbai Metropolitan to the South-West.

Air Pollution:

Aside from energy production, the main industrial sectors responsible for air pollution are the petrochemical industry, the chemical industry, the mineral industry (mining and quarrying) and the metal production and processing industry, as well as additional activities associated with waste treatment, the food industry, dry cleaning and garages. The main industrial processes that emit pollutants are the combustion of fuels such as fuel oil, gas oil and natural gas and production processes that do not involve combustion but emit air pollutants.

There are two types of emissions:

1. Point source emissions: Air pollution channeled through a pipe such as a chimney stack or vent.
2. Non point source (diffuse or fugitive) emissions: Air pollution caused by direct contact between volatile substances or particulate matter into the environment. These emissions may originate

from field sources (tanks, pools, mounds, etc.) or leaks from equipment (valves, taps, couplings, etc.).

Air Pollutants:

1. Sulfur dioxide, 2. Nitrogen oxides, 3. Particulates (RSPM,SPM), 4. Carbon dioxide, 5. Non methane volatile organic compounds

Effects of air pollutants:

• Sulfur dioxide:

Effects on human health: Respiratory problems, heart and lung disorders, visual impairment Effects on environment: Chlorosis, death of plant tissues

• Nitrogen Oxides:

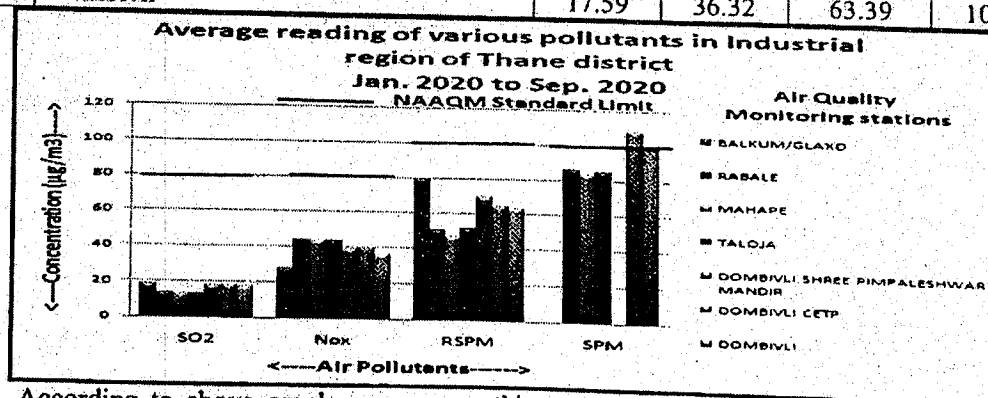
Effects on human health: Generates PAN, Pulmonary disorders, Respiratory infections, very toxic at high concentrations Effects on environment: Acid rain reduces crop yields.

• Particulate matter:

Effects on human health: Respiratory problems, asthma, bronchitis, reduced lung function, lung/liver fibrosis, heart stroke, bone problems, cancer, heavy metal poisoning.

Effects on environment: Adverse effect on biodiversity, accumulation of soot or black layer on the leaves. The Trans-Thane-Creek (TTC) has the country's highest concentration of chemical industrial units comprising almost 70-75 percent of the units located here. Most of them are linked to the petroleum industry. However, pollution apart, even the faulty urban planning of New Mumbai has also drawn flak (<https://www.downtoearth.org.in>). Dr. Rashmi Mayur, director of the Industrial Institute for a Sustainable Future, is more categorical: Industry is responsible for upto 65 per cent of the pollution. Among above mentioned air pollutants sulfur dioxide (SO_2), nitrogen oxides (NO_x), and particulate matter (RSPM,SPM) these are the major industrial air pollutants measured in various ambient air quality monitoring stations in Thane district.

Sr. no.	Ambient Air Quality Monitoring Stations in Industrial areas of Thane district					
	Readings of various Air Pollutants (Jan. 2020 to Sep. 2020)					
	Station Name	Pollutants --> NAAQM Standards->	SO_2 80 $\mu g/m^3$	NO_x 80 $\mu g/m^3$	RSPM 100 $\mu g/m^3$	SPM 100 $\mu g/m^3$
1	Balkum/Glaxo		18.14	27.58	79.79	0
2	Rabale		13.77	44.02	50.62	86.06
3	Mahape		13.35	43.81	46.81	83.58
4	Taloja		13.33	43.58	51.61	85.21
5	Dombivli Shree Pimpaleshwar Mandir		18.00	39.02	69.96	0
6	Dombivli CETP		18.10	39.94	64.49	108.14
7	Dombivli		17.59	36.32	63.39	100.91



According to above graph we can see this year emission of air pollutants by industries controlled due to corona virus (Lock Down). Normally in the environment the concentration of RSPM found larger than SPM but this time the concentration of SPM found larger than RSPM. Two places of monitoring stations like Dombivli CETP and Dombivli have crosses the limit of concentration of SPM suggested by NAAQM standard limit.

Conclusion: