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Neeraj Godara
Department of chemistry
D.A.V. College Abohar
Punjab, India

Air pollution in Punjab: A slow poison

Neeraj Godara

Abstract

Air pollution is the biggest problem in the world. The definition of air pollution is "The presence in the atmosphere of one or more contaminants as is injurious, or tends to be injurious, to human health or welfare, animal or plant life." Acid rain and smog are the two major effects of air pollution. The main source of air pollution comes from industry, which causes a lot of problems for plants, animals, and human beings. Thermal power plants, refineries, petrochemicals and mines release dangerous pollutants into the air; for instance, sulphur dioxide, carbon monoxide, nitrogen oxides and lead. Burning coal, producing paper or smelting metal cause terrible pollution too.

Keywords: Air pollution, slow poison.

1. Introduction

Punjab, predominately an agrarian state is also well known for its rapid industrialization in the post-independence period. But with the advent of green revolution and process of liberalization and economic reforms, manufacturing sector geared up in Punjab. Majority of these industries use coal as a main fuel which correspondingly resulted into increase in the levels of air pollution in the state over the time period. RSPM (Respirable Suspended Particulate Matter) levels are above the maximum permissible limits by CPCB in almost all the cities of Punjab. This study review briefly discusses the drivers and precursors responsible for the increasing levels of air pollutants in the state and the status of air quality, its impacts and the steps/interventions taken to curb this environmental issue.

2. Reasons behind Air Contamination

Major sources of air pollution in Punjab include industries, vehicular sector and agricultural burning (CPCB, 2010; However, growth of population and various developmental activities in the state are the driving forces behind the deteriorated air quality of the state.

Population and Economic Growth

Population in Punjab has grown over 2.5 times in past 50 years. While the rate of population growth has stabilized over the years, the Net State Domestic Product (NSDP) for Punjab has increased three fold during 2004-05 to 2012-13. However, tertiary sector has now surpassed the primary sector in their contributions to the overall NSDP of the state,

3. Industries

Industries are significant contributors for the deterioration of air quality in Punjab. In 2011-12, around 13070 industrial units in Punjab were put under red category (highly polluting) industries by the central government Around 1.68 million small scale industries and 425 large and medium scale industries are presently functioning in Punjab (GoP, Env. However the number is significant in terms of functional units in the country.

4. Transport

Transport sector is one of the most important contributors to air pollution more specifically in the urban areas. In terms of vehicular population in 2012, Punjab is among the top ten states in the country.

Correspondence
Neeraj Godara
Department of chemistry
D.A.V. College Abohar
Punjab, India

5. Agricultural residue burning

Air pollution through agricultural residue burning during the months of Mar-Apr and Oct-Nov largely affects both the states of Punjab and Haryana. Around 16 million tonnes of paddy and 8 million tonnes of wheat straw are burnt in the agricultural fields every year leading to air pollution in the state and nearby areas (Envis Centre, 2014).

6. Baseline Emissions

Statewise emission assessment study (TERI, 2015) shows sector-wise emissions for the Punjab state (Figure 5). Almost 56 % of NO_x emissions are contributed by transport sector in Punjab including both road transport and mode of transportation used during agricultural activities.

7. State of air quality

Currently Punjab has 24 air quality monitoring stations in 11 cities under the National ambient air quality Programme (NAMP) of CPCB (CPCB, 2014) as shown in Table 1. A number of epidemiological studies have been carried out worldwide to study the relationships between air pollution and mortality rates. In Punjab also, following studies (Table 3) have been carried out to study the impact of air pollution on human health and visibility. Air quality in Punjab is strongly related to increasing health problems. However, studies are mainly concentrated on Mandi-Gobindgarh (second big industrial town in Punjab), but cover a wide range of respiratory diseases and their relationship with deteriorating air quality.

8. Response

Various interventions have been taken by Punjab government, Central Government, different Ministries at different time periods in order to control air pollution in Punjab. Apart from these steps, a lot of other measures are been taken in Punjab to curb the pollution levels. A regular check on installation of air pollution control equipment (APCE) for old and newly constructed units is carried out. CNG has been introduced as an alternative fuel in autorickshaw especially in Amritsar, Jalandhar and Punjab. Awareness programs have been conducted by the Punjab government for different target groups time to time.

9. Barriers

Air pollution from natural sources was evident since the beginning in Punjab majorly from open burning activities but has become an alarming problem in past few decades due to industrialization in the state. Although control measures have been introduced in the state from time to time to combat the pollution levels but the pace at which the emission levels have increased is very high compared to that of control measures. In case of emissions from open agricultural burning, farmers are not left with any other option than burning the left over paddy and wheat as they do not have enough money to buy better technology equipment.

Air pollution control equipment (APCE) have been made mandatory for all industries but there are lot of small scale industries like brick kilns which are held accountable due to their mobile nature. People prefer luxury and comfort by travelling in personal vehicles than public transport which has eventually increased the number of vehicles on road.

10. Conclusion and Future Recommendations

Transport sector, industrial combustion and open burning are

major contributors of deteriorated air quality in state of Punjab. Nearly all the cities of Punjab are violating the particulate matter levels as prescribed by Central Pollution Control Board. Thus, it is imperative to control pollution levels in the state by controlling emissions from the respective sources.

In the business as usual (BAU) scenario, the future emissions from these sectors will grow manifold (Figure 7) if proper stringent measures are not being taken on time. This is mainly because of the high growth rate of construction sector and use of old technologies of firing bricks with no air pollution control equipment.

Instead of following chronological order for the norms, BS-V fuels should be considered by enabling the Indian refineries to leapfrog from BS-II to BS-V.

- An effective inspection and maintenance system should be enforced by the Government in the state.
- Old vehicles should be banned in the state.
- Government should conduct programs at community level to sensitize the public about the growing levels of the pollution due to vehicles and promote public transport systems.

Open Burning from left over paddy and wheat straw is a major concern for Punjab state as air pollution caused by these activities is found to be correlated with the increase in eye irritation and respiratory diseases in the state.

- Government should ensure regular vigilance of open burning activities. Some penalty should be enforced in order to bring out this step in action.
- New sustainable technologies should be introduced in the state.

In this sector, industrial combustion is mainly contributing to the emissions in the state.

- Cleaner fuels should be used to curb the emission levels.
- Instalment of APCEs in all industrial units should be made mandatory for all the industries.
- Efficiency of installed APCE's should be checked at regular levels.
- In order to have more regular control, number of air quality monitoring stations in the state should be increased.
- In brick sector, government should emphasize on adoption of cleaner technologies like Vertical Shaft Brick Kiln (VSBK) and tunnel kilns.

Registration of brick kilns should be made mandatory as due to the mobile nature of few brick making technologies, the exact number of brick kilns is never accurate.

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