



# Effect of cement industries on the environment in selected villages of Damaracherla and Nereducherla mandals in Nalgonda district, Telangana.

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## Abstract:

Global warming is considered the major environmental challenge for the world. Rapid industrialization and technical evolution have resulted in larger production in various sectors. The cement industry plays a vital role in sustainable development, growth improving living standards all over the globe by creating larger scale job opportunities and providing multiple cascading economic benefits to associated industries. But the cement industry is an energy enormous intensive and produces many dusts, emissions, odors, and noise. It is a major source of emissions such as CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub>, VOCs, Particulate matter etc. The present study evaluated the effect of cement industries on the environment in eight villages in Damaracherla and Nereducherla mandals. Result concluded that the maximum incidence of environmental pollution such as soil, water and pollution due to the cement factories in this region. This study has highlighted the problem of agriculture production, groundwater, transportation, education and health risks of residents living Wadapally, Ganeshphad, Thalla Veerappa Gudem and Irkigudem of Damarcherla mandal and Sunya Pahad, Ravi Pahad, Ganga Bhavani Puram and Mahankaligudem of Nereducherla Mandal villages near Penna and Deccan Cements factory, and its effect on the environment and livelihood of this area.

**Keywords:** Environment, Pollution, Cement Industry, Agriculture and Livelihood.

## 1. Introduction:

Today, the world's environment, particularly soils, water, air is becoming more and more polluted by various industrial organizations. In particular, during the process of industrial waste, the discovery of natural deposits, the production of construction materials and their use in the national economy, there is a deterioration of agricultural lands and changes in a number of soil properties. Pollution by cement industry effluents is fast becoming a primary cause of the degradation of agriculture lands and resource and crippling of the agricultural economy in developing countries.

The present research work carried on the impact of cement industry effluents with the following objectives (i) studying the perception of farmers on crop production and soil due to cement industries pollution (ii) to examine the impact of the pollution on crop yield (iii) impact of the pollution on education (iv) to examine the impact of the pollution on livelihood and employment.

Concrete is commonly used for the construction, cc roads and building industries. Cement is the primary component of the concrete used in for civil engineering constructions such as buildings, flyovers, cement concrete roads, dams and building constructions. On average approximately 1 ton of concrete is produced each year for every human being in the world. Therefore, concrete (i.e. cement) is one of the world's most significant manufactured materials. Constant increasing of cement industry and its abundance in the world market, need to throw a light on the environmental consequences of concrete and cement manufacturing are becoming increasingly important.

The cement industry has adopted significant technical advancements in reducing carbon dioxide (CO<sub>2</sub>) emissions through developments in process and productivity, but further improvements are limited because CO<sub>2</sub> production is inherent to the manufacturing process of calcinating limestone. The cement industry pollution contributes significantly to the discrepancies in the environment; in particular soil, water and air quality. The key environmental emissions are gases, they are mainly nitrogen oxides (NO<sub>x</sub>), Sulphur dioxide (SO<sub>2</sub>), Carbon dioxide (CO<sub>2</sub>), heavy metals and grey dust. Poor air quality, heavy metals in soil, poor water quality is seen in the cement and construction companies surrounding areas, especially in urban developments. Industrial plant smokestacks from cement and construction companies are some of the biggest contributors to environmental pollution, especially in nearby cities and municipalities of cement industry. Cement manufacturing industries are under close examination these days because of the large volumes of CO<sub>2</sub>, SO<sub>2</sub> and No<sub>x</sub> emitted. Actually, this industrial sector is thought to represent 5–7% of the total CO<sub>2</sub> anthropogenic emissions. Rapid industrialization and technological advancement have resulted in cement making companies being able to produce higher volumes compared to the past. However, the higher production levels have also been largely identified as the prominent cause of pollution. The main sources of air pollution in the industry include excavation activities, dumps, tips, conveyer belts, crushing mills and kiln emissions. As of 2007, the cement industry alone was reported to produced 5% of total greenhouse gases in the atmosphere. Cement industry is one the major contributor of economy, employment and livelihood in the Nalgonda district,

there three cement industries such as Deccan cement, Penna cement and The Indian Cement factory. Cement factories are two sword edges, one hand it is beneficial and another way they causes environmental pollution. Environmental pollution mainly effects the crop production, crop yielding, soil quality, air quality, ground water resources, transportation and livelihood.

The study was undertaken in 2017-2020 period in the surroundings of the Deccan cement, Penna cement and The Indian Cement factories are located in the Damaracherla and Nereducherla mandals, particularly in Wadapally, Ganeshphad, Thalla Veerappa Gudem and Irkigudem in Damarcherla Mandal; Sunya Pahad, Ravi Pahad, Ganga Bhavani Puram and Mahankaligudem in Nereducherla and bordering the state of Andhra Pradesh, about 2 km east from Wadapally and Nereducherla [1].

## 2. Review of literature

Industries are the main reason for the drastic environmental degradation which leads to pollution and particularly from cement industry is a major area of research to overcome the problem of environmental degradation. Since early 1990s, it has been evident that industrial pollution affects the agriculture, crop production and yielding and animal life span, harmful effects on air, water, soil and deteriorates material and generally affects not only the large metropolitan areas but also the medium sized town and urban cities.

Rapid industrialization and urbanization were major culprits for environmental pollution, industrial waste, effluents and unused materials contains hazardous and toxic materials, which are responsible for altering the surround ecological systems. Different industrial discharges damage to various natural resources in the environment such as water, air, soil, livelihood and agriculture production.

Nalgonda district is located in the Telangana state of India. It has a populace of 3, 483, 648 of which 13.32% is urban as of 2011. The district is spread over a region of 2, 449.79 square kilometers (945.87 sq. mi). Starting at 2011 Census of India, the region has a population of 1, 631, 399 Nalgonda regions is the fourth biggest region of Telangana. It is situated between 16° 25' and 17° 50' N of scope, 78° 40' and 80° 05' E of longitude. The region covers a zone of 14'240 sq. kms.

Penna cement industries was formed in year 1991 by Penna cement nereducherla mandal janaphad village the capacity of 0.2mtpa. PCIL was ISO 9001: 2008. Deccan cement limited was estimated in 1979 to set up a mini cement plant. DCL was the first mincemeat plant in the country using dry process rotary kiln pre-calcinatory technology for the manufacture of ordinary port land in technical collaboration with node engineering of Japan. Dcl 1.00 million tpa along with setting up of the capacity coal board power plant of 15 mw. The project site is at bhanipuram in Nalgonda district, Telangana.

Our study area mainly in Wadapally, Ganeshphad, Thalla Veerappa Gudem and Irkigudem villages of Damarcherla mandal, and Sunya Pahad, Ravi Pahad, Ganga Bhavani Puram and Mahankaligudem in Nereducherla mandals in Nalgonda district. The primary crops that are developed in this region are paddy, cotton, chilies, maize, millets, ground nut and jowar were the major crops in this region.

Lakshminarayana Komati 2019 [2] reported that the impact on the environment due to rapid industrialization and establishments of cement factories in Nalgonda district and shown the opencast

extraction activities like drilling, blasting, material handling and transport as a potential source of environmental, soil and air pollution. Also estimated the effect of environmental of the cement production and its variations between different cement plants.

Few studies reported that the toxic compounds such as copper, fluoride, lead, zinc, copper, hydrochloric acid, magnesium, sulfuric acid and beryllium emitted by cement manufacturing plants.

Shah et al. (1989) [3,4] had found the cement dust pollution as an operative ecological factor causing deterioration in the quality of our environment.

Air pollution is the majorly in the environment by cement industries and main threat to the survival of crops in the industrial areas due to the toxic particles of cement dust on some crop yielding [5-7].

### 3. Methodology

This study was carried in Wadapally, Ganeshphad, Thalla Veerappa Gudem and Irkigudem villages of Damarcherla mandal, and Sunya Pahad, Ravi Pahad, Ganga Bhavani Puram and Mahankaligudem in Nereducherla mandals in Nalgonda district.

The research is focused on both primary and secondary data, data was collected largely by employing questionnaire to various households. The secondary data will be collected from existing sources like Govt and private data source the data thus collected will be process by Applying the statistical and Cartography techniques [8].

The computation, mapping the processed data for better interpretation and analysis was be done by using (GIS) Geo graphical information technology [9].

### 3. Objectives

- To study the educational background of Damarcherla and Nereducherla mandals in Nalgonda district.
- To study the employment status of Damarcherla and Nereducherla mandals.
- To study the effect of cement industries on environment especially in soil, water and air in Damarcherla and Nereducherla mandals.
- Impact of cement industries on agriculture and livelihood in the study area.

### 4. Results and interpretation

The results of the questionnaire were listed below section wise. Figure-1 shows that the educational qualifications of respondents of this research study is classified into six groups. Mainly groups in to SSC, Intermediate, diploma, technical, graduate and postgraduate. 69% of the total respondents are studied up to SSC, 11% intermediate, 06%, diploma, 06 % , under graduation 05% and 03% were graduates among the respondents in this study area.

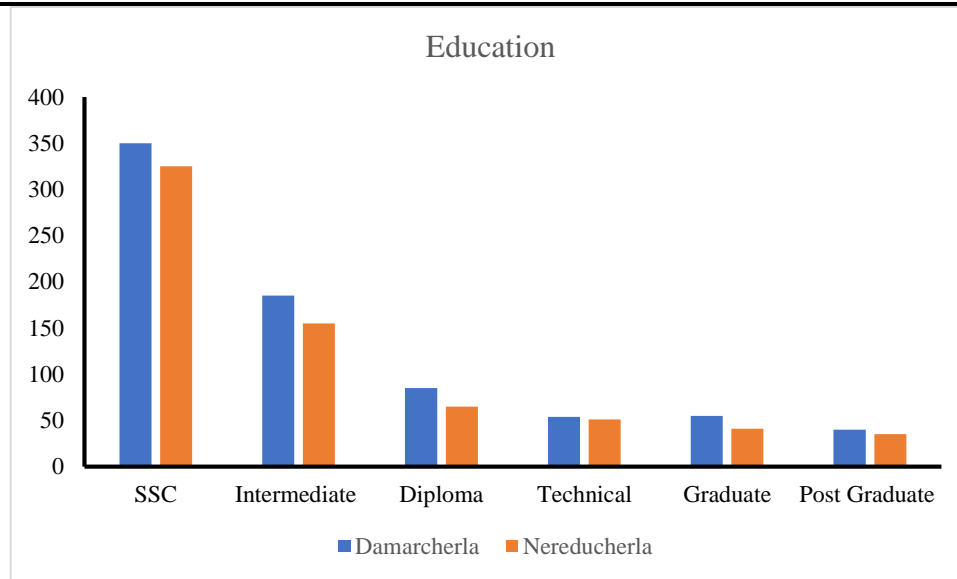


Figure-1. Field study; Educational qualifications.

Figure-2 explained the employment status of the respondents in the Wadapally, Ganeshphad, Thalla Veerappa Gudem and Irkigudem villages of Damarcherla mandal, and Sunya Pahad, Ravi Pahad, Ganga Bhavani Puram and Mahankaligudem in Nereducherla mandals. Majority of the respondents 60-65% agriculture, 4-5% industrial labour, 22-24% daily wages, 4-6% cement factory employees and 5% were self employment in this area.

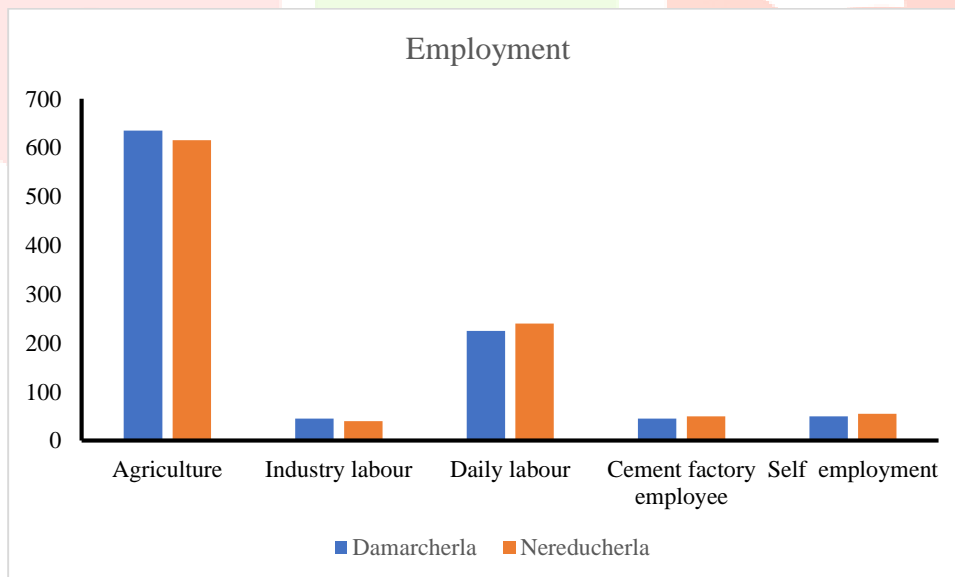


Figure-2 Field study; Employment status.

Effect of cement industry on agriculture, livelihood and transport.

	Agriculture	Livelihood	Transportation
Damarcherla	740	580	660
Nereducherla	675	720	590

Table-1 Field study; Effect of cement industry on agriculture, livelihood and transport.

Table-1 explained the impact of cement industry on agriculture, livelihood and transport status of the respondents in the Wadapally, Ganeshphad, Thalla Veerappa Gudem and Irkigudem villages of Damarcherla mandal, and Sunya Pahad, Ravi Pahad, Ganga Bhavani Puram and Mahankaligudem in Nereducherla mandals. Out of 800 respondents in each section, 85-90% respondents said cement industry causes damage of land, agriculture and crop production. 65-75% off respondents stated livelihood affected and 70-80% respondents stated that transportation affected due to cement industries in this area.

## 5. Conclusion

Our study has concluded that cement factories such as Rasi, Penna and Deccan Cements factories cause for the environmental pollution in this area. Also, our study showing the data of crop production nearby villagers this cement industries. Cements cement factory causes to different types of pollution such as air, soil, water, chemical, noise and waste pollution while those that resides between 5-10 KM from these industries are more prone pollution related diseases such as asthma, lung infections and skin diseases, this pollution also impacts on agriculture and crop production in this area. Government and cement industries should look into the pollution control policy and put into consideration on no occasion should any residential building, agriculture and farming be allowed for approval within 5 KM to any cement factory in order to reduce harmful effects on crop yielding and agriculture.

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