



CEMENT INDUSTRIES AND EFFECTS OF NOISE POLLUTION IN KADAPA DISTRICT, ANDHRA PRADESH, INDIA

B. Balaji Naik

Department of Economics, S. V. University, Tirupati – 517 502, AP

K. Radhika*

Department of Economics, S. V. University, Tirupati – 517 502, AP *Corresponding Author

ABSTRACT

The environment is a complicated and dynamic system, with many interacting components. Our knowledge of these components, of their interactions between them, and the relationship between people, resources, environment and development has undergone profound evolution over the last many years. Climate change is considered as the major environmental challenge for the world. Technological advancement has resulted in Cement making companies being able to produce higher volumes compared to the past. However, the higher production levels have also been largely labelled as the leading cause of pollution. The present paper is on the causes and effects of noise pollution.

KEYWORDS : Cement Production, Environmental and Health Impacts

INTRODUCTION

Environment problems arise in virtually all the sectors of human activity in both the developing and developed countries. In modern time society's interaction with nature is so extensive that it has given rise to what we know as the environmental question affecting all humanity. Environmental deterioration can be attributed to industrialization and urbanization, the depletion of traditional sources of energy and raw materials, constant population growth, the disruption of natural ecological balances, the destruction for economic ends of various animal and plant species, and the negative genetic consequences of the industrial and other pollutants, which include the danger of man's genetic degeneration. Steady scientific and technical progress has secured an unprecedented growth of man's power in relation to nature. Cement is the most common construction material used in building industry. Cement is a basic component of concrete used for building and civil engineering construction. On average approximately 1 ton of concrete is produced each year for every human being in the world. Therefore, cement is one of the World's most significant manufactured materials. Because of its abundance in the world market, understanding the environmental implications of cement manufacturing are becoming increasingly important (Huntzinger and Eatmon and Eatmon, 2009). The cement industry has made significant progress in reducing CO₂ emissions through improvements in process and efficiency, but further improvements are limited because CO₂ production is inherent to the basic process of calcinating limestone.

Noise emissions occur throughout the whole cement manufacturing process from preparing and processing raw materials, from the clinker burning and cement production process, from material storage as well as from the dispatch and shipping of the final products (Stajanca and Estokova, 2012). The heavy machinery and large fans used in various parts of the cement manufacturing process can give rise to noise and/or vibration emissions, particularly from: chutes and hoppers, any operations involving fracture, crushing, milling and screening of raw material, fuels, clinker and cement; exhaust fans; blowers; duct vibration. K.Syamala Devi et al. (2017) opined that Building industry is one of the leaders in deterioration of environment by depleting resources and consuming energy or creation of waste. Emissions from Cement manufacturing are one of the major contributors in global warming and climate change. The cement industry is an energy enormous intensive and products many emissions, odours and noise. It is a major source of emissions such as CO₂, NO_x, SO_x, VOCs, Particulate matter etc.

METHODOLOGY

Random sampling method has been adopted in the present study and according to the information provided by the office of AP Pollution Control Board, The Kadapa District, there are seven cement plants functioning in the study area. Random sampling technique is made use of in the selection of respondents. Among 7 units, 25 respondents were selected randomly who are working in the factory and 25 respondents living around the cement factory were selected randomly and compared their health conditions with respect to environmental

pollution mainly water and finally total sample comes to 350.

RESULTS AND DISCUSSION

Gender

The gender of the respondents is shown in the table 1.

Table 1 Gender of the respondents

Sl. No.	Gender	Category		Total
		Living around factory	Working in the factory	
1	Male	175	172	347
		100.00%	98.30%	99.10%
2	Female	0	3	3
		0.00%	1.70%	0.90%
Total		175	175	350
		100.00%	100.00%	100.00%

The table shows that 347 respondents are males (99.10 %) and mere 3 respondents (0.90%) are females. Moreover, majority of the males are living around the factor and all the female respondents are working in the factory.

Source of Noise Pollution

The sources of noise pollution according to the respondents are ascertained and the details are presented in the Table 2.

Table 2 Source of Noise Pollution

Sl. No.	Source of Pollution	Category		Total
		Living around factory	Working in the factory	
1	Vehicles	24	44	68
		13.70%	25.10%	19.40%
2	Factories sound	58	121	179
		33.10%	69.10%	51.10%
3	Near Road	91	10	101
		52.00%	5.70%	28.90%
4	Others	2	0	2
		1.10%	0.00%	0.60%
Total		175	175	350
		100.00%	100.00%	100.00%

The table shows that more than 51 per cent of the respondents expressed that the sound of the factory is a major source of noise pollution, followed by around 30 per cent opined that near to the road is the reason for noise pollution and more than 19 per cent expressed that vehicles are the source of pollution.

Family members got noise pollution on disturbance

The members of the family of the respondents whether got noise pollution has been ascertained and the details are furnished in the Table 3.

Table 3 Family members got noise pollution on disturbance

Sl. No.	Family members got noise pollution on disturbance	Category		Total
		Living around factory	Working in the factory	
1	Yes	147	138	285
		84.00%	78.90%	81.40%
2	No	28	37	65
		16.00%	21.10%	18.60%
	Total	175	175	350
		100.00%	100.00%	100.00%

The Table 3 shows that 81.40 per cent of the respondents' family members got noise pollution while 18.60 per cent did not get disturbance due to noise pollution.

Problem encountered during the noise pollution

Noise creates problems to the people residing nearby cement factories. Sometime the noise when beyond permissible poses problems. The problems the respondents encountered during the noise pollution are presented in the Table 4.

Table 4 Gender of the respondents

Sl. No.	Problem encountered during the noise pollution	Category		Total
		Living around factory	Working in the factory	
1	Lack of sleep	51	15	66
		29.10%	8.60%	18.90%
2	Loss of appetite	5	23	28
		2.90%	13.10%	8.00%
3	Headache	96	115	211
		54.90%	65.70%	60.30%
4	Mental restlessness	9	22	31
		5.10%	12.60%	8.90%
5	Others	14	0	14
		8.00%	0.00%	4.00%
	Total	175	175	350
		100.00%	100.00%	100.00%

Table 4 shows that 60.30 per cent of the respondents got headache and majority of them are working in the factory, around 19 per cent are suffering from lack of sleep, 9 per cent suffer from mental restlessness, 8 per cent from loss of appetite and 4 per cent of the respondents are suffering from other problems. It is concluded that majority of the respondents (60.30 %) got headache.

Disease caused due to Noise Pollution

Noise pollution at times even causes diseases. The details the diseases caused to the respondents due to noise pollution are presented in the Table 5.

Table 5 Disease caused due to Noise Pollution

Sl. No.	Disease caused due to Noise Pollution	Category		Total
		Living around factory	Working in the factory	
1	Damage of ear drum	4	12	16
		3.30%	7.90%	5.80%
2	Deafness	3	18	21
		2.40%	11.80%	7.60%
3	Physical and mental illness	12	17	29
		9.80%	11.20%	10.50%
4	Blood pressure	8	13	21
		6.50%	8.60%	7.60%
5	Hyper tension	11	14	25
		8.90%	9.20%	9.10%
6	Stress	85	78	163
		69.10%	51.30%	59.30%
Total		123	152	275
		100.00%	100.00%	100.00%

The table shows that 59.30 per cent of the respondents suffered from stress, around 11 per cent of the respondents suffered with physical and mental illness, around 8 per cent equally got deafness and blood pressure and around 6 per cent of the respondents got damage to their eardrum.

CONCLUSION

The heavy machinery and large fans used in various parts of the cement manufacturing process can give rise to noise and/or vibration emissions, particularly from: chutes and hoppers, any operations involving fracture, crushing, milling and screening of raw material, fuels, clinker and cement; exhaust fans; blowers; duct vibration. There are 347 respondents are males (99.10 %) and mere 3 respondents (0.90%) are females. More than 51 per cent of the respondents expressed that the sound of the factory is a major source of noise pollution, 81.40 per cent of the respondents' family members got noise pollution, 60.30 per cent of the respondents got headache and majority of them are working in the factory and that 59.30 per cent of the respondents suffered from stress.

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