



Occupational Health Hazards in Cement Plant Workers and Their Remedies

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Nat. Env. Poll. Tech.
ISSN: 0972-6268
Website: neptjournal.com

Key Words:

Cement plant workers
Cement dust
Occupational health hazards

ABSTRACT

The paper deals with the occupational health hazards among the mini cement plant workers of Hazaribagh district. The health status data of 500 workers were obtained from five different mini cement plants. During investigations, the results obtained indicated that the workers who have been working continuously for more than five years in this environment were suffering from respiratory, skin, eye and heart diseases with chest and stomach pain. It was also noticed that the percentage frequency of affected persons depend upon their age, work experience and sensitivity. It was also noticed that cement plants act as an aging factor for the workers. A few suggestions have been given for protection of health by these workers.

INTRODUCTION

Shelter is one of the fundamental necessity of human beings. To build their shelter, building materials like bricks, stone of various size, marbles and concrete are required. Concrete is the mixture of sand, cement, small stones and water. It is used for making roads, bridges, septic tanks, floors, houses and apartments. Due to urbanization and population bloom, the rate of construction of concrete houses and apartments is increased resulting in more demand of building materials. These building materials are manufactured in mini or mega cement industries and stone crushers. These factories or plants or crushers fulfil the demand of people and play an important role in the development of structure of this advanced and modern world at one side but they pollute the environment by releasing particulate matter of dust at other side. Air pollution is causative factor leading to disease and death among the inhabitants of industrial societies as aerosols are regularly inhaled.

Millions of peoples are engaged daily in such type of dusty plants and industries, and have to face different types of health hazards like fumes, gasses and dust which are risk factor in arising occupational diseases. The dust particles less than 2μ are trapped in the lung and their settling may affect the physiology of lungs (Junge 1977). The effect of dust on the body varies with nature and duration of exposure as well as age of the persons (Chandaran & Rajkumar 2002). Silica dust causes pneumoconiosis, and skin diseases are strictly of occupational origin (Mishra & Gupta 1993). Development of cancer in Danish stone industries workers, Vermont granite shade and quarry workers due to silica exposure have been reported (Gue'ne'l et al. 1989). Allergic manifestation such as respiratory asthma (pulmonary and bronchitis) with fever and skin allergy in the form of formation of rashes to severe skin ulcer may result from exposure to tobacco dust are reported by earlier investigators. Particulate air pollution has been associated with the incidence and severity of respiratory disorder (Pope & Dockery 1992, Near et al. 1995, Peters et al. 1996).

Cement dust is one of the major air pollutants. It consists of hazardous materials such as:

1. alkaline compound (lime) that are corrosive to human tissue, 2. silica that is abrasive to skin and causing damage to lung (silicosis), and 3. chromium that can cause allergic reaction (pulmonary as well as skin).

Cement dust affects three main organs, in general, like eyes, lungs and skin causing different types of respiratory, skin and eye diseases. Keeping in view of above facts, it was decided to investigate the occupational diseases in the mini cement plant workers exposed to cement dust.

MATERIALS AND METHODS

The investigations are based upon the health hazards among mini cement plant workers of Hazaribag district, Jharkhand, India. Hazaribag is a small town with many cement and sponge iron plants are located in and around it.

For this study, 500 workers of varied age and work experience were selected from five different mini cement plants. The occupational diseases among the workers were investigated by inquiry through short questionnaires and also on the basis of their previous medical reports provided by the hospitals. The health status data, thus, obtained were screened to confirm their occupational diseases with relevance to dust pollution arising from mini cement plants.

RESULTS AND DISCUSSION

After data collection of the health status of cement workers, it was noticed that risk of injuries depend on the duration, level of exposure, individual age and sensitivity as also reported by earlier workers (Chandran & Rajkumar 2002). During investigations many diseases like skin, respiratory, eye, nose and throat irritation, rising blood pressure, cardiac disease, and chest and stomach pain were identified among workers. The percentage of total affected people in mini cement plants was found 80%. Some diseases like rashes and dryness of skin, eyes reddening, nail hardening and dry cough were identified as common among workers having five years work experience. However, the level of virulence is low in persons with low work experience than that of long time work experience people.

The common respiratory diseases like dry cough, wheezing troubles, bronchitis, asthma and skin allergy in the form of rashes and irritation were reported in high percentage (70%). The similar results were also found among workers of lime stone crusher (Mishra & Gupta 1993). It was also observed that workers having long term work experience were affected from more than one occupational diseases (double, triple or multidisease affected) in combined form depending upon their age and sensitivity. Ambient air pollution near mini cement plants and other such type of plants is commonly associated with occupational diseases like chronic bronchitis, dry cough, eye diseases and skin allergy (Purohit et al. 2007).

Severe diseases such as heart disease due to high blood pressure and blood clot were marked 6% during the investigation, but no report of lung cancer. The lung cancer in quarry, red and grey granite workers was reported (Koskela et al. 1994). 2.2% of heart diseases and 7% of respiratory diseases were reported in the quarry workers (Dockery & Pope 1994). But in the present study, 70% respiratory diseases were reported. Air pollution is known to affect lungs, especially for asthmatics and it can raise blood pressure and also lead to formation of blood clots and increase the risk of heart disease and stroke.

The common eye diseases like tearing, reddening, irritation and myopia were found in high percentage (65%) in the present study. Such types of eye diseases were also reported among quarry

Table 1: Percentage of affected persons in mini cement plants with respect to their age.

Age of People (yrs)	Total number of examined persons	Number of affected persons	Percentage of affected persons
20-25	18	7	38.88
26-30	50	26	52.00
31-35	80	55	68.75
36-40	95	80	76.00
41-45	70	60	85.71
46-50	48	43	89.58
51-55	79	72	91.13
56-60	60	57	94.00

Table 2: Percentage of affected people in mini cement plants with respect to their work experience.

Lenth of work experience (yrs)	Total number of examined persons	Number of affected persons	Percentage of affected persons
1-5	50	16	32.00
6-10	95	60	63.15
11-15	75	65	86.66
16-20	102	92	90.19
21-25	90	83	92.22
26-30	30	28	93.33
31-35	23	22	95.65
36-40	35	34	97.14

workers which cause physiological change (Raju 1997).

Data given in the Table 1 focuses the percentage figure of affected person with respect to their age. It shows that the percentage of affected persons increase with their age. In low age group people (20-25 years) the percentage figures of affected persons was low (38.8%) than with high age group (50-60 years) of 94%. The data in Table 2 represents the percentage of affected person with respect to their work experience. It is clear from the data that as the work experience of workers increases, the percentage of affected workers also increased. Both variables are positively correlated with each other. In short time work experienced workers (1-5 years) the percentage was low (32%) than that of long term experienced workers (97.14%). Long term exposure to high level of particles has been associated with an increase with the risk of death from lung cancer and heart attach (Koskela et al. 1994). Besides these findings in present study, it was also noticed that cement plant acts as an aging factor to induce the aging among the workers. The workers with 10-12 years work experience looked overaged due to reaction of dust particles.

SAFETY MEASURES

To get protected from cement and cement mixture, workers should take following precautions.

1. First of all, it is utmost important to prevent the skin exposure from cement dust. Every company should provide cotton boiler suits to their workers as per ILO. But very few of them provide such boiler suits, so workers should take care of their own by wearing long sleeves and trousers (preferably cotton) to reduce skin exposure from cement dust.
2. Workers should wear alkali resistant gloves.

3. Workers should wear safety goggles to protect the eyes.
4. Suitable respiratory protective equipment such as P, N or R95 respirator when cement dust can not be avoided.

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