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IMPACT OF BRICK MANUFACTURING ON ENVIRONMENT IN BERHAMPORE C.D. BLOCK, WEST BENGAL, INDIA

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Abstract:

Brick is the most essential building material or unit in underdeveloped nations. Around the world, brick making has been done for ages. Brick-making facilities are part of the minor industrial sector, which is primarily a rural industry. Due to urbanization and population increase, the number of brick kilns is growing daily. In these well-known industries, workers are a vital component of the manpower resources, but sadly, they endure significant suffering. The two biggest effects of brick production are air pollution and land degradation. Both primary and secondary data sources served as the foundation for this study. For the same study, four brick kilns are inspected in Murshidabad's Berhampore C.D. Block. The current study looks at environmental issues and how they affect workers. In addition, this paper discusses and outlines various ideas and solutions for resolving issues related to the brick manufacturing phenomenon.

Keyword: Brick kilns, environmental pollution, Berhamporerural, health issues, building materials.

Introduction:

A long-standing tradition in rural India and around the world is the production of bricks. It has been the most popular building material for millennia. The need for bricks is rising in developing nations, particularly India, according to current trends. One industry linked to infrastructure development in India is brick manufacture, which significantly boosts the country's GDP. The rise in brick kilns is creating jobs for the people of this nation. It belongs to the small and industrial sector and is primarily a rural industry. Due to urbanization and population growth, brick kilns are expanding daily. Brick kiln owners are very eager to grow their company by producing high-quality bricks. Employees make up a significant portion of the manpower resources used in the brick industry. An adverse consequence of brick production was the discovery of environmental contamination within the site. The two biggest effects of brick production are air pollution and land degradation. According to a national survey from India, workers are impacted by the poisonous gasses and suspended particulate matter released by brick kilns. Additionally, the local residents who live closer to the brick manufacturing facilities are also impacted by the environmental issues in the affected area.

Objectives of the study:

- To find out the environmental pollution from brick manufacturing.
- To assess the impact of the problems on the workers engaged with brick kilns.

Review of literature:

Joelle Saad-Lessler (2010) in his paper entitled,
"A Cross-National Study of Child Labor and its Determinants" contends that the interaction of supply and demand is what causes the prevalence of child labor. Employers who recruit children typically create the need for child labor, according to Joelle Saad-Lessler. Ali H. (2019) ‘Meaning and magnitude of child labour: A brick kiln study of Murshidabad district in West Bengal, India’ He found that the present study attempts to analyse the extent of child labor in Murshidabad District's brick kiln industries. Additionally, this study pinpoints the direct causes of child labor in the brick kiln sector.

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Rahman M.,Dhabak I.,(2021) ' Environmental problems from brick manufacturing and its impact on workers : A study on some selected brick kilns in Berhampore C. D. block ,West Bengal.' They observed that the present study examines the environmental problems and its associated impacts on workers. This paper is also discussing and starching some solutions and recommendations regarding the abolition problems associated with brick manufacturing phenomenon.

Study area:

Berhampore C.D. Block, which is situated in the Murshidabad district of West Bengal, India, has been selected for the current study. The Berhampore C.D. the block is located in the middle of the district of Murshidabad. The Bhagirathi River is also connected to the research area. Four brick manufacturers inside the block have been chosen for the study. The study area is located at 24°10°N and 88°25°E. The Berhampore occupies 194.67 square kilometers.

Methodology:

The entire study project is designed using primary data. Using a field survey and the appropriate questionnaire, primary data was gathered in accordance with the planned methodology. Four brick kilns have been chosen for the current study in order to gather primary data via field survey. With the aid of GIS techniques and tools such as Google Earth, Q-GIS, all maps and diagrams are created. A technique is employed to calculate the Satisfaction Index in order to display the level of satisfaction among the employees connected to brick kilns. The Satisfaction Index formula is SI= (fs-fd)/N, where N is the total number of respondents, fs is the number of satisfied respondents, fd is the number of dissatisfied respondents, SI is the Satisfaction Index.

Discussions:

The fact that the individuals operating this firm are financially stable and have made an effort to seize the chance to start a second career is another crucial factor. The brick industry benefited from favorable natural conditions. The rural economy around this town is dominated by the brick industry. Investors appear to view the brick industry as a significant subsidiary of the agriculture sector, and workers play a significant part in making it a significant employer. The availability of various raw materials and enough water is the primary cause. The market, the availability of water, and other raw materials needed for the brick-making process are some of the variables that affect brick production. The availability of high-quality soil is crucial for brick production. The activity is supported by the large-scale supply of raw materials, soil, water resources, laborers, etc. Good agricultural soil is preferred in Umbraj as the raw material for brick production. Ash and gaseous pollutants are released into the environment when fuel is burned to make bricks. The two main environmental issues associated with the brick business are air pollution and high-quality soils. Four brick production facilities in Berhampore C.D. a block have been chosen for this investigation. There are 191 workers in total, of whom 128 are men and 63 are women and are surveyed. In this place, there are more men than women in the population. Both men and women are involved in the brick drying, burning, and loading processes as well as the clay molding and making processes. Accordingly, 65.21 percent of male employees work in the clay molding process, 65.15 percent work in the clay manufacturing process, and 71.42 percent work in the brick drying, burning, and loading processes. Of the female employees, 34.78 percent work in the clay-making process, 34.84 percent work in the clay-molding process, and the drying, burning, and loading is 28.57 percent.

Bricks making process:

Clay preparation: There are six phases involved in making clay bricks. The clay that is roughly 200 mm deep in the top layer of soil is thrown away because it may contain contaminants. Following the

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removal of the top layer, the clay is excavated, spread out on the prepared area, and then cleaned. Clay that has been cleaned is exposed to weather. The mixing and tempering process may be used after the whole rainy season.
2. Molding: This technique, which can be completed by hand molding, involves shaping prepared clay into bricks.
3. Row brick drying: After the molding process, the bricks have some moisture, thus drying is necessary to prevent cracking when burning.
4. Brick burning: Kilns are used to burn the dried bricks at a specific temperature.

Wages of Workers in Brick Manufacturing:

Employee Pay in the Brick Manufacturing Industry The designations of the surveyed brick fields—CBF, BRIGHT, DSAHA, and BBF—are explained Employee pay in brick kilns varies according to the job procedure. The average monthly salary for workers in the clay-making process is Rs. 4475. For every 1000 bricks, the average pay for the clay molding process is Rs. 340. Additionally, the average pay for loading, burning, and drying bricks is Rs. 705 for 1000 bricks. As a result, employees in brick kilns are paid poorly. Because of this, the workers' financial well-being is not satisfactory.

Child Labours in Brick Kilns:

The most significant issue facing modern civilization is child labor. Along with environmental issues brought on by the rise in school dropouts, there is also social pollution. Brick kilns use a large number of juvenile laborers. According to the field survey, CBF brick field employs 22.23 percent child labor, BRIGHT employs 21.42 percent, DSAHA employs 11.32 percent, and BBF brick field employs 30.55 percent. Therefore, child labor accounts for an average of 21.65% of all labor in brick kilns.

Air pollution:

It has been noted that the high-quality agricultural land in the vicinity of the brick making facility has been harmed by the accumulation of coal dust and ashes. Another issue is the large amounts of waste materials produced by brick kilns. It is evident that the productivity of agricultural land is decreasing daily as a result of land degradation. Fly ash, boiler ash, and stone dust make up the majority of the waste materials.

The presence of pollutants in the atmosphere in quantities that negatively impact people, plants, animals, or materials is known as air pollution. The primary source of air pollution is the extensive burning of fuels like coal, oil, gas, etc. to power homes, businesses, and vehicles. Fuel combustion is thought to be responsible for over 90% of air pollution. Particulate matter (dust, smoke), gases (nitrogen oxides, sulfur dioxide, carbon monoxide, carbon dioxide, etc.), metals (such as lead), etc. are the main pollutants. effects of pollution brought on by tiny brick kilns in rural regions. Workers, adjacent residents, and nearby crops are all impacted by air pollution in these clusters. Brick loaders, firefighters, and other personnel who handle ash are among the groups of people who work in brick kilns and are most exposed to pollution. As a result, individuals have a number of health issues. Inhaling these pollutants can lead to lung illnesses including silicosis and pneumoconiosis, which are brought on by breathing in siliceous dust, as well as irritation of the skin and eyes. Agricultural crops are impacted by pollution as well. massive amounts of toxic substances are released. Brick kiln components are posing major health risks. Poisonous gas that contains floating particulate matter rich in carbon particles, high concentrations of carbon monoxides, and sulfur oxides that are damaging to the throat, lungs, and eyes is released by brick kilns. The proprietors of the brick field have been using firewood to burn bricks. Consequently, a significant number of trees are falling.

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Soil pollution:

One of the most fundamental and crucial components in the production of bricks is soil. As a result, manufacturing facilities are constructed in locations with easy access to soil. An essential raw element in a Berhampore is soil; if the soil quality is high, the bricks will likewise be high. The primary raw element used in brick kilns is soil. The Ganga River basin is where Berhampore is located. The primary supply of soil is the Ganga River Basin. The soil in Berhampore block the nearby settlement is suitable for the brick business. The river basin is a significant supply of dirt. The soil deposition in Ganga is of exceptionally high quality. This type of soil deposition along riverbanks is caused by recurrent flooding. The proprietor of the kiln imports soil from the river. Since these locations are found along the banks of river basins, the kiln owner imports soil from these areas. One form of overuse of natural resources is soil excavation. It has an impact on the river channel in addition to soil erosion. It is discovered that the river's meandering is diverted in some areas of the river basin, causing the river channel to change. It might be the cause of river courses encroaching on arable land.

Water pollution:

Coal and bagasse are key materials needed in the brick-forming process. Ash and unburned coal, bagasse, and radish-burned soil particles are left over after brick formation, and they can readily combine with river water, but the water's quality is somewhat altered. Since everyone is expected to depend on water for their survival, the degradation of water bodies and water-driven bodies becomes a very important issue. The only source of drinking water in the research area is surface water flowing through different rivers. Both nature and human activity are degrading the river habitat. Both societal and personal health are impacted by the degraded water bank.

Land cutting problems:

Bricks with superior properties are made from soil of high quality. Thus, the proprietor of the brick factory made an effort to introduce healthy soil properties from the area along the river. Here, the dirt is selected from the Bhagirathi River basin. Thus, a gradual increase in land-cutting activities causes soil erosion. The siltation of Bhagirathi River is the progressive way. Good agricultural grounds are occasionally utilized for brick kilns, and this procedure also has an impact on them. Because all of the topsoil is removed, the agricultural area is turned into fallow land.

Reduction of agricultural land:

A significant amount of agricultural land is taken away to make way for brick kilns because farmers prefer them to cultivating crops because brick kiln owners pay significantly more than they can from farming. As a result, they compelled farmers to cede their agricultural land so they could increase their manufacturing space. Brick kiln owners want to lease the surrounding property for four or five years, and they will pay the farmers in installments. the total area occupied by means of an annual pattern change. The net area of each brick kiln rose daily between 2003 and 2017. Between 2003 and 2017, the area of brick kilns in CBF increased. Between 2003 and 2017, the area of brick kilns increased to 0.167 acres in CBF, 0.182 acres in BRIGHT, 0.181 acres in DOHARA, and 0.219 acres in BBF. The BBF brick field exhibits the most significant fluctuation in the overall land occupied pattern.

Workers' health issues in brick kilns:

The majority of the employees are impacted by the health issues in the brick kilns, according to the findings of the field study and interviews. According to the survey, long-term work activities cause musculoskeletal pain in the hands, knees, legs, and heaps in 16.43% of female employees and 23.65% of male employees. As a result of air pollution, workers developed a variety of illnesses, including asthma,

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heart disease, respiratory issues, and skin conditions. Skin illness accounts for 10.32 percent and 6.23 percent of affection, heart disease for 12.25 percent and 9.23 percent for males and females, and respiratory issues and asthma for 15.24 and 8.21 percent, respectively. As a result, the effects of air pollution are also causing issues for locals.

Satisfaction Index of workers in brick kilns:

Based on the replies of those who work in brick kilns, the degree of satisfaction index was determined. The Satisfaction Index was created by Hall, Yen, and Tan (1975) using the formula SI= (fs-fd) /N, where N is the population as a whole, fs and fd stand for satisfied and unsatisfied respondents, respectively. Therefore, workers are not satisfied with the amount of money they are paid (SI is -0.37), they are moderately satisfied with infrastructure (SI is 0.57), they are not satisfied with working conditions (SI is 0.05), they are not satisfied with health conditions (SI is -0.02) because of air pollution in kilns, they are only slightly satisfied with security (SI is 0.036), they are not satisfied with child labor (SI is -0.47), and Finally, they do not meet the requirements for seasonal labor (SI is -0.05). They are not employed in brick kilns for half of the year, particularly during the wet season.

Recommendations:

First and foremost, it is crucial to identify the factors that contribute to child labor and address these issues by enacting strict legislation and putting in place different child-reduction initiatives like the Integrated Rural Development Programme (IRDP), JGSY, PEEY, CMEY, etc. The study also demonstrates that child labor in India generally and in Murshidabad District specifically is caused by unemployment and underemployment. Therefore, it is important to start implementing new job tactics and self-employment plans at the very beginning. One of the main contributing elements to the issue of child labor is the parents' low educational attainment. In order for the parent to comprehend the importance of education in day-to-day living, this must inspire them to acquire literacy and initiate public awareness campaigns. By focusing on socioeconomically disadvantaged groups, child labor can be prevented, managed, and eradicated.

Conclusions:

It is evident that issues with land cutting are causing soil erosion and a progressive reduction in agricultural land resources. Additionally, the emission of chemicals and other harmful compounds from the brick kilns is said to be deteriorating the quality of the air. Waste from solid bricks contaminates the air, water, soil, and organic matter. Negative health issues linked to brick manufacture affect a large number of workers. There is child labor there. Poverty and economic instability are reflected in low labor costs and per capita income. High-tech instruments and equipment should be used to measure and control the air pollution from brick kilns. The owner should make an effort to conserve high-quality agricultural land connected to brick kilns and minimize material waste. To stop environmental pollution and land degradation in brick kiln plants, the Agriculture and Land Reforms Department should take the initiative. Verification of workers' life insurance and the setting up of enough pay for both male and female employees should guarantee a high standard of living. Rules and regulations must be promoted by the government to curb child labor in brick kilns. Brick kilns should be visited by local government representatives in order to lessen social and economic issues as well as environmental ones.

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