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STUDY ON CONSTRUCTION ENVIRONMENT AND HUMAN HEALTH

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Abstract: Construction activities affect the environment throughout the lifecycle of development. These impacts occur from introductory work on site through the construction period, operational period and to the final demolition when a building comes to a conclusion of its life. Despite the fact that the construction period is comparatively shorter in relation to the other stages of a building's life, it has assorted huge impacts on nature. For that matter there is progressively growing concern about the impact of construction activities on human health and environment. This paper describes about the environmental issues and human health issues in a construction site from the activities, materials and the equipment through a site survey. And also recommending the measures to minimize these impacts.

Index Terms - Human Effects, Survey, Analysis, Cement

I. INTRODUCTION

We are in a fast-developing country. Each day the construction of roads, bridges, buildings etc. are occurring in each corner of our country. This is mainly due to the increase in population and for the development. As the construction activities increases, new technology, advanced materials and equipment are also implemented. These activities effect the environment. It resulted to ozone layer depletion, global warming, resource depletion and ecosystem destruction. Construction activities affect the environment throughout the lifecycle of development. For that matter there is progressively growing concern about the impact of construction activities on human health and environment. The construction site is polluted due to the activities, materials using, construction waste, vehicle, machineries and equipment. Environment is getting affected due to the chemicals and other things from materials, noise and fumes from the equipment, raw materials consumption, vibration on ground, vegetation removal, pollution on water, reduction in water table, interference with the ecosystem, dust generation, fuel consumption, waste and all. Each project creates construction waste which adds to environmental pollution. These things will affect the people at site and surroundings also. In a construction site several labors will be there. Each one will be associated with each activity. Each activity causes several health problems and accidents. This project is an attempt to study about the environmental issues and human health issues in a construction site from the activities, materials and the equipment. Also, to study how much it is affecting and recommending measures to minimize these impacts.

II. AIMS AND OBJECTIVES

The main objective is to identify the major impacts of construction related things on environment and human health.

- To identify the major impacts of construction activities on the environment and human health.
- To identify impacts of construction materials, equipment, waste etc. on environment and human health.
- To measure the amount of impact in a construction site by collecting data.
- To find the appropriate measures to minimize these impacts.

III. METHODOLOGY

The methodology selected for this research paper is questionnaire survey. The form is made on the basis of detailed literature survey. After this, generated the survey form. One of the most significant portions of the study is the "collection of correct data" for effective study. For this purpose, a construction site is identified, and the survey is done based on the daily project activities. Which includes the major activities, materials and equipment using at site. The survey investigated the site working condition, impacts on environment, impacts on human health and its remedies. Various questions are prepared based on the activities, quantity of activities, number of labors, materials using, equipment using etc.



Fig 1. Chart showing the methodology

IV. DATA COLLECTION

The study was carried out by preparing the questionnaire for survey. Survey is done based on the daily report of the project and by the interaction with the project representatives. The survey is done at a construction site for 1 month on a weekly basis. The response received were analyzed.

V. ANALYSIS AND RESULTS

After collecting the data, the date wise work at site is analyzed. From that number of labors associated with the respective work also analyzed.



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	Jan 2020										
	02	03	04	90	<i>L</i> 0	80	60	10	11	13	
RCC work in m ³	35	87.5	10.7	56	42.6		22.2	11.1	7.5	63.24	
Excavation in m ³	25.6	ı	ı	10.08	I	11.25	20.56	ı	ı	I	

Table 1. Quantity of works at site

Table 2. Number of labors associated with each work

	Jan 2020											
	02	03	04	06	07	08	60	10	11	13		
RCC work in m ³	10	15	11	18	15	I	12	14	18	19		
Excavation in m ³	5	ı	ı	4	·	4	9	ı		I		

Table 3. Cement Consumption

	Jan 2020									
	02	03	04	06	07	08	60	10	11	13
In bags	273	682.5	83.5	436.8	332.5	-	174	87	58.5	493

The major work at site is RCC (Concrete works). In that the most common using material is Cement. Cement is found to be the most influencing material in environmental and human issues.



Fig 4. Cement Consumption

Major activity, in which a greater number of labors is incorporated with concrete work. Quantity of concrete works is more when compared to the other works. Lack of usage of safety equipment for labors were found. Like lack of mask, gloves etc.

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VI. DISCUSSION

From the analysis it is found that Usage of cement is more when compared to other materials. When coming to the concrete, cement is the major component. It having major impacts on human health and environment. Cement pollutes the air by dust, carbon oxides, nitrogen oxides (NOx) and Sulphur dioxide (SO2). Exposure to cement dust can disturb eyes, nose, throat and the upper respiratory system. Skin contact may bring about moderate disturbance to thickening/cracking of skin to severe skin damage from chemical burns. Silica introduction can prompt to lung injuries including silicosis and lung cancer. Cement has direct contact with the humans while loading and unloading, while transferring to the site etc. Cement causes high air pollution by dust.

From the production stage also cement causes severe effects on humans and environment. At production units, while transporting and at site cement have direct contact with the humans. While discussing with the cement distributors, they commented that there is no proper care for the workers at production units. Similarly, at site also. To overcome this, first a proper awareness and guidance has to give for the site supervisors and labors. Proper eye protection, ear protection, Mask, Gloves need to be compulsory in construction site and production units also. By using this some of the effects can be reduced. Cement causes this much of issue like environmental issue and human issue is due to its dry form. If cement is available in wet form, these issues will be sorted out up to extent. Actually, the wet form of cement plaster is available for plastering works, repair works, water proofing works etc. but it is used in very less sites. This type of wet form of cement is supplied by ready mix concrete agencies. But no one try to use it. This type of wet form of cement need to be encouraged. So that a lot of issue can be reduced. In construction site, we can go for a simple method; it is sprinkling water at the working area. So, the effect of dust will be less.

VII. CONCLUSION AND RECOMMENDATIONS

In this paper, a study is done on the construction environment and human health. The areas effecting the environment and human health are researched. A questionnaire and personal interviews through at site have formed the basis of this paper. The study reveals cement has a major role in environment and human health in all stages of work. Cement effecting the environment and human health badly. Some recommendations are as follows,

- Air pollution due to the dust particle caused by all activities at site. It can be controlled by spraying water.
- Use personal protective equipment like mask, gloves, eye protection, ear protection etc. It will reduce the effect
- Use wet form of cement for the construction activities.

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