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Noise Pollution Control by using Agro Waste Material

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Abstract: *Increasing use of electrical and mechanical appliances at home and industries has created a concern for noise pollution created by them. Urbanization and heavy growth of construction work in every neighborhood further emphasize the need of new technologies for noise reduction. Noise created by different machines can be controlled either by suppressing the noise generating factors or by using the noise proofing agro materials which help to reduce the acoustic wave's energy by blocking or absorption. Maize, rice straw, and coconut fiber these agro products help to reduce the noise pollution. Newspaper waste also used as noise absorbing materials noise pollution control using agro waste involves leveraging agricultural residues to create effective sound-absorbing solutions. This abstraction encompasses the development of materials like acoustic panels, barriers, or insulation from agro waste, providing sustainable and eco-friendly methods to mitigate noise pollution in diverse settings.*

Keywords: Agro waste materials, maize, rice straw, rice husk, gypsum, natural latex

I. INTRODUCTION

Noise Pollution: Unwanted or disturbing sound in the environment that affects the health and well- being of humans and other living organisms is called as noise pollution. Noise pollution has become the 3 pollution sources. It has adverse effect on environment, human health and economy. Recent studies reveal that a prolonged exposure to noise levels about 90 decimals can cause permanent deafness. Researcher are of opinion that if the present noise levels continues unfettered, future generation may be born deaf and dumb, At present the focus is to develop a cheap, renewable sound proofing material from agro waste, which is non-abrasive, porous, good insulation, hygroscopic and architecture combustive material for automobile, home appliances applications As the population grows, the number of people living in crowded urban areas will also increase. It is estimated that by 2050, over two-thirds of the population will live in urban areas, which will only increase the amount of noise pollution. Long-term exposure to day- evening-night traffic noise levels of at least 55 decibels affects an estimated 113 million Europeans. Furthermore, 22 million Europeans are subjected to high levels of noise from railways, 4 million to high levels of aircraft noise, and fewer than 1 million to high levels of noise from industries According to a recent BBC report, parts of the London Underground were "loud enough to damage people's hearing," with noise exceeding 105 decibels on many lines. According to the report, some were "so loud that hearing protection would be required if they were workplaces." Based on a survey among citizens of the EU, by the World Health Organization (WHO), 80% of respondents believed that noise affects their health. Per the World Hearing Index, a person living in the loudest cities has hearing capabilities equal to someone 10- 20 years older. Overall, the findings revealed a 64% correlation between hearing loss and noise pollution

II. LITERATURE REVIEW

K. Nagasahadeva Reddy et.al (2020)

Carried out experimental study on noise control by using agro waste produced like maize, rice straw and binding materials like adhesive and gypsum. In this paper they have prepare acoustic board of various proportion of using agro waste. They carried out various test such as water absorption, sound absorption test on the board. In conclusion of the study, they found that this board can reduce the unnecessary sound.

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Dr. Kumar A. and Shruti (2020)
Have carried out study on Analysis of sound absorbing material using agro waste products. In this paper, they used rice straw, bamboo agro waste and polypropylene as a binding material for their study. To achieve good strength, agro waste concentration was divided in to 3 different ratios for specimen. They carried out flexure test, moisture absorption test and impedance tube test on the specimen. They found that all this natural fiber has excellent physical and mechanical properties and can be utilized more effectively in the devolvement of composite material for various building application

A Saleh, et al (2020)
have carried out study on potential of using agricultural waste (orange peel) and empty water bags in the production of sound absorption panel. For this study, they used orange peel and polythene as resin along with 2.5mm mesh sieve. Resin is chemical material that binds the fiber together to produce particleboard. They prepared six samples i.e. 280gm of orange peel and 120gm of pure water bags respectively. These sample transfer to compound machine one after one. The temperature of compound machine was set to150°C for 30 minutes. The hot paste was removed from roll mill and transferred in to a mold of 20cm. From this study, they found that the composite is good sound absorber.

Ebrahim Taban, et.al (2019)
have Carried out study [2 on experimental and mathematical survey of sound absorption performance of Date Palm fibers. For this experimental study, they used date palm natural fiber and polyvinyl alcohol. They made 3 sample of thickness of 20mm. 30mm and 40mm and constant density of 65kg/m. Result found from this experimental test shows increased in thickness of sample can further enhance their sound absorption coefficient.

Balan A.V. and shivasankaran N. (2019) Carried study on noise control using waste materials. In paper they have used newspaper waste, maize waste and textile waste. They have prepared seven samples with various proportions. They use impedance tube instrument for sound measurement. From this study, they found that maize waste and textile waste have more sound absorption up to800 Hz

Ricky Dave T. Mercado et.al (2018) carried out study on the potential of selected agricultural wastes fiber as acoustic absorber and thermal insulator based on their surface morphology via scanning electron microscopy. They use coconut husk, sugarcane husk. banana pseud stem for the study. In this study, they prepared samples by using agro waste and they carried out flame test, water absorbing capacity test, sound absorbing capacity test on sample. The found that, coconut husk have good sound absorbing capacity and thermal insulation

Son T. Nguyen (2017)
carried out study on Green aerogel from Rice Straw for thermal acoustic insulation and Oil spill cleaning Applications. This study was carried out on green aerogels from rice straw for thermal acoustic insulation. For this experiment rice straw, ethanol, cationic, starches were used to prepare sample. After preparing three-sample sound absorption test has carried out. From this study, they found that aerogels have high oil absorption capacity (up to 13g/g).

III. CONCLUSION

Noise pollution is one of the major type of pollution which cause various health effects on living being. There is a need to minimize the noise pollution increasing day by day. From this review study it has been observed that various studies were carried out and efforts have been taken by various governing bodies to minimize Noise pollution and its ill effects, but still there is a need of more attention to be given for Noise pollution and its control.

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