

Comparative study of incidence of diseases prevalence among livestock animals in cement polluted and non-polluted areas of Kashmir, India

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ABSTRACT

Cement factories releases an enormous amount of pollution in the form of gases, particulate, dust and heavy metals having adverse effects on whole environment including livestock. The livestock industry plays a significant role in gross domestic product (GDP) of the nation, which needs utmost care. However due to negligence of various sectors including government as well as private, the conditions of the livestock health is getting worsened. During a comparative survey the incidence of various diseases such as respiratory infections bronchitis, calf pneumonia, coughing /wheezing, eye irritation, liver abnormalities, dermatological / skin problems, and various other pollution related problems were found to be significantly on rise among livestock at an alarming rate in the cement polluted areas and appropriate steps to overcome these impacts were needed to be taken.

Key words: *Livestock; Prevalence; Respiratory Problems; Cement*

I. INTRODUCTION

Cement is most widely used concrete material throughout the world. The discharge of cement factories generally consist of particulate matter, sulphur dioxide, nitrogen oxides and heavy metals producing continuous visible clouds which ultimately settle on the surroundings as a result the whole ecosystem around the cement factory is subjected to extraordinary stress and abuse. These gaseous and suspended air pollutants released from cement factories entered the body mainly through inhalation, as large particulates are generally precipitated on the surface water and vegetation which are mostly ingested by animals.

II. STUDY-AREAS

Livestock health status in the **Khrew-Khonmoh** ($34^{\circ} 01' 14.00'' \text{N}$ $075^{\circ} 00' 05.0'' \text{E}$ - $34^{\circ} 04' 30'' \text{N}$ $74^{\circ} 58' 10'' \text{E}$; administrative district of Pulwama) area suffering cement dust pollution and the non-polluted area of **Chatterhama** ($34^{\circ} 09' 58'' \text{N}$ $074^{\circ} 53' 39.1'' \text{E}$; included in the administrative district Srinagar) was evaluated after obtaining details of data from the Department of Animal Husbandry, J&K Government. Some of the photographic evidences of air pollution caused by cement factories in the area are given below:

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Huge plumes of dust from Saifco Cement Factory in Khonmoh, Jammu and Kashmir, India



Dust and Gas Emissions from Khrew, Jammu and Kashmir, India (JK Cements)



*Settled Cement Dust on Wild Fruit Shrub (*Rubus viveus*)*



*Cement Dust on Forest Tree (*Celtis australis*) and the Ground Herbage on which Cattle Graze*



*Cement Dust on Forest Tree (*Celtis australis*)*



Cattle Suffering from respiratory Illness

and the Ground Herbage on which Cattle Graze

III. RESULTS AND DISCUSSION

The total population of livestock in the three areas of Khrew, Khonmoh and Chatterhama is given which includes cattle, cows, sheep, goats, poultry birds and organized farms/ poultry population is given in figure (1) below.

The highest population of livestock excluding poultry birds was at Chatterhama was (14319) followed by Khonmoh (2096) and then by Khrew (1457).

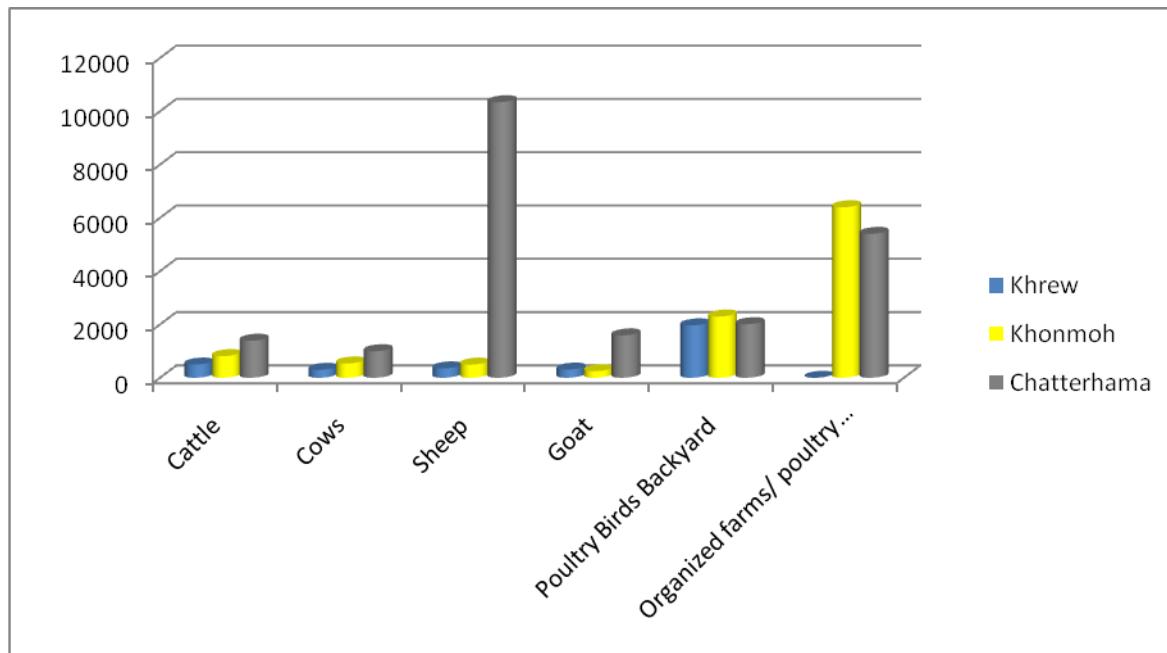


Figure 1: Livestock population in Khrew, Khonmoh and Chatterhama

Data about twenty types of diseases was provided by animal husbandry department which included: Respiratory tract infection, bronchitis, gastro intestinal disorders, parasitic infestations, urinary Tract and Gynea related infection, surgical cases, black quarter, foot and mouth, infertility cases, Tympanites, calf pneumonia, Metritis, cystic ovary, coughing /wheezing, eye Irritation, rabbies, liver abnormalities, Insomania, dermatological/ skin problems, flourisis/plumbisum.

Respiratory tract infections were 14.8% at Khonmoh, 10% at Khrew and 6.68% at Chatterhama. 10% of bronchitis cases were found at Khrew, 6.80% at khonmoh and 3% at Chatterhama while gastro intestinal disorders were minimum 3% at control site (Chatterhama), 3.80% at Khonmoh and 4% at Khrew. Foot and Mouth diseases were maximum 30% at Khrew, 3% at Khonmoh and zero% at Chatterhama. 5% cases of calf pneumonia were found at Khrew, 2% at Khonmoh and zero% at Chatterhama (Figure 2).

7.62% of coughing/ wheezing cases were reported from Khonmoh, 5% cases from Khrew and 0.50% from Chatterhama while 5% cases of eye irritation were found at Khrew, 2.09% at Khonmoh and zero% at Chatterhama. 1% cases of liver abnormalities were found at Khrew while none cases were found at Khonmoh and Chatterhama.

Dermatological disorders were also reported from the area. 5.2% from Khrew, 4.85% from Khonmoh and 4.75% cases from Chatterhama.

Various other diseases were also found but those may not be related to cement pollution.

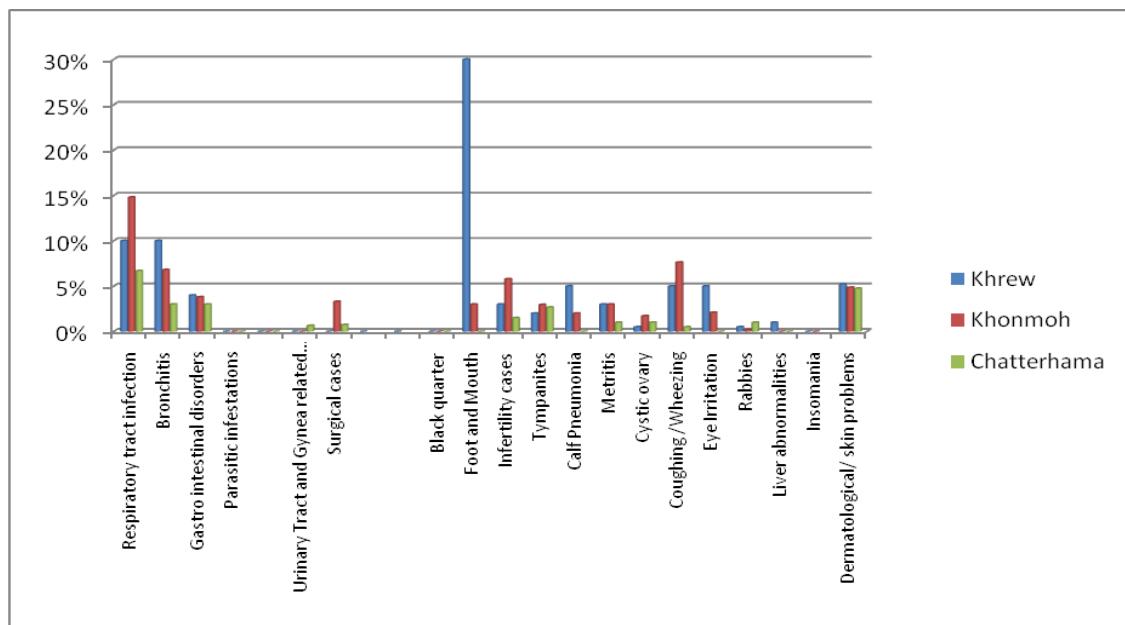


Figure 2: Representation of percent incidence of diseases prevalence among livestock in Khrew, Khonmoh and Chatterhama

Thus according to the data collected from animal husbandry departments and veterinary experts it has been estimated that there was high diseases prevalence in Khrew and Khonmoh when compared with the control area. There were enough hazards of cement dust in the areas as the intensity of cement dust is increasing and we found cement dust settled on soil, houses, animal sheds, and ponds and on entire plantation. This has caused various health problems in livestock of the area (B.V.O, Pampore).

Maximum percentage of respiratory tract infections was found in Khonmoh followed by Khrew and minimum at control site which most probably were caused by cement dust. Other cement pollution related diseases such as bronchitis, calf pneumonia, coughing /wheezing, eye irritation, liver abnormalities, and dermatological / skin problems (Van Rensburg *et al.*, 1966; Schwabe, 1984; S, Sana. 2013) were found higher in Khrew and Khonmoh as compared to control site of Chatterhama..

IV. CONCLUSIONS

- It has been concluded from the study that cement industry is a major pollution problem contributor in terms of dust and particulate matter emitted at various steps of cement manufacture.
- High prevalence of diseases among livestock was found in the cement affected areas when compared with control one.
- Cement dust consists of many toxic constituents.
- Besides humans high rate of diseases were seen among livestock in the cement affected areas.

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- It has been seen that the effect of pollution on animals is greater than that on man and the biocidal effects of polluted environment may sometime appear in animal species before people are affected.

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