ABSTRACT

The environmental pollution problems in developed and developing countries are growing rapidly. Air pollution is one of the man-made environmental disasters which is a major problem all over the world. One of the sources of air pollution is through industrialization. To manage resources and take positive action towards preventing of air pollution, continuous monitoring round the clock and perfect reporting mechanisms are necessary. The existing monitoring and reporting methods and their drawbacks are

Short or Spot sampling – cannot give adequate data.

Continuous reporting – Produce excessive communication.

Reporting Aggregation of data – Based on the method of aggregation, sometimes it is impossible to analyze the data. This study provides the design guidelines to an industry, for efficient construction of wireless Sensor Networks (WSNs). The work is carried out in four tracks, they are Application domain space, Network domain space, Logical topology design and Physical topology design, for the purpose of knowing the characteristics of air pollution monitoring application, the possibilities of implementing WSNs in industrial areas, Various practical need of reporting methodology and Energy efficient WSNs implementation respectively. The application domain space and network domain space characteristics are analyzed based on the large-scale industrial visit under the control of TamilNadu Pollution control Board (TNPCB). The logical and physical topology designs are implemented using Castalia simulator based on OMNeT++. 