

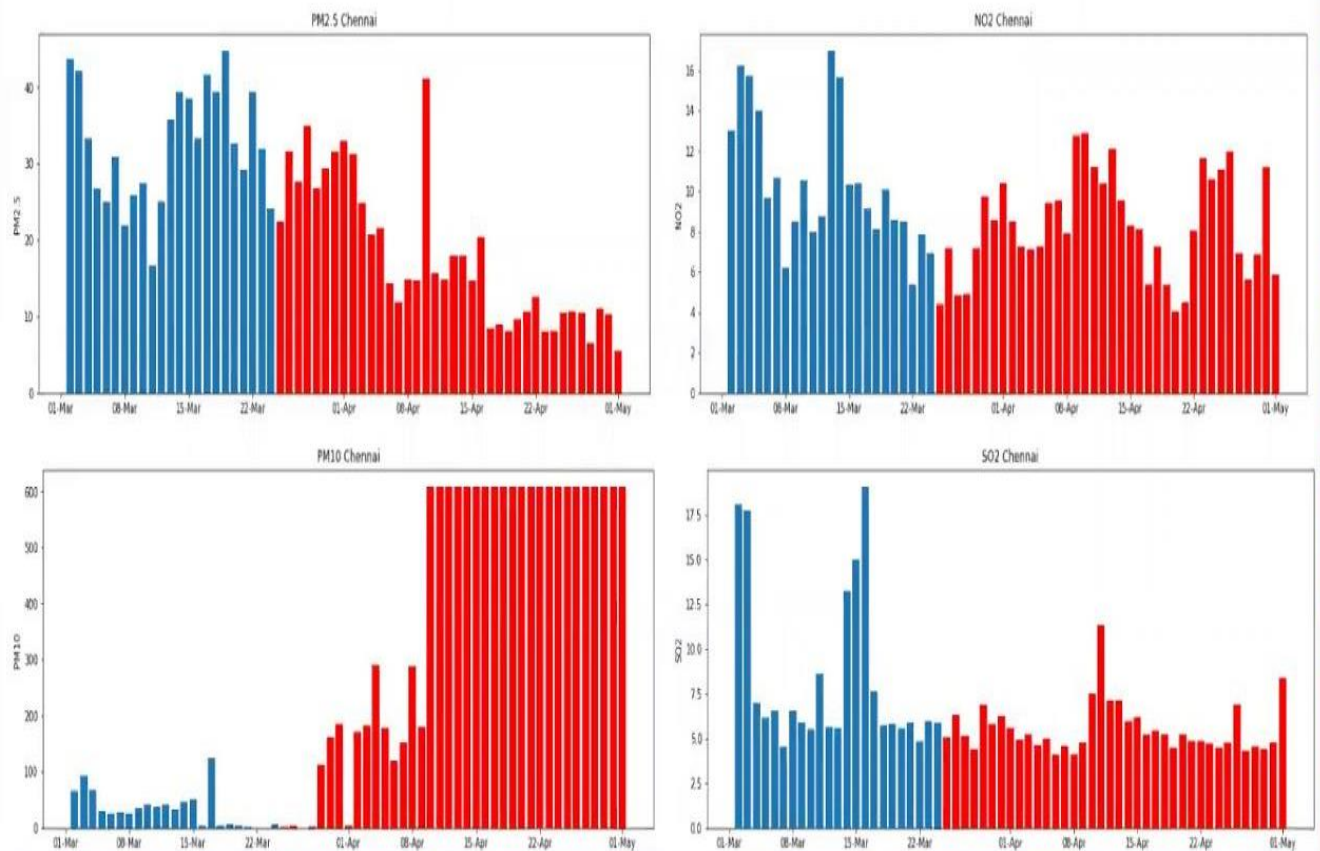


AIR QUALITY ANALYSIS IN TAMIL NADU

1 PROBLEM STATEMENT:

- ❖ Air pollution is one of the most serious problems in the world. It refers to the contamination of the atmosphere by harmful chemicals or biological materials. It may cause diseases, allergies, and severe health problems in humans and other living organisms and may damage the natural environment. Health problems have been growing at a faster rate, especially in urban areas of developing countries where industrialization and the growing number of vehicles lead to the release of a lot of gaseous pollutants into the environment that causes damage to human health and makes the air quality poor. According to the World's Worst Polluted Places by Blacksmith Institute in 2008, two of the worst pollution problems in the world are urban air quality and indoor air pollution.
- ❖ Pollution is becoming a serious issue so there is a need to build a flourishing system that overcomes the problems and monitors the parameters that are affecting environmental pollution. In the United States, the Environmental Protection Agency (EPA) collects air pollution statistics. It's important to study these statistics because they show how polluted the air has become in various places around the country. So there is a need to monitor air pollution levels in an area and the statistics of parameters that affect air quality so that the level can be minimized and certain actions can also be taken.
- ❖ Another problem that can be taken into consideration is the use of traditional air quality monitoring systems. These systems are generally expensive and provide low-resolution sensing, large bulk, and unstable operation.
- ❖ High cost and large bulk make it impossible for a large-scale installation. This system can only be installed in key monitoring locations of some key

enterprises thus system data is unavailable to predict the overall pollution situation. To overcome defects of traditional monitoring systems and detection methods and to reduce test costs, a work proposes a method combining IoT technology with environmental monitoring



❖ 2 PROPOSED SOLUTIONS:

- ❖ The desired monitoring process will involve the combination of hardware and software with the major sensors performing their specific roles. The data from the sensors will be taken on the Arduino board and output is generated on the LCD and buzzer which can be controlled via a web server. When it will be

connected to Arduino then it will sense all gases, and it will give the Pollution level in PPM (Parts Per Million). The sensor will give the output in form of voltage levels and we have to convert it into PPM. Combining these monitoring processes with the new technologies in trends that have made things easier along with some open sources to meet the desired requirement. It involves the development of a platform for monitoring various parameters like temperature, humidity, and air pollution level by examining various gases levels and their concentration level present in an environment via gas sensors and showing the results comparing it with the threshold values indicating a red flag if it goes beyond threshold via buzzer. A Hands-on Arduino board, WI-FI module, and various sensors with the major involvement of the Internet of Things (IoT) make this monitoring process reliable. This technology also provides a replacement for the traditional monitoring process making it less costly and more reliable and accurate

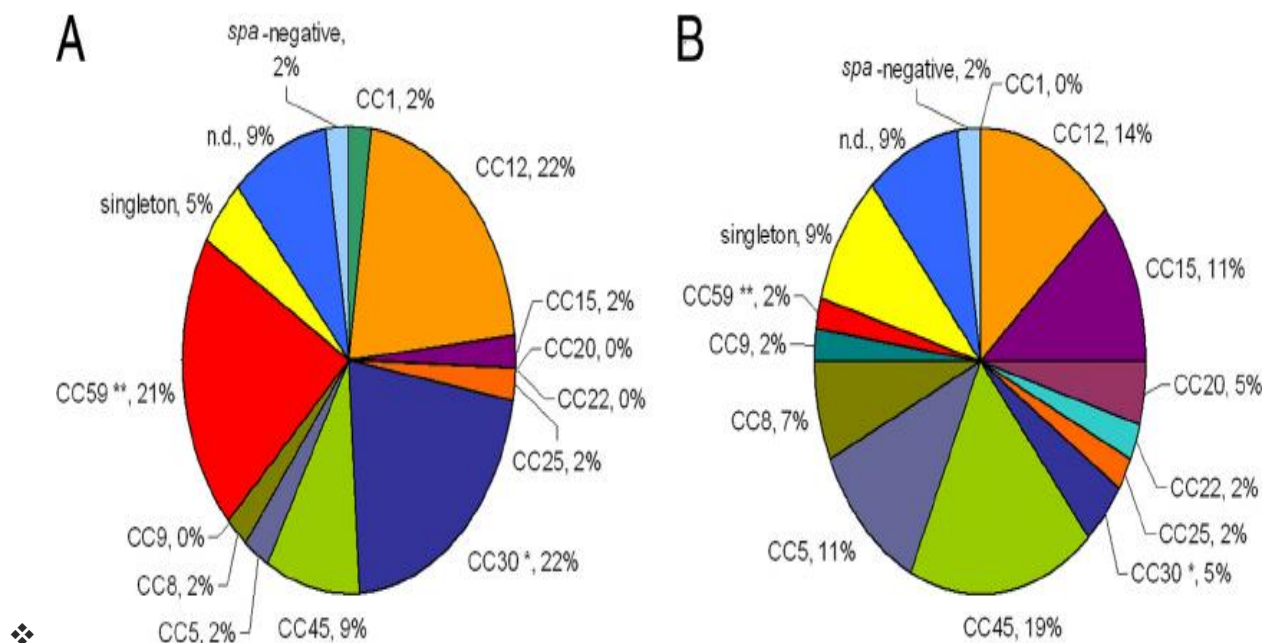
❖ **3 CURRENT CHALLENGES:**

- ❖ The current challenges for air quality monitoring systems include data delivery in real-time. Pollution characteristics through the integration of multi-sensory data. Also, the use of traditional air quality monitoring systems is generally expensive and provides low-resolution sensing, large bulk, and unstable operation.
- ❖ High cost and large bulk make it impossible for a large-scale installation. This system can only be installed in key monitoring locations of some key enterprises thus system data is unavailable to predict the overall pollution situation.

❖ **4 PROJECT OUTCOME -ACHIEVEMENTS:**

- ❖ This project describes the implementation constraints and attributes or measures of the various pollution monitoring system. This system has an advantage such as low power consumption, in order to monitor pollutant quantity in different sites. The proposed wireless air pollution monitoring system provides real-time information about the level of air pollution in these

regions, as well as provides alerts in cases of drastic changes in the quality of air. This information can then be used by the authorities to take prompt actions such as evacuating people. The proposed system will show the simulation output of sensing the humidity level, temperature, and presence of other gases in the environment. The sensor output is then pushed to the cloud and can be viewed through the internet. Anyone sitting in any corner can monitor the air quality and can perform actions over it. The Arduino will sense the input from various sensors and output will be generated on the LCD and buzzer indicating a value



❖ 5 APPLICATIONS OF THE PROJECT:

- ❖ Indoor Air Quality Monitoring
- Industrial Perimeter Monitoring
- ❖ Site Selection for reference monitoring stations
- ❖ Making the data easily available for the users

❖ 6 FUTURE SCOPE OF WORK

- ❖ Interface more sensors to know the detailed content of the gases present in the air.
- ❖ Designing webpages and uploading the data on the web page making it user accessible easily.

- ❖ Interfacing of SD Card to store the data can be done
- ❖ Interfacing of GPS Module to monitor the pollution at the exact location and upload on the webpages.