**AIR QUALITY ASSESSMENT(TN)**

### PHASE2-innovation

**Submitted by:**

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MODULE 3- DATA EXTRACTION:

Assessing air quality in Tamil Nadu, involves collecting and analysing various data points.

1. **Monitoring Stations**:

Tamil Nadu likely has several air quality monitoring stations situated across the state. Data is collected from these stations regularly.

1. **Parameters Measured:** The following parameters are usually measured to assess air quality:

* **Particulate Matter (PM2.5 and PM10):** These are fine particles in the air, which can deeply penetrate into the respiratory system.
* **Ground-level Ozone (O3):** Ozone at ground level is a key component of smog and can cause respiratory issues.
* **Nitrogen Dioxide (NO2):** A byproduct of combustion processes and a contributor to air pollution.
* **Sulphur Dioxide (SO2):** A pollutant often associated with industrial emissions.
* **Carbon Monoxide (CO):** A colourless, odourless gas produced by incomplete combustion.
* **Volatile Organic Compounds (VOCs):** Organic chemicals that can easily become vapours or gases and contribute to air pollution.

1. **Data Collection Frequency**:

Data is typically collected continuously or at least hourly at monitoring stations.

1. **Data Accessibility:**

The collected data is usually made accessible to the public and relevant authorities. It can often be found on government websites, environmental agencies, or through specialized air quality monitoring apps.

1. **Air Quality Index (AQI):**

The collected data is often used to calculate the Air Quality Index, a standardized way to convey air quality information. The AQI is divided into categories such as "Good," "Moderate," "Satisfactory" etc.

 Tamil Nadu Pollution Control Board

**Air Quality Index of 34 CAAQM Station on 01, August, 2023 @16:00 Hrs**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl.No** | **District**  **(Location)** |  | **SO2** | **NO2** | **CO** | **PM2.5** | **PM10** | **AQI Index** | **AQI**  **Value** | **Prominent**  **Pollutant** |
| 1 | Ariyalur |  | 9 | 12 | 0.4 | 16 | 42 | Good | 42 | PM10 |
| 2 | Chengalpattu (Vandalur) | | 12 | 14 | 0.3 | 15 | 46 | Good | 46 | PM10 |
| 3 | Chennai | Kodungaiyur | 9 | 17 | 0.6 | 14 | 63 | Satisfactory | 63 | PM10 |
| 4 |  | Koyambedu | 2 | 12 | 0.4 | 28 | 62 | Satisfactory | 62 | PM10 |
| 5 |  | Perungudi | 3 | 21 | 0.5 | 15 | 77 | Satisfactory | 77 | PM10 |
| 6 |  | Royapuram | 2 | 23 | 0.7 | 17 | 68 | Satisfactory | 68 | PM10 |
| 7 | Coimbatore | Kuruchi-SIDCO | 14 | 2 | 0.3 | 35 | 71 | Satisfactory | 71 | PM10 |
| 8 |  | PSG Collage | 5 | 6 | 0.1 | 15 | 38 | Good | 38 | PM10 |
| 9 | Cuddalore | Semmendalam | 3 | 6 | 0.1 | 20 | 25 | Good | 25 | PM10 |
| 10 |  | SIPCOT | 11 | 22 | 0.6 | 21 | 32 | Good | 32 | PM10 |
| 11 | Dindigul |  | N/A | | | | | | | |
| 12 | Hosur |  | 6 | 8 | 0.1 | 24 | 46 | Good | 46 | PM10 |
| 13 | Kanchipuram | | 2 | 4 | 0.2 | 23 | 49 | Good | 49 | PM10 |
| 14 | Karur |  | 13 | 10 | 0.5 | 20 | 33 | Good | 33 | PM10 |
| 15 | Madurai |  | 2 | 5 | 0.3 | 23 | 46 | Good | 46 | PM10 |
| 16 | Nagapattinam | | 12 | 13 | 0.3 | 16 | 10 | Good | 16 | PM2.5 |
| 17 | Namakkal |  | 15 | 16 | 0.4 | 23 | 31 | Good | 31 | PM10 |
| 18 | Ooty |  | 20 | 21 | 0.3 | 16 | 47 | Good | 47 | PM10 |
| 19 | Perundurai |  | 20 | 4 | 0.5 | 18 | 48 | Good | 48 | PM10 |
| 20 | Pudukkottai |  | 12 | 16 | 0.2 | 23 | 39 | Good | 39 | PM10 |
| 21 | Ramanathapuram | | 7 | 3 | 0.4 | 9 | 55 | Satisfactory | 55 | PM10 |
| 22 | Ranipet, SIPCOT | | 12 | 16 | 0.8 | 13 | 45 | Good | 45 | PM10 |
| 23 | Salem |  | 11 | 9 | 0.4 | 15 | 19 | Good | 19 | PM10 |
| 24 | Thanjavur |  | 13 | 16 | 0.1 | 17 | 40 | Good | 40 | PM10 |
| 25 | Thiruvallur | Gummidipoondi | 12 | 8 | 0.4 | 50 | 133 | Moderate | 133 | PM10 |
| 26 |  | Kathivakkam | 28 | 20 | 0.1 | 22 | 72 | Satisfactory | 72 | PM10 |
| 27 |  | Manali | 4 | 10 | 0.1 | 20 | 75 | Satisfactory | 75 | PM10 |
| 28 | Thoothukudi |  | 7 | 10 | 0.3 | 29 | 67 | Satisfactory | 67 | PM10 |
| 29 | Tirunelveli |  | 6 | 4 | 0.3 | 20 | 44 | Good | 44 | PM10 |
| 30 | Tiruppur |  | N/A | | | | | | | |
| 31 | Trichy | City | 20 | 23 | 0.5 | 37 | 80 | Satisfactory | 80 | PM10 |
| 32 |  | Rural | 12 | 13 | 0.1 | 20 | 40 | Good | 40 | PM10 |
| 33 | Vellore |  | 33 | 12 | 0.4 | 25 | 67 | Satisfactory | 67 | PM10 |
| 34 | Virudhunagar | | 11 | 9 | 0.4 | 11 | 23 | Good | 23 | PM10 |

Minimal impact

Minor breathing discomfort to sensitive people

Severe

Very Poor

Poor

Moderate

Satisfactory

Good

Breathing discomfort to the people with lungs, asthma and heart diseases Breathing discomfort to the to most people on prolonged exposure Respiratory illness on prolonged exposure

Affects healthy people and seriously impacts those with existing diseases

1. **Data Sources:**

In Tamil Nadu, data is often collected and maintained by agencies like the Tamil Nadu Pollution Control Board (TNPCB) and the Central Pollution Control Board (CPCB).

1. **Geographic Variation:**

Air quality can vary significantly across different regions of Tamil Nadu, so data is often collected from multiple locations to account for this variation.

1. **Historical Data:**

Historical data is valuable for trend analysis, so data is stored and made available for research and policy planning.

1. **Public Awareness:**

The data is often used to inform the public about the air quality in their area. Public awareness campaigns may be launched during periods of poor air quality to encourage people to take precautions.

1. **Regulatory Compliance:**

Industries and organizations are often required to monitor and report their emissions to ensure they comply with air quality regulations.

MODULE 4- COGNOS ANALYTICS IN ACTION:

"Action analytics" typically refers to the process of collecting and analysing data to make informed decisions and take action. In the context of air quality assessment in Tamil Nadu, action analytics would involve using the collected air quality data to make informed decisions and take actions to improve air quality and protect public health. Here are some steps involved in action analytics for air quality assessment:

1. **Data Analysis:**

The first step is to analyse the air quality data collected from monitoring stations. This analysis may involve identifying trends, patterns, and anomalies in the data.

1. **Identify Hotspots:**

Identify areas with consistently poor air quality. This may include industrial zones, traffic-congested areas, or regions with a high density of pollutant sources.

1. **Health Impact Assessment:**

Evaluate the health impacts of poor air quality, considering the vulnerable populations and the potential for respiratory and cardiovascular diseases.

1. **Regulatory Compliance:**

Ensure that industries and businesses adhere to air quality regulations. Use data to identify and address non-compliance issues and enforce stricter emissions standards if necessary.

1. **Mitigation Strategies:**

Develop and implement strategies to improve air quality in areas with persistent issues. This may include reducing emissions from industries and transportation, promoting clean energy sources, and enforcing stricter emission controls.

1. **Urban Planning:**

Incorporate air quality data into urban planning and development to reduce sources of pollution and promote green spaces, public transportation, and pedestrian-friendly infrastructure.

1. **Policy Development:**

Use data to inform the development of air quality policies and regulations. This could include setting emission limits, promoting clean energy adoption, and incentivizing environmentally friendly practices.

1. **Emergency Response:**

Prepare emergency response plans for extreme air quality events, such as smog or high particulate matter concentrations. These plans may involve issuing health advisories and implementing traffic restrictions.

1. **Continuous Monitoring:**

Maintain continuous monitoring of air quality to assess the effectiveness of implemented measures and to adapt strategies as needed.

**INTERPRETATION:**

Action analytics for air quality assessment is an ongoing process that requires collaboration between government agencies, environmental organizations, industries, and the public to make informed decisions and take actions to improve air quality and protect public health.