**Pakistan's Air Quality Index (AQI)**

Pakistan's Air Quality Index (AQI) standards are primarily based on the National Environmental Quality Standards (NEQS) established by the Pakistan Environmental Protection Agency (Pak-EPA). While these standards provide permissible concentration limits for various pollutants, a standardized AQI calculation method akin to those used by the US EPA or India's CPCB has not been officially adopted. However, researchers and environmental agencies in Pakistan often utilize AQI calculation methods similar to international practices, adjusting them to align with local NEQS values.

**Pakistan's NEQS for Key Pollutants**

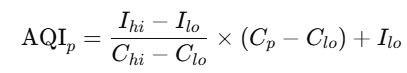
The NEQS specify maximum allowable concentrations for pollutants over specific averaging periods:

* **PM2.5**: 35 µg/m³ (24-hour average)
* **PM10**: 150 µg/m³ (24-hour average)
* **NO₂**: 80 µg/m³ (24-hour average)
* **SO₂**: 120 µg/m³ (24-hour average)
* **O₃**: 180 µg/m³ (1-hour average)

*Note*: These values are derived from the NEQS and may vary based on updates or specific regional considerations.

**AQI Calculation Methodology**

To compute the AQI for each pollutant, the following formula is used:



Where:

* *Cp*​: Measured concentration of the pollutant
* *Chi, Clo*​: Breakpoint concentrations that are closest to *Cp* ​
* *Ihi*​, *Ilo* ​: AQI values corresponding to *Chi* ​and *Clo*​​

The final AQI is determined by taking the maximum AQI value among all pollutants for a given time period.

**AQI Categories and Health Implications**

Based on the AQI value, air quality is categorized as follows:

| **AQI Range** | **Category** | **Health Implications** |
| --- | --- | --- |
| 0–50 | Good | Air quality is considered satisfactory. |
| 51–100 | Moderate | Acceptable; some pollutants may pose a moderate health concern for sensitive individuals. |
| 101–150 | Unhealthy for Sensitive Groups | Sensitive groups may experience health effects. |
| 151–200 | Unhealthy | Everyone may begin to experience health effects. |
| 201–300 | Very Unhealthy | Health warnings of emergency conditions. |
| 301–500 | Hazardous | Serious health effects for the entire population. |
| >500 | Severe Hazardous | Emergency conditions; the entire population is more likely to be affected. |

*Note*: These categories are adapted from international standards and may be used in Pakistan for public communication and health advisories.