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Analysis of Water and Air Quality in and Around HIMSWM Treatment Plant- Hyderabad

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Abstract: *In recent days the emission of air pollutants in to the environment has grown very quickly. The air pollution is caused due to the smoke emitted by vehicles, industries and other sources. Hyderabad is the largest and capital city of Telangana. It occupies 650km^2 on the Deccan Plateau along the banks of the Musiriver, in the northern part of south India. According to the 2011 Census of India, Hyderabad is the fourth-most populous city in India with a population of 6.9 million residents within the city limits, and has a population of 9.7 million residents in the metropolitan region, making it the sixth-most populous metropolitan area in India. With an output of US$74 billion, Hyderabad has the fifth-largest urban economy in India. In India air pollution is monitored by Central Pollution Control Board(CPCB) along with State Pollution Control Boards (SPCBs) and the National Environmental Engineering Research Institute (NEERI) in Nagpur. The National Air Quality Monitoring Programme (NAMP) was started in 1984 with seven sensor stations 248 towns and cities have the air quality network of 591 air quality monitoring stations upto 2015, it is reported that in India 2022 added 180 manual air quality monitoring stations, increasing the number to 883 to achieve the goal of 1500 by 2024. For our study because of some practical difficulties and analysis of the air quality. Air Pollutants has been collected from the CPCB. The dataset contains City, Date, Time, $PM_{2.5}$,PM_{10}, NO_2, SO_2, CO, O_3, Benzene, Toulene, Xylene, Air Quality Index (AQI). Hyderabad was divided into six zones, air quality monitoring sensors are located at 14 places in and around six zones. For our study we selected one sensor that is Secunderabad, which covers the surrounding areas including Jawahar Nagar treatment plant. To analysis the maximum concentration of air pollutants such as $PM_{2.5}$,PM_{10},SO_2,NO_2,CO,O_3over the time period of three months (Jan to Mar 2023).Most physio-chemical properties, including as pH, EC, Alkalinity, Chlorides, Cu, Mn, Pb, and Cr, exceeded their acceptable limits at more than three sample sites, according to this study. The water sources were determined to be unsafe for drinking, agricultural, and irrigation uses due to elevated toxicity levels.It was observed that PM2.5,ranges 218 - 403µg/m3 is very poor causes respiratory illness, PM10 range 112 - 360µg/m3 is moderately polluted causes breathing discomfort (Asthma, lungs), NO2 range 10 – 12ppm is satisfied causes minor breathing discomfort to sensitive people ,O3 range 20 – 35ppm is good causes minor effect, SO2 is 12 – 22ppm is satisfied causes minor breathing discomfort to sensitive people ,CO 109 – 119ppm is severe effects on healthy people and serious impact for those with existing diseases, so continuous air quality monitoring is necessary to protect environment and human health.*

Keywords: Municipal Solid Waste, Hyderabad Integrated Municipal Solid Waste Management (HIMSWM), landfills, Greater Hyderabad Municipal Cooperation (GHMC), Municipal Solid Waste(MSW)

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