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ABSTRACT

For a healthy lifestyle, it's critical to regularly breathe in clean air. When chemical, physical, or organic materials contaminate an indoor or outdoor space and change the environment's inherent features, it is referred to as air pollution. Fires in homes, cars, factories, and forests are common causes of air pollution. Particulate matter, carbon monoxide, ozone, nitrogen dioxide, and sulfur dioxide are all examples of things that are pollutants to public health. Air pollution causes respiratory and other illnesses and is a leading cause of illness and death. The reason for conducting this study is to examine air pollution problems in Ghana. The targeted areas for this study were Accra, Kumasi and Tamale of Ghana. The study areas were considered owing to their dominance in large population density, diversity, and high smoking prevalence. Data have been collected from PM2.5 for Accra and Kumasi and PM 10 for Kumasi concentration levels between January 2019 to November 2024 from Ghana USA Embassy air quality database

(aqicn.org/data-platform/). The data for Tamale PM 2.5 was taken from a work conducted by Sing et, al 2020 on the topic exposure to secondhand smoke in hospitality settings in Ghana. Evidence of changes since implementation of smoke-free legislation. The data for the three cities were entered onto an excel sheet namely Kumasi PM10, Kumasi PM2.5, Kumasi Month, Kumasi Yearly Summary, Kumasi Temperature, Kumasi Summary, Kumasi 2024 September, Kumasi vs Accra and PM2.5 Levels in Kumasi, Accra and Tamale. Descriptive statistics including the daily minimum, maximum and median were generated for the PM levels across the whole dataset and then subdivided by cities in excel. Graphs were developed from the data in the excel sheet to measure the concentration of PM 2.5 for Kumasi, Accra and Tamale to show the difference in their concentration levels in the atmosphere. Kumasi PM 10 data concentration was also measured through the development of graphs in the excel sheet. The charts (figure 1 to 12) allow for the drawing of the following significant conclusions. The difference between urban and suburban/rural environments is highlighted by contrasting the three cities. Accra's consistently high PM2.5 levels demonstrate the challenges of managing pollution in a densely populated urban setting. Tamale's flat line, in contrast, shows a cleaner atmosphere, which might be the consequence of less urbanization and industry. Given that Accra's figures indicated significant increases in early 2022 and early 2023, this is concerning. These could be related to human activities (such as increased building, traffic, or industrial emissions) or environmental conditions (such as Harmattan dust). It is essential to understand the cause of these increases to effectively control air quality challenges. Exposure to high levels of PM2.5 over an extended period can have negative health impacts, such as respiratory and cardiovascular diseases and even early death. The Accra data is quite concerning since it demonstrates numerous instances of hazardous air quality that require immediate attention. The seasons can have a significant impact. For example, Saharan dust can increase PM2.5 levels during the Harmattan season (December to February), especially in the central and northern regions of Ghana.