

Climate Change Effects of Vehicular Carbon Monoxide Emission from Road Transportation in Part of Minna Metropolis, Niger State, Nigeria

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Abstract : Poor air quality often considered one of the greatest environmental threats facing the world today is caused majorly by the emission of carbon monoxide into the atmosphere. The principal air pollutant is carbon monoxide. One prominent source of carbon monoxide emission is the transportation sector. Not much was known about the emission levels of carbon monoxide, the primary pollutant from the road transportation in the study area. Therefore, this study assessed the levels of carbon monoxide emission from road transportation in the Minna, Niger State. The database shows the carbon monoxide data collected. MSA Altair gas alert detector was used to take the carbon monoxide emission readings in Parts per Million for the peak and off-peak periods of vehicular movement at the road intersections. Their Global Positioning System (GPS) coordinates were recorded in the Universal Transverse Mercator (UTM). Bar chart graphs were plotted by using the emissions level of carbon dioxide as recorded on the field against the scientifically established internationally accepted safe limit of 8.7 Parts per Million of carbon monoxide in the atmosphere. Further statistical analysis was also carried out on the data recorded from the field using the Statistical Package for Social Sciences (SPSS) software and Microsoft excel to show the variance of the emission levels of each of the parameters in the study area. The results established that emissions' level of atmospheric carbon monoxide from the road transportation in the study area exceeded the internationally accepted safe limits of 8.7 parts per million. In addition, the variations in the average emission levels of CO between the four parameters showed that morning peak is having the highest average emission level of 24.5PPM followed by evening peak with 22.84PPM while morning off peak is having 15.33 and the least is evening off peak 12.94PPM. Based on these results, recommendations made for poor air quality mitigation via carbon monoxide emissions reduction from transportation include Introduction of the urban mass transit would definitely reduce the number of traffic on the roads, hence the emissions from several vehicles that would have been on the road. This would also be a cheaper means of transportation for the masses and Encouraging the use of vehicles using alternative sources of energy like solar, electric and biofuel will also result in less emission levels as the these alternative energy sources other than fossil fuel originated diesel and petrol vehicles do not emit especially carbon monoxide.

Keywords : carbon monoxide, climate change emissions, road transportation, vehicular

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