

Effect of Climate Change Pollutants on the Corrosion Rate of Steel in Rural, Urban and Industrial Environments

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Abstract

Ever since industrial revolution, the world climatic conditions have been deteriorating due to the ever increasing amount air pollutants injected into the atmosphere. This have adversely affected the health of living organism, plants and the environment that host them. Building structures are not left out in the devastating effects of air pollution as metallic components are easily oxidized leading to corrosion. Corrosion of steel materials due to environmental pollutants has become an issue of great concern to researchers all over the world. This paper looked at the effect of climate pollutants in the air as they affect weathering steel in rural, urban and industrial environment. The corrosion process in steel over time and how it varies in rural, urban and industrial environments were considered. The overall objective of this work is to underscore the factors that have impact on the progressive deterioration of materials exposed to atmospheric weathering. The climate and air pollution parameters that affect material losses are identified and their numeric values obtained via dose response functions. The results obtained show that SO_2 corrosion rate of industrial environment is about five times that of rural environment while that of industrial to urban and urban to rural corrosion rates are slightly above two times for each.

Keywords: Climate Change, Building Materials, Air Pollution, Corrosion Rate and Global Warming