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Title: Impact of Emissions from Power Stations on the Ambient Air Quality of Selected Urban Areas in Kuwait

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Abstract: In Kuwait, two main power stations, one comprising of seven-300MW steam generators at Doha and other with eight-300MW steam generators at Subyia cover the major power requirement of Kuwait city. These stations used different types of fuel oil as the prime source of energy that has different sulpher contents (S%). Comprehensive emission inventories for year the 2001 were used to execute Source Complex model for Short-term Dispersion (ISCST4.5) to predict ambient ground level concentrations of sulphur dioxide (SO2) and nitrogen oxide (NOx) at selected receptors. A yearlong meteorological data were used in conjunction with the dispersion model to compute SO2 and NOx levels in and around the power stations. For validation of the model, computed results were compared with the measured daily average values at a fixed Kuwait EPA air quality monitoring station located at the roof of polyclinic in Rabia residential area. Contributions of each power station to the highest predicted values were assessed. Significance of the fifty highest hourly, daily and annual ground level concentration values under existing meteorological conditions was analyzed. The results for year 2001 revealed that daily and annual mean predicted SO2 concentrations had exceedance about 5.7% and 0.16% respectively of the total area under investigation. Based on these results, mitigation strategies would be proposed to abate high pollution levels caused by these power stations.