Title: Primary Pollutants Monitoring and Modeling Using Chemical Mass Balance (CMB) Around Fahaheel Residential Area

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Abstract: Four major sources of air pollution were identified and modeled using Chemical Mass Balance (CMB) around a residential area. The sources were identified as MAA refinery, downtown area, upstream facilities and main highway road. The sources were analyzed using a series of concentration roses (unfiltered and filtered) executed from the data collected. Data collected included primary and secondary pollutants levels as well as major metrological parameters. The model gave a 91% and 89% match at the receptor point for the identified sources in two different durations. Metrological conditions and chemical fingerprints were adapted into the model to minimize the error and mismatch. Seasonal variation analysis was established by choosing the two months that represent the seasonal distribution in the year. Local and international rules and regulations were cross referenced in order to evaluate the air quality of the area under investigation. A number of violations in terms of ambient levels of primary and secondary pollutants were found and reported in this study.