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WEEKDAYS AND WEEKEND VARIATIONS OF SURFACE OZONE LEVEL IN THE GREATER VANCOUVER AND FRASER VALLEY (FV) OF BRITISH COLUMBIA

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This paper analyzed ambient ozone and its precursor data from nine monitoring sites of the Greater Vancouver/Fraser Valley of British Columbia to study the possible influence of primary pollutants emissions on the weekdays and weekends variations. Greater Vancouver Regional District (GVRD) Authority provided the data for the study. Despite the decreasing trend in ambient level of CO, NOx, SO2, and PM10 in the region, average level of surface ozone has been in increasing trend since the last decade. In general, level of traffic vehicles mileage in Canada varies according to the days of the week with maximum mileage during Thursday and Fridays which corresponds with the variations in CO and NOx levels in the FV region. Both CO and NOx emissions follow the similar patterns in all the stations. Distinct variations in O3, CO and NOx levels exist between weekdays and weekends for different seasons with higher percentile variations in winter and lower in spring. Despite reduction in CO and NOx levels during the weekends, ozone level increases during the weekend. Within the weekdays, relatively higher level of CO and NOx emissions were observed during Tuesday, Thursday, and Friday. Significant correlations between emissions of CO and NOx indicate the influence of traffic volume on the productions of surface ozone. Higher Ozone level during the weekends shows the importance of advection phenomena due to meteorological conditions, possible NOx limiting condition in the low traffic areas, and topography of the site. Keywords: Surface Ozone, Weekdays and Weekends, Traffic Emissions, Greater Vancouver/Fraser Valley