



Air quality monitoring around oil refinery in the Baltic region. First results.

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One of the largest oil refineries in the eastern Baltic Region is situated in a northern, rural part of Lithuania, 10 km from a small city of Mažeikiai (Lithuania). The thermal power station serves as an energy source for an oil refinery and is located near the refinery. Both stations contribute to the air quality of the Mažeikiai region and are subjects of state and municipal monitoring.

The present study is directed to assess the concentration of Nitrogen dioxide (NO₂) Sulphur dioxide (SO₂) and Volatile Organic Compounds (VOC) in Mažeikiai region and relate it with industrial and urban emissions. NO₂, SO₂ and VOC concentrations were sampled by passive sampling method. Sampling was carried out in 13 points distributed across study area, monitored since July 2009. The passive samplers were placed at 3.5 m from the ground and kept in a special shelter to protect them from rain and wind influence. The results showed that NO₂ concentration ranged from 1.40 to 34.9 µg/m³, with an average value of 13.2 µg/m³. The highest concentrations were observed in the places nearby intensive traffic. SO₂ concentration varied between 0.3 to 5.5 µg/m³ with a mean value of 3.85 µg/m³. The highest SO₂ concentration was identified in the areas close to thermal power station and oil refining company.

We studied also the concentration of the benzene, toluene and xylene in all area. The higher concentration of the first pollutant was 2.94 µg/m³ and the lower 0.90 µg/m³, with an average of 1.7 µg/m³. In relation to the second, the maximum value was 3.60 µg/m³ and the minimum 0.76 µg/m³, with a mean value of 1.69 µg/m³. In the last element, we identified a higher value of 3.2 µg/m³ and the lower 1.3 µg/m³, with an average value of 2.6 µg/m³. These VOC's were identified in higher concentration near major traffic areas.

Non of the observed concentrations exceed the thresholds limited by European directives. The spatial pattern of pollutants accumulation is related with traffic emissions, major wind patterns and oil refinery location.