

FIELD VALIDATION OF PASSIVE SAMPLERS TO MEASURE TROPOSPHERIC OZONE IN LA PLANA DE CASTELLON

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The aim of this work is validate the Ogawa® passive sampler to measure tropospheric ozone in a Mediterranean Spanish coastal area characterized by high sunlight, hot and very stable weather summers as well as mild winters; it's a summer tourist place and an important agricultural area. Primary pollutants of tropospheric ozone are emitted by traffic and industries. The validation of a method has to consider precision, bias, accuracy, selectivity, detection limit, cost and applicability. For assessing precision, co-located samplers were exposed in duplicate in two reference-sampling points, beside UV-photometric ozone analyzer. Bias was calculated comparing results of passive samplers exposed in these two reference-sampling points with the measurements given by the reference analyzer. Accuracy was calculated following the NIOSH Manual Analytical Methods. The Limit of Detection was calculated as 3 times the standard deviation of the blanks in a batch of passive samplers. Validation of Ogawa® passive samplers gives a precision of 6.02%, a bias of 13.84%, an accuracy of 22% and a LOD of 9.5 g/m³. The selectivity of the reaction between ozone with nitrite is very good for the environmental conditions where the study was performed. The cost and applicability of this methodology is in both aspects successful. Tropospheric ozone levels measured with passive samplers were comparable with those averaged values measured with the reference analyzer. Acknowledgements Authors are grateful to the Ministerio Ciencia y Tecnologia for financial support through the REN2002-04337-C02-01/CLI project. J. M. Delgado is grateful to the Generalitat Valenciana for the FPI grant.