

PM 1, PM 2,5, PM10 size and Radon daughters ^{214}Po , ^{218}Po monitoring in Athens center/periphery. An acute atmospheric pollution episode observed due to dust migration from Sahara desert

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In this paper we have monitored the atmosphere of Athens and great periphery for detection of PM 1/ 2,5/10 together with Radon daughters (^{218}Po ^{214}Po) for correlation with the environmental pollution.

We have been monitoring Radon daughters since June 2003 (continuous monitoring) and we have collected three thousand samples of PMs in total.

There hasn't been a vast research in the field of PM1 in our country during the last decade. That is the reason we try to obtain some concentrations (several samplings) of the PM elements which represent the main hazard especially the last ten years for the human health in our city.(an enormous number of vehicles in circulation.) During our measurements we had an acute pollution episode due to a dust migration (a dust storm, duration for a few hours) from Sahara desert ,which increased the values of the PMs and radon daughters in the atmosphere.

Some authors in the past correlated and used the radon propagation in the atmosphere with car exhausts as an index pollution (Durrani Revzan 2000, Catania Univ.). Note also a publication for the dust migration from Gobi dessert over Korea with values to arrive 2mg/m³.Howard W. N.York Times, April 2002.

Radon daughters and exhausts correlation(Grigoropoulos K.–Feredinos G. EGU General assembly Vienna 2006).Since the 80's the main problem which emerged suddenly (in our city) was the increase of the number of vehicles in circulation due to the immigration of the population in the capital and the start of a low cost cars available in the market. The result was the increase of the number of cars in enormous levels with the consequence of a liberation of high quantities of CO and NOX. That is linked directly with the epidemiological status of the inhabitants especially in the respiratory tract morbidity. Lethal cases and several clinical/pathological disorders, like heart attacks, bronchial asthma, acute respiratory infections and arrhythmias have increased the index of our city. In this research we used an active radon detector (a spectroscopy method-Sarad company), a portable PM detector (light scattering method- Met One Instruments USA.)and the permanent station for particulates matters, of our environ-

mental ministry (β absorption method).

Our detectors are both accompanied with a recent certificate of calibration.

On the PM detector we made a weekly zero filter test and flow rate control, according to the factory instructions.

The results were very impressive during the dust migration from Sahara because we noted extraordinary peaks of all the PMs (arrive more than 1,5mg/m³) when in normal days they not exceed the international safety standards. At same time the values of radon daughters are more than the daily normal monitoring.

We conclude that the dusty storm increase dramatically PMs and Rn daughters associated in extreme values, over in our multi factors polluted city with all the consequences for public health.