

POSTER PRESENTATION SESSION 3**ABSTRACT 135****EVENTS AFFECTING LEVELS OF GROSS ALPHA AND GROSS BETA ACTIVITIES AND HEAVY METALS COMPOSITION OF AIRBORNE PARTICULATE SAMPLES**

Esperanza Liger¹, Concepción Dueñas², Elisa Gordo³, Sergio Cañete³, María Cabello² and Manuel Pérez⁴

¹ Department of Applied Physics II, University of Málaga, Spain e-mail: eliger@uma.es

² Department of Applied Physics I, University of Málaga, Spain

³ Central Research Facilities, University of Málaga, Spain

⁴ Department of Radiology and Health Physics, University of Málaga, Spain

Particulate matter (PM) pollution is a serious environmental issue mainly due to the presence of toxic substances and trace metals in the atmosphere. The association of PM with adverse health effects has been recognized for a long time. Monitoring of both PM mass and chemical composition is important for identification of the emission source, determination of compliance with the set air quality standards and establishment of effective pollution control programs. In addition, the Saharan dust events have been recognized to have a non negligible impact on the particulate matter surface concentrations recorded in Europe. The objective of this study was to analyse temporal variation in mass concentrations, gross-alpha and gross-beta activities and heavy metal components for evaluating the integrated effects of transport and meteorology on the atmospheric loadings of substances with different sources and to further examine the relationship between the occurrence of African dust outbreaks and radionuclide activity concentrations. The origin of the air masses reaching the study region was interpreted based on back-trajectories and principal component analysis were performed to find out the groups of elements with similar behaviour. Airborne dust samples were periodically collected from March 2014 until February 2015 over 48-hour periods using a high-volume MCV sampler at a flow rate of 30 m³/h. During this sampling campaign, a filter piece with a diameter of 47 mm was cut out of each PM filter collected and directly analyzed by several non-destructive techniques. Gross-alpha and gross-beta radioactivity measurements are of particular interest for routine monitoring purposes and allow establishing trends in radionuclide concentrations. X-ray fluorescence analysis was successfully applied for the determination of metallic elements on the aerosol filters collected.