Radionuclides concentrations in moss bags close to a coal fired power plant in Northern Greece

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Mosses are ideal for monitoring the concentrations of different radioactive nuclides deposited from the atmosphere. They have no roots, and they obtain all the nutrients and water directly from the air. This gives the advantage of estimating the concentrations of radionuclides in the atmosphere in a low-cost and easy operating way [1].

Naturally growing mosses as well as transplanted mosses can be used for biomonitoring purposes, especially in cases where they cannot be developed or there are difficulties during their collection [2-3]. This introduces another active moss-based biomonitoring method, the "moss bag technique". This method is applied in industrial areas too, providing information about the air quality, and revealing the impact of the anthropogenic activities (like the coal fired power plants) on the environment.

Coal is the most dominant fossil fuel and contains different naturally occurring radionuclides, such as ^{40}K, ^{232}Th, ^{238}U and their decay products [4]. During coal combustion, all these radionuclides are emitted and deposited to the environment, contributing to the radiation exposure of people that are working and living nearby.

The aim of this study is to determine the concentrations of different radionuclides (^{210}Pb, ^{40}K, ^{137}Cs, ^{7}Be) in moss bags close to a coal power plant in Northern Greece. For this purpose, moss species *Hypnum Cupressiforme* Hedw. were packed into special designed bags and they were placed close to the coal power plant. After a twelve-month exposure, they were analyzed by means of gamma spectrometry. Most of the radionuclides show higher activities during summer period. ^{210}Pb and ^{7}Be have arrived in mosses through aerosol deposition, while ^{137}Cs has been transferred to mosses due to soil re-suspension.

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