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Polonium 210Po in edible mushrooms collected in northern Poland

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The main aim project was 210Po determination in caps and stems of mushrooms from Leccinum pseudoscabrum, Leccinum aurantiacum, Leccinum vulpinum, Leccinum duriusculum and Leccinum quercinum collected in Pomorskie, northern Poland. Mushrooms are organisms which contain a lot of water (75-90%). Mushrooms absorb heavy metals such as mercury, chrome, cadmium and radionuclides: e.g. polonium, uranium, plutonium from the environment (soil, air). Our studies have shown that the radionuclides are included not only in green plants, but also in mushrooms. Radioactive elements are taken either from the soil, through the mycelium or directly from the entire surface gathered in the fruiting bodies. As a result of the Chernobyl accident radioactive contamination of the environment has grown considerably. Many European countries were contaminated with significant amounts of radioactive elements.
In our research natural polonium 210Po were determined. 210Po is characterized by high radiotoxicity and its main sources in the environment are water, food, urban pollution and the Chernobyl accident. The average 210Po concentration in caps and stem mushroom ranged from 0.85±0.09 mBq·g-1 in Leccinum quercinum stem to 10.77±0.47 mBq·g-1 in Leccinum pseudoscarbum cap. Analysis of 210Po concentrations in mushrooms showed its higher values in caps than stem. This means the main source of 210Po is wet and dry atmospheric fallout. The studies showed interspecies differences among all analyzed speciec and Leccinum pseudoscarbum (10.15 mBq·g-1) as well as Leccinum aurantiacum (11.83 mBq·g-1) accumulated more polonium than Leccinum vulpinum (2.22 mBq·g-1), Leccinum duriusculum (3.65 mBq·g-1) and Leccinum quercinum (3.57 mBq·g-1).

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