

Abstrakt rozprawy doktorskiej mgr Jarosława Wieczorka pt “Zawartość ^{210}Po i ^{210}Pb w produktach konopnych oraz radiologiczne skutki ich przyjmowania.”

Abstract of the doctoral dissertation of Jarosław Wieczorek, MA, entitled “The content of ^{210}Po and ^{210}Pb in hemp products and the radiological effects of their intake”

The discovery of ionizing radiation, 125 years ago, opened up many new avenues and created many risks, and the expansion of knowledge of this phenomenon has contributed to the development of ever newer useful inventions and technologies, especially as ionizing radiation accompanies mankind almost on a daily basis. With the growing awareness of both scientists and the public, new challenges have arisen to protect people, while health protection has become a priority, especially in view of the uncontrolled release of radioactive isotopes into the natural environment. Of particular interest in this aspect are food products and those that come into direct contact with people, which we can include water, milk, cereal and delicatessen products. Products consumed by humans for recreational purposes, such as tobacco and cannabis, are also not negligible. The mechanisms of accumulation of natural radionuclides in the tobacco plant are well known and often used as a standard for estimating the radioactive dose from smoking the radionuclides polonium ^{210}Po and radiolead ^{210}Pb , but there is still a lack of systematized and complete knowledge about the behavior of the indicated isotopes in hemp products. In the presented doctoral dissertation, using classical chemical techniques, alpha spectrometry, as well as recent analytical techniques such as ICP-MS, the concentrations of ^{210}Po and ^{210}Pb were estimated and the mechanisms of their uptake and accumulation in three types of *Cannabis sativa* plant were investigated: Futura, Felina and Fedora at four growth stages from plants of a few centimeters to mature plants just before commercial harvest, and hemp products such as dried, hashish and hemp tea. Studies were also undertaken to estimate the effective dose from their consumption and smoking, the desorption rate of ^{210}Po from dried cannabis when smoked using a cigarette, a water-filtered pipe, commonly referred to as a 'bong', and a glass barrel, the effectiveness of water and cellulose filters was assessed, and the polonium desorption curve was determined in the low temperature range from 30 °C to 230 °C using a modern, generally available vaporizer. A research experiment, regardless of the scientific field, involves planning and execution, and a detailed analysis of the obtained research results was carried out using statistical factor analysis (PCA) and cluster analysis (HCA) methods. The research results obtained may contribute to reducing the radioactive dose from the consumption and use of these plants in the future, which is particularly important in protecting human life and health.