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BOOK OF ABSTRACTS

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Determination of Background Concentrations of Heavy Metals in the Soils of the Sumy Region

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Abstract: Due to the military actions on the territory of Ukraine, there is currently an active contamination of the soil with heavy metals. Their source is the use of ammunition. The concentration is especially high, where constant shelling takes place. To determine the content of heavy metals in typical slightly leached, low-humus medium-loam Chernozem, heavy metal concentrations were determined in the 0-100 cm layer with a step of every 10 cm. The content of chemical elements was determined using the X-ray fluorescence method with the device ThermoScientific Niton XL2. It was determined that none of the identified 27 chemical elements exceeds the sanitary standards established by Ukrainian legislation in the amount of heavy metals in the soil. However, an interesting feature was noted, namely, the highest defective content of barium and ferrum was recorded at the depth of the plow sole - 30-40 cm. Overall, while the current levels of heavy metals do not pose an immediate threat according to sanitary standards, the presence of elevated barium and ferrum at the plow sole depth warrants further monitoring and investigation. It is important to create a database of the content of heavy metals in the soils of Ukraine in order to further understand the impact of military operations on their condition.

Keywords: trace metals; X-ray fluorescence method; background concentrations database; Ukraine; Chernozem

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