

norms and regulations for cytostatic waste pharmaceuticals has provided a method of neutralization by pyrolytic incineration at temperatures below 1200⁰ C. In our country furnaces with similar temperature conditions are only used by a few companies involved in the production process and are not intended for incineration cytostatics. In accordance with the provisions of normative legal acts in the absence of pharmaceutical hazardous cytotoxic waste (PHCW) technologies for cytostatic waste pharmaceutical destruction must be kept in special rooms, in order for drug agencies to be allowed to use them. Only some hazardous waste is sent to the furnace. One option for a temporary solution to the problem of accumulated waste (PHCW) is depositing it on the CUE "Complex on processing and landfilling of toxic and industrial waste of Gomel Region."

Thus, at the national level, the issue of the utilization of PHCW can be resolved by the organization: temporary storage of PHCW on the territory of the unitary enterprise « Complex on processing and landfilling of toxic and industrial waste of Gomel Region " and burning at a temperature not lower than 1200⁰ C in special installations, which requires the purchase of special equipment.

Resolution of this issue requires a significant financial investments and the participation of all interested bodies of state administration, as well as executive and administrative authorities.

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X-RAY FLUORESCENCE ANALYSIS OF LEAD-ZINC WASTES

X-Ray Fluorescence analysis (XRF) is a nondestructive physical method used for chemical elemental analysis of materials in the solid or liquid state. The specimen is irradiated by photons or charged particles of sufficient energy to cause its elements to emit (fluoresce) their characteristic x-ray line spectra. The detection system makes determining energies of the emission lines and their intensities possible. Elements in a specimen are identified by their spectral line energies or wavelengths for qualitative analysis, and intensities are related to concentrations of elements, providing an opportunity for quantitative analysis.

XRF provides one of the simplest, most accurate and most economic analytical methods for the determination of the chemical composition of many types of materials. It is non-destructive and reliable; requires little to no sample preparation; and is suitable for solid, liquid and powdered samples. It can be used for the determination of a wide range of elements, from potassium to uranium, and provides detection limits at the ppm level; it can also measure concentrations of up to 100% easily

and simultaneously. Heavy and toxic elements can be identified in environmental samples (geological and ecological, plants, herbs, soil, etc.) using XRF. 26 elements like K, Ca, Ti, Cr, V, Mn, Fe, Ni, Cu, Zn, As, Se, Br, Rb, Sr, Y, Zr, Nb, Mo, Ag, Sn, Sb, Cs, Ba, La, Pb can be determined simultaneously in a sample. Detection limits for the different elements are between 1 and 5 mkg/g, depending on the matrix and Z of the element. Relative errors between 1 and 10% are typical for trace element analysis. A certain advantage of this method is the relatively simple sample preparation procedure.

The main task of our study was to investigate the main principles of XRFA; to prepare samples for analysis and XRF-spectrometer measurement; construct a calibration curves for the Cd-109 source, considering matrix effects; and realize the qualitative and quantitative analysis of samples.

Multi-elemental analysis of the samples was carried out at the Flerov Laboratory of Nuclear Reactions (JINR, Dubna, Russia). The experimental material used in this study was received from Unal tailing, located in North Osetia-Alania. This study was conducted in collaboration with State University "Dubna" and GUP "Basis stock" (North Osetia-Alania).

The samples were analyzed by an X-ray fluorescence spectrometer with Si (Li) detector (area 30 mm² surface, 3 mm thickness, Be window thickness 25 um, full width at half maximum (FWHM) resolution – 145 eV at 5.9 keV energy).

Standard ring-shaped radioisotope sources Cd-109 (E = 22,16 keV, T1/2 = 453 days) and Am-241 (Eg = 59.6 keV, T1/2 = 432.2 years) were used for the excitation of X-ray radiation.

The united standard curve was used for analysis. The calibration curves for analyzed samples calculated resulted in the measurement of 10 reference samples (soil-5, SP-3, ENO and etc.).

As a result of our work the full qualitative and quantitative contents of real samples were estimated. In some samples the content of certain elements exceeds the MPC: Mn, Ni, Cu, Zn, As, Cd, Sb and Pb.

Also, some samples were rich in sulfur, likely existing in a sulfide form. This can prevent the migration of heavy elements to other areas due to its insolubility.

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ACE GENE POLYMORPHISM CONTRIBUTION TO THE DEVELOPMENT OF ONCOLOGICAL PATHOLOGIES

From the viewpoint of biology, tumor transformation is the result of the gradual accumulation of genetic alterations in cells affecting different cellular regulatory mechanisms. ACE gene is a key enzyme of the renin-angeotenzin system, which is involved in the regulation of blood pressure, the number of erythrocytes in the