An extraction-photometric method has been developed for determining of content of higher carboxylic acids in aqueous solutions. It is based on the extraction of higher carboxylic acids in the form of an ionic associate with Pyronin G in an octanol-heptane mixture from an alkaline medium. A soap solution was used as an anthropogenic environmental pollutant. The main component of soap is higher carboxylic acids and their salts. These salts are soluble in water and distributed throughout its entire volume. As a result, cytoplankton, zooplankton, mollusks, which are rather passive in water, die, and the fish lose their elementary food supply.

High linearity of the calibration dependence on the amount of higher carboxylic acid was shown [1]. On the example of soap by the method of additives and dilution, it was shown that it is possible to measure the content of higher carboxylic acids in water by the proposed method.

Table 1

The dependence of the optical density (A) of the organic and aqueous phases (the initial concentration of Pyronin G in the aqueous phase is $9{,}91 \cdot 10^{-5}$ M) on the nature of the interfering anion (0,05 M) at pH = 11,25

Interfering anion	A (organic phase)	A (water phase)	Note
SCN^-	0,052	0,82	precipitate formed
NO_3^-	0,024	2,92	precipitate formed
Br^-	0,030	2,90	–
Cl^-	0,021	2,95	–
SO_4^{2-}	0,040	2,88	–
HCO_3^-	0,026	2,92	–

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POSSIBLE CONSEQUENCE OF ACCUMULATING OF AMERICIUM-241 IN POLESYE STATE RADIATION-ECOLOGICAL RESERVE

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The article describes the problem of radionulideAmericium-241. Its way of transferring in solid, living organism, and its chemical properties. Because of decay of Polonium-241, the quantity of Americium-241 increases and can cause new problems of pollution in Polesye State Radiation-Ecological Reserve.

Keywords: Americium-241, Plutonium-241, Polesye State Radiation-Ecological Reserve.

The consequence of Chernobyl accident was an extirpation from agriculture lands that are used for grazing, cultivation of cereal crops and vegetables. Developed countermeasures allowed to restore the use of some lands.

Intensity of the income and accumulation of radioactive materials in objects of environment is different and depends on physical and chemical properties of radionuclides, soil and climatic conditions, properties of grown up plants.

In the initial period after accident, the main factor that determines the character of and focus of countermeasure in agriculture was bound with dropping-out of short-lived radionuclides Np-239, Cm-242, I-131.

In the next period radionuclides contaminate plants by non-root digestion. The feature of this period is non-selective sorption of dropping-out radionuclides, which don't have high coefficient of intake. In this way, the quantity of input radionuclides can be large and consists not only of radionuclides of cesium and strontium, but those of zirconium, ruthenium, transuranium elements and radionuclides of other elements.

In later period root digestion of long-live radionuclides appears (for example, Cs-137 and Sr-90). Besides, as the result of natural decay of Pu-241(half-life 14,35 years) transformation occurs, and, in the end, the content of Am-241(half-life 433 year) increases. In comparison with Pu-241, Am-241 has better migration ability on account of better solubility. The transfer of radionuclide can appear in higher layers of solid and inside

plants. Moss Pleurozium scherberi is a good indicator of contamination, due to small unit mass on unit of square, especially, exposed by hydrated or underflood in polluted solid.

From the other side, americium-241 has quite low factor of transition in living organisms, as it has no chemical analogs, so organism considers it like alien material. Thus, the intake of americium-241 in human organism is possibly realized by consumption of animal meet whose ration contains solid polluted by radionuclide. So, in meet of wild boars, which ration contains contaminated solid, radionuclide have been found. Also inhalation income of radionuclide can occur in polluted lands. At inhalation input, radionuclide bound in chemical compound, can rapidly transfer from lungs to blood and can be deposited in liver, skeleton and kidneys for a long time.

Americium-241 is a source of alpha-radiation and in case of transfer in organism leads to inner irradiation. Its influence on the organism of animals was studied the most. The main consequence of incorporation is tumors of lungs and osteosarcomas.

According to the map of density of pollution of americium-241 and polonium-241 of Polesye state radiation-ecological reserve of 2009 and 2056, the main part of plutonium-241 and americium-241 fell out in exclusion zone and some border zones (Mogilev region). In 2056 the peak of accumulation of americium-241 in solid has been predicted, as a result of decay of plutonium-241. For example, in the exclusion zone in region of settlements Lesok, Molochki, Grada the density of pollution by Americium-241 will increase from 10,0–20,0 Bk/km^2 in 2009 to 20,0–40,0 Bk/km^2 in 2056. From the other side, the possibility of increase of radiation pollution near the border zone, for example, Narovlia and Lomish, is from 4,0–10,0 Bk/km^2 in 2009 to 4,0–10,0 Bk/km^2 in 2056.

RADIO FREQUENCY TECHNOLOGY: GENERAL AND THEORETICAL INFORMATION

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Due to the discovery of microwave radio frequency radiation, we use many modern technical means. RF technology is widely used in accelerator technics. To transmit high-frequency power, a coaxial cable, a plannar line, a coaxial line, a waveguide are used. The most important characteristics of the transmission of radio frequency energy are the quality factor, SWR, active and reactive components of the impedance, and other parameters of RF devices. All of the above values can be determined using large schemes and complex mathematical calculations. In real conditions, these parameters are determined using expensive devices, the use of which greatly simplifies the solution of many practical problems.

Keywords: radio frequency technology, waveguide, accelerator technics, vector analyzer, SWR, impedance, cavity resonator, quality factor.

Nowadays it's hard to imagine our life without portable electronics, space television, home appliances and radio navigation. We use all these techniques due to the discovery of microwave RF radiation. RF technology is widely used in accelerator technics (particles acceleration, charged ions generation, particle bunching, etc.). High frequency technology differs from classical electronics: there is no difference between the elements and the transmission line. The elements that affect the propagation of waves are often irregularities in the transmission line itself: plates, diaphragms, dowels, couplers, etc.

To transmit high-frequency power, a coaxial cable, a planar line, a coaxial line, a waveguide are used. Unlike other transmission lines, waveguide has the greatest practical interest. The advantages of waveguides are that the wave does not decay in the dielectric with increasing frequency, as in coaxial cables, and breakdown requires much more power than in a coaxial or planar line.

The limitations of the waveguide are that only electromagnetic waves with a longitudinal component (magnetic field vector H or electric field vector E) and dispersion (phase velocity depends on frequency) can propagate through it.

When the short-circuiting plug is installed at the end of the transmission line, the standing wave is formed in the waveguide. That is, the direct wave in the waveguide will be completely reflected from the load.

The most important characteristic of a reflected wave is the reflection coefficient, VSWR (voltage standing wave ration, hereinafter SWR) and the quantity inverse to it, TWR (travelling wave coefficient).