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The System CA® (analytical Kit "Анфеж®") for determination of low levels of radiocesium contamination in liquid media.

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The recently developed apparatus named System CA® (Kit "Анфеж®") and the procedure of its effective application for the concentration and determinination of low levels of radiocesium contamination in liquid media is discussed. The liquid media which can be analyzed by the System CA® include sea water, fresh water, drinking water, wine, milk, juice, human urine etc. The apparatus is designated to rapidly estimate radiocesium contamination of individuals by immediate determination of radionuclides in urine samples. Unlike the known analogs, this analytical Kit is cheap and simple in application. The main element of the system is a plastic chromatographic column which contains 10 to 100 g of granulated ferric cyanoferrate. This chemical is absolutely safe and harmless to human health and is widely recommended as an antidote in the case of radiocesium or thallium poisoning. It is shown experimentally that for quantitative determination of background levels of radiocesium in humans, the volume of the sample should be 900 to 1000 ml of urine and the chromatographic pretreatment may take 3 - 5 min.
Our research showed that this analytical Kit can be also used for high-speed concentration of radiocesium from large volumes of water solutions (to 1000 l of sea water) during a short period of time (to 30 min). According to the experimental testing, the analytical Kit allows quick transfer of the saturated sorbent from the chromatographic column to a well-type scintillation detector. The shelf life of the Kit is 5 years.

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