LEAD-210 is a naturally occurring radionuclide of the $^{238}$U series. $^{210}$Pb has important role in human radiation exposure because of $^{210}$Pb deposit in the skeleton long enough and highly contribute to skeletal dose. $^{210}$Pb also can be used for studying of different environmental and marine process (tracing atmospheric process and analyzing the behavior of aerosols in troposphere, determining average erosion rates in soils, understanding sediment chronology etc.). $^{210}$Pb emits low energy beta particles ($E_{\text{max}}=20$ keV 81%, 61 keV 19%) and gamma rays ($E=46.5$ keV). In both cases measurement is difficult because of low counting efficiency, self absorption, background fluctuation and some other reasons so that indirect measurement techniques has been more usual for the quantification. In indirect quantification, $^{210}$Pb is usually determined through its grand-daughter $^{210}$Po by alpha spectrometry or, to a less extent, through its beta daughter $^{210}$Bi. For this type of $^{210}$Pb determination a preconcentration, chemical separation from sample and sufficient in growth period of $^{210}$Po (or $^{210}$Bi) are required.

The main aim of our paper is to show novel procedures for the determination of $^{210}$Pb in liquid samples in which some usual determination limits (great sample volume) can be avoided and also to show how other isotopes can be simultaneously isolated and determined. The procedures consist of chemical separation of lead from samples and subsequent quantification of $^{210}$Pb by gamma spectrometer.

In one procedure, lead is directly isolated from water samples on the column filled with Sr resin by binding of lead to the resin from 0.1 M HCl in a water samples, and successive elution with HCl. In others, lead and strontium are precipitated from water samples with $(\text{NH}_4)_2\text{CO}_3$, followed by isolation on a Sr column or an anion exchange column. In a paper, advantages and disadvantages of proposed procedures will be discussed in detail.