Industrial, household and atmospheric waste water contains a variety of dissolved or suspended inorganic and organic impurities. Qualitative and quantitative composition of such elements must be subjected to severe control. Prior to being drained into water reservoirs, waste water are passed through different purification units, and the purification efficiency is estimated by analysis. Thereat the analysis is performed for both rather concentrated unpurified sewage and diluted solutions with compositions close to that of surface water.

For determination of inorganic components in waste water, promising are those methods which allow to simultaneously determinate a large number of elements within a wide concentration range, irrespective of their form of existence in the objects under investigation. Among such methods, X-ray spectrometry should be mentioned.

Considered are the methods of specimen preparation for X-ray fluorescence analysis of water. For direct determination of impurities in waste water, quasi-solid specimens based on gelatin (agar) are proposed [1]. Such specimens may be also used after extraction concentration of impurities and their re-extraction in aqueous phase [2]. As concerns organic specimens, those in the form of organogels [3] or thin polymer films [4] may be directly obtained. For group impurity concentration it is suggested to use low-temperature directed crystallization of water with subsequent obtaining of glassy saccharose-based specimens from aqueous concentrates [5]. The mentioned techniques have been applied to determine Ag, As, Bi, Ga, Cd, Co, Cu, Fe, Ni, Pb, Se, Zn impurities in waste water.