The invention describes an industrial method for the treatment of waste contaminated with various types of organic phosphorus compounds. The method involves a sequential process of alkaline (high OH-anion concentration) and peroxide hydrolysis (due to the presence of αnucleophiles) of organic phosphorus compounds in an industrial decontamination column by periodically mixing the treated waste at 18-25 ℃ with a peroxidation activator and a micelleforming agent. After obtaining appropriate results of the analysis of the whole reaction mixture at the level of safe values of contaminants, the mixture is transferred to a neutralization chamber and, neutralized to pH 6.5-7.5, can be used in the production of phosphate fertilizers, industrial detergents, etc.