

T11. Multilevel Approach to Analysis and Processing of Industrial Wastes

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Industrial wastes, if not treated properly, may be dangerous for the environment. Modern manufacturing processes often result in the waste of a complex multiphase composition, processing of which is complicated. The most expedient approach is an integrated utilization that converts the waste into raw materials, reagents or bulk additives.

A multilevel approach to the development of integrated waste utilization technologies has been suggested. It includes informational, physicochemical, technological, and integral blocks. Two basic principles are used for the creation of integrated utilization methods in the most complicated cases such as multicomponent heterogeneous wastes: the principle of phase redistribution and that of composite component correspondence. The principle of phase redistribution implies phase transformation processes resulting in the products, composition of which is satisfactory for further utilization of serves for neutralization of dangerous components. The principle of composite component correspondence requires that compounds of all material flows, when playing their roles in the process of the waste transformation or acting as a ballast, to fully correspond by their properties to the general transformation route and the quality of the final product.

The multilevel approach to the problem of analysis and processing of wastes makes it possible to convert multicomponent heterogeneous toxic wastes into ecologically safe and utilizable products.