

Biological reactor for wastewater treatment from minor sources of pollution using activation process with activated sludge in upflow and/or with growth culture, where all processes of biological treatment with activation process take place in a single-tank biological reactor, where functional areas of mechanical pre-treatment, aeration and activated sludge separation are spatially separated. The biological reactor contains a tank (1), in which a separation chamber (4) is centrally situated, an area between a casing (5) of the separation chamber (4) and a casing (2) of the tank (1) is divided into two parts by two vertical partition walls A (7) and B (8) spanning from a tank bottom (3) to a bottom of a discharge piping (29), namely into a mechanical pre-treatment chamber (11) and an aerated chamber (12), Recirculation of activated mixture from the oxic aerated chamber (12) into the mechanical pre-treatment chamber (II) is provided in such manner that pre-treatment chamber (11) and the aerated chamber (12) are connected by an opening (19, 22) in the upper parts of both vertical partition walls A (7) and B (8), wherein aeration elements A (36) and B (37) located near the bottom of the aerated chamber (12) in front of partition walls A (7) and B (8) are situated so that a height of the water column over the aeration element A (36) is lower than a height of the water column over the aeration element B (37) and/or an air flow regulator (42, 43) for the aeration elements A (36) and B (37) provides air (low regulation in such manner that the amount of the air conveyed into the aeration element A (36) is higher than the amount of the air conveyed into the aeration element B (37), which allows to create horizontal circulation of water surface layer of activated mixture around the upper part of the casing (5) of the separation chamber (4), namely from the opening (19) in the partition wall (7) through the mechanical pre-treatment chamber (11) of to the opening (22) in the partition wall B (8) and through the opening (22) in the partition wall B (8) to the aerated chamber (22) and further to the opening (19) in the partition wall A (7).