

entassant le fumier de cheval et bovin à même le sol en extérieur et en attendant quelques mois qu'il arrive à maturité. Ensuite, il suffit de créer un nouveau tas mitoyen de fumier frais et les vers migrent du compost à maturité, prêt à être épandu, vers le fumier frais.

Certains particuliers recyclent leurs déchets organiques afin de limiter leur quantité de déchets à traiter et obtenir un engrais gratuit pour leur potager ou leur bacs à fleurs. Pour cela, ils s'équipent d'un vermicomposteur placé dans le jardin ou même en appartement. En effet, le vermicompost ne dégage pas d'odeur s'il est correctement réalisé. Le vermicompost s'utilise par simple épandage autour des cultures.

L'inconvénient de la technique est que, contrairement au compostage classique avec montée en température, les graines présentes dans les déchets ne sont pas neutralisées. Il est donc fréquent de retrouver des plants de tomates, melon et autres là où le vermicompost a été épandu mais dans ce cas c'est qu'il n'a pas été suffisamment travaillé.

MODELLING OF THE PROCESS OF BIOLOGICAL SEWAGE TREATMENT IN AERATION TANKS

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The methods of aerobic biological treatment by means of microorganisms of active silt are widely applied for sewage treatment recently.

However, the degree of organic pollution extraction in biological treatment works in many cases does not meet the necessary standard requirements. Therefore, under modern conditions a very important problem for the treatment works is the problem of meeting the requirements for maximum permissible dump, which value regularly becomes tougher. The insufficient degree of treatment promotes release of a plenty of polluting substances into the reservoirs, which results accordingly in deterioration of the ecological situation in the regions.

Nowadays, a big attention is paid to increase of the existing structures efficiency; the development of mathematical models and methods for parameters estimation for the works of biological clearing during removal of pollution are also considered.

The technological mode and the overall performance of the biological treatment works are defined by a great number of factors including quality and quantity of active silt and sewage acting in aeration tank, oxygen mode, temperature, the hydro dynamical scheme of the stream, presence and intensity of the circulating streams inside or between the elements of the scheme. Therefore, to increase the efficiency of biological sewage treatment works it is important to study the features of the process of biological sewage treatment in the system " aeration tank - secondary sediment bowl" as well as the influence of different factors on the quality

of sewage treatment and studying the basic regularities of the processes and development of mathematical models.

The aeration tank operation is based on the ability of the microorganisms to take organic pollution from sewage during their life activities. A great variety of microorganisms in active silt, which changes eventually, and existence of different types of their interaction causes multifactoriality and complexity of the description of biological clearing processes in aeration tanks.

One of the effective directions for intensification of the biological sewage treatment is an increase of the silt dose and increase of the silt mass in the aeration tanks by filling all the volume or a part of it by inert materials, namely, using neutral carriers for fixed micro flora formation on them. It means that in the aeration tank two kinds of microbial cultures are supported: freely floating, i.e. the usual active mule and the culture attached to the carriers floating in the silt mixture.

For description of the processes occurring during the biological sewage treatment, mathematical modelling is used. Thus, all the processes of inter conversions starting from the input of active silt into the aeration tank and sewage and up to the output of treated sewage and settled silt from the secondary sediment bowl are usually described by a system of the equations for different physical sizes.

The mathematical model of biochemical oxidation of the pollution is supplemented also by empirical dependences, which characterize a hydro dynamical mode in the aeration tanks. Taking into account the hydro dynamics and the speed of the biochemical oxidation in the aeration tanks allows to carry out a more rational aeration; to use the maximum volume of the aeration tank at the beginning and to avoid superfluous power consumptions at the final stage of the process (at the beginning of aeration there is a big concentration of pollution and a significant speed of biochemical oxidation and, therefore, a high speed of oxygen consumption).

For the analysis of the joint extraction of organic pollution suspended and fixed by the biocenose in aeration tanks, in mixing machines and displacers a general mathematical model is developed related to the changes of concentration of organic pollution in the aeration tank.

For estimation of the influence of organic pollutions extraction mechanisms, various boundary cases of aeration tank operation in the system of biological sewage treatment are considered. The following cases have been analyzed:

- the case of fixed biocenose absence and extraction of organic pollutions only with the help of the suspended (free flow) active silt;
- the case of extraction of organic pollution with the help of only the biomass fixed on loading;
- the case of extraction of organic pollution in the aeration tank with the help of suspended and fixed biocenose in the form of a biofilm formed on the surface of the nozzles placed inside the aeration tank.

In the latter case, a very important issue is definition of the optimum parameters of loading, in particular, the possible options of the loading arrangement in the aeration tank volume and the necessary area of the surface biofilm. Actually, the elements of loading (a nozzle, a grid, etc.) can be located along the whole length of

the aeration tank or the location can be more compact or compact only in separate places. A great value for the aeration tank operating mode will take place the arrangements of loading, namely, its location at the beginning of the aeration tank or at the end of it.

Thus, under modern conditions development of new methods for management of sewage treatment works to provide maximum efficiency of aerobic biological sewage treatment is very important.

METHODS OF DEVELOPMENT OF BLOCK URBAN TYPE SETTLEMENTS IN BIG AND MAJOR CITIES OF UKRAINE

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The relevance of the study is proved by the solution of urban problems and formation of the architectural environment of urban-type settlements taking into account the need for their harmonization in new conditions.

Besides, the relevance of the study is supported by the psychological factors. Among the positive characteristics of living in low-rise areas a highly developed engineering infrastructure should be mentioned.

In this regard, the concept was formed, that the development of block settlements has a particular investment attractiveness, provides a wide field of creativity for today's designers and stimulates a high consumer interest in this product of urban housing.

The hypothesis of the research:

On the basis of the theoretical works, the concept was formed for the development of block urban-type settlement for big and major cities of Ukraine.

Analysis of the works on the theory of settlements designing proved that, despite of the elaboration of the related branch of science, the system of categories is still underdeveloped.

The need for development of blocks of houses has the following economic, social, architectural and urban planning reasons:

- the desire of many citizens to have a separate house with a plot of land, but a lack of financial opportunity to own a private single-family house. Block houses provide such an opportunity at a lower price;

- cost effectiveness;

- density of development;

- availability of a small plot of land.

The purpose of the study is to develop a block urban type settlement on the basis of historical experience and current requirements.

Accordingly, the following tasks were set:

1) to make a retrospective analysis of the methods for development of urban-type settlements (the concept of "Town House")