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Application of microbiological technology in urban sewage treatment

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Abstract. In the process of urban development and construction, the method of sewage treatment is planned. Sewage treatment is directly related to the quality and cleanness of urban drainage. For urban sewage treatment, in order to achieve environmental protection, we actively introduce microbiological technology to improve the process of sewage treatment, simplify the process of sewage treatment through microbiological technology, reduce the difficulty of sewage treatment, and control environmental pollution. The application of microbiological technology in urban sewage treatment was discussed in this paper.

Key words. Microbiological technology; city; sewage treatment

1. Introduction

In recent years, the application of microbial technology widely, in city sewage treatment, microbial technology, to achieve environmental protection, and improve the efficiency of wastewater treatment, more important to reduce the complexity of sewage treatment, give full play to the role of microbial technology and practice. In terms of urban sewage treatment, we should enhance the emphasis on microbiological technology, improve the environment of sewage treatment, and make use of microbiological technology to make sewage treatment meet the needs of urban development.

2. The role of microbiological technology in urban sewage treatment

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2.1. *Metabolism*

The metabolic role of microbial technology in urban sewage is manifested in the life activities of microorganism. Microorganism takes the organic matter in sewage as the metabolic energy of life, produces a series of chemical reactions, and metabolize the pollutants in sewage. When microbial metabolism is metabolized, bacilli, actinomycetes, etc. can be used to metabolize the fat in the sewage, and in the fat of the sewage, the energy of life can be obtained. In urban restaurant sewage, the metabolic function of microbes can be fully utilized to prevent the formation of two pollution in the sewage.

2.2. *Degradation*

The degradation of microbial technology, in urban sewage, degradation of organic matter, converted into inorganic substance [1]. Degradation and application of microbial technology in city sewage, the inorganic elements of the natural life cycle, to maintain the balance of the elements, the city sewage treatment and microbial participation, reflecting the state of benign cycle, fungi, bacteria and other microorganisms, can be in the city sewage treatment, play the role of reasonable selection of microbial degradation. In the city, sewage, complete degradation work thoroughly, reduce the content of organic matter in the sewage.

2.3. *Detoxification*

Toxicity is a kind of characteristic of urban sewage, and the toxic waste water cannot be treated by discharge. For example: inorganic phosphorus in city sewage, the sewage in itself is very difficult to degrade, the content of inorganic phosphorus, will accelerate propagation of algae, algae, directly affect the water quality, the microbial technology can remove sewage toxicity, transformation of inorganic phosphorus, organic acid, carbon dioxide as no poison, purification of phosphorus elements in sewage [2]. Microbial technology in city sewage in detoxification, prompting such technology has been applied, the city sewage water purification, sewage to meet the emission standard, non-toxic sewage, destruction of the ecological structure will show the advantages of microbial.

3. **Application of microbiological technology in urban sewage treatment**

According to the needs of urban sewage treatment, several microbiological technologies are cited, which show the importance of microbial technology in sewage treatment, and improve the level of urban drainage green.

3.1. *Adsorption technology*

Adsorption technology in the sewage, the use of microbial cell body, secretions and other substances, binding suspended substances in the sewage, together constitute a floc, floc surface, covered with a large number of polysaccharides, which itself has strong adsorption function. In China's urban sewage treatment, microbial adsorption technology mainly uses white rot fungi and yeasts, and helps to absorb lead, chromium and other substances in the sewage, so as to avoid such toxic substances from being discharged at will. In addition, in the process of microbial adsorption, we studied desulphurizing bacteria, and adsorbed copper ions in sewage in a weak current environment. The case shows that the efficiency of copper removal by desulphurization bacteria is basically over 97%, which purifies the discharge water source and stops the occurrence of re pollution. In adsorption technology, biological adsorbents should be studied actively to improve the level of sewage adsorption, thus the efficiency of municipal wastewater treatment should be guaranteed by [3]. According to the adsorption function of microbial technology division, there is one type of adsorption of activated sludge, microbial under aerobic conditions, after a long time of aeration, reproduced activated sludge, activated sludge based carrier for microorganism, the purification process is shown in Figure 1, the organic matter in city sewage adsorption, oxidation, decomposition can also provide role. Activated sludge to two clarifier, complete the settlement, sewage is discharged smoothly, with activated sludge of sewage discharged continuously, recycling to adsorption purification, reflects the economical thought.

3.2. Flocculation technology

Microbial flocculation technology, using microbial flocculation characteristics, in the natural state, the degradation of polymer organic matter. As mentioned above, microorganism cells and secretions can be used as flocculants to deal with highly concentrated sewage in cities and eliminate odor and impurities in sewage. Application examples, flocculation technology in city wastewater treatment such as: (1) wastewater, microbial flocculation technology, the decolorization effect is obvious, the precipitation principle, realize decolorization, promote non-ferrous pollutant, can effectively remove the soluble pigment precipitation, sewage, sewage treatment to enhance the transparency of the (2) livestock wastewater purification, livestock sewage, containing a large number of 1,4- butanediol, difficult processing, using microbial flocculant, the effective removal of total organic carbon in wastewater and 1,4- butanediol, through microbial flocculation treatment of sewage, water quality is good, can be safely discharged.

3.3. Electrode biomembrane method

The electrode biomembrane method is a typical representative of microbiological technology, which absorbs the organic matter in the sewage through the growth characteristics of microbes. Biofilm electrode method, through physical and chemical method, the microbial, fixed to the electrode surface, consisting of a thin layer of biological membrane between the electrodes, the formation of a weak current, the biofilm will have the effect of adsorption, absorption of pollutants in sewage and pollutants by adsorption, in electrochemical effect, has been fully degradation. The electrode biological membrane method is more common in the nitrogen removal process, and the effect of nitrogen removal is very obvious. For example: a city sewage purification, because it involves the agricultural wastewater discharge, so in the sewage, containing a lot of pesticides, increase the nitrogen content in the wastewater, introducing biofilm electrode method, complete removal of nitrogen element in the sewage, and the biofilm electrode method, and denitrification, dilute the effect of phosphorus. To avoid adverse organic sewage, the city sewage discharge assisted smoothly.

3.4. Immobilized microbiological technique

Immobilized microorganism technology, in urban sewage treatment, mainly solidify the free state of biological cells into a certain area, and strongly adsorb the organic impurities [4] in sewage. Immobilized microorganism technology, which has the characteristic, can choose the area of immobilized microorganism treatment according to the demand of urban sewage treatment. Microbes have strong activity and can be repeatedly used in sewage treatment, which embodies the characteristics of conservation and environmental protection. The immobilized microorganism technology has improved the process of sewage treatment, reduced the volume of sewage treatment to a large extent, produced no larger sludge output, improved the degradation efficiency of organic impurities, and effectively promoted the purification level of urban sewage.

3.5. The development of microbiological technology in urban sewage treatment

Microbial technology has a good prospect in the treatment of urban sewage. In recent years, genetic engineering bacteria, specific microorganisms, plants and microorganisms, microbial solid system combination, is the development of microbial performance, promote microbial technology, more convenient and effective application to the city sewage treatment. The scale of urban construction in China is bigger and larger, and the amount of sewage discharge increases year by year. We should actively study microbiological technology, promote the development of microbiological technology, meet the needs of urban sewage discharge, and show the practical value of new technology of microorganism. Microbial technology is the core of urban sewage treatment, according to the actual situation of urban sewage, the development of related microbiological technology to improve the treatment environment of urban sewage.

4. Conclusion

Microbial technology has improved the process of sewage treatment in the city, which shows the practical value of sewage treatment and promotes the effective development of microbiological technology. In terms of urban sewage treatment, we should fully implement microbiological technology, give full play to the specific role of microbiological technology, ensure the effectiveness of urban sewage treatment, and provide a basic guarantee for the development of microbiological technology.

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