Evaluation Investigation of Urban Domestic Sewage Collection and Treatment

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Abstract: The dangers of sewage are a matter of concern in today's society, and the need to treat sewage is reflected in the social life and production. The goal now is to find more efficient and affordable and gradually and practically to be applied to more industries and enterprises in the future. In this paper, the difficulties faced by mankind in wastewater treatment in the 21st century and today's treatments are described to make people aware of how wastewater is treated. In conclusion, the importance of wastewater treatment is to protect against harm to ecosystem balance and improvement. Secondly, it protects human health by eliminating the growth of bacteria and pathogens and thus the spread of disease. Thirdly, by treating wastewater, more resources can be recycled, eliminating waste and production costs and thus demand. By explaining the hazards of sewage and the importance of treatment, this article helps to raise public awareness of sewage treatment, promote social attention to environmental protection, and enhance people's understanding of sustainable development.

1 INTRODUCTION

In today's city environment, water has become a very important part of human life in every parts, including manufacturing, cultivation and daily life which has a large proportion in my daily life, especially for resources like water, has been influenced by human activities badly. Due to today's heavy industries and some light industries such as paper mills and textile mills, all of these are having pollution whatever is serious. According to today's situation in cities, household waste is intruding water resources like rivers and lakes, which brings pollution to people's lives and the environment. Lager scales of waste and wastewater are a major problem for today's situation. These problems cause a lot of problems like the death of aquatic organisms. This also causes the death and decrease of birds which feed on fish. The polluted rivers and other water resources may be harmful to human health due to chemicals like gases. It is necessary to solve this problem because water is an important role in natural and human's life (Han, 2024).

For example, the position of the city sewage system and the ways to collect and secondary treatment for use. The model of the city and landscape map is also included while measuring the way of water flows. The sewage collecting system must be studied including pipes and the sewage recycle industry. Furthermore, sewage definitely played an important role during the whole circulation (Song, 2024).

The paper aims to find out the collection of the city's sanitary sewage and how to recycle it with some chemical or physical materials in some schemes. This article will illustrate how to collect city sewage and recycle it. The target is to help people know why it is vital to humanity and the natural world. Through the whole possess, first, the collection of sewage is studied by discussing and researching city sewage systems based on the landscape. secondly, the way of recycle is worth studying.

2 THE CURRENT WAY OF COLLECTING DOMESTIC WATER IN VARIOUS AREAS OF THE CITY

2.1 Concepts and Hazards of Urban Domestic Sewage

Urban water management has become an important

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social task and management index in the current city. The connotation of urban water management is to utilize, regulate, manage and protect the water resources in urban areas, thus carrying out more involvement in water management, such as water resources, water supply and transmission, as well as inter-regional transfer of water and sewage treatment and reuse collection. Regarding the collection of urban domestic sewage, it is important to understand the source of domestic sewage. Domestic wastewater is the wastewater discharged from the normal activities of ordinary citizens in their daily lives, and the main sources of this wastewater are nearby residential buildings such as neighbourhood apartments, followed by public buildings such as schools, hospitals, and restaurants. The wide range of sources of domestic wastewater has led to a complex source of its components and ingredients. Its main component is water composition, in which the main components of pollutants are organic matter such as proteins, carbohydrates, fats and urea. Next is a large number of pathogens and microorganisms similar to parasites and parasite eggs, and enteric infectious viruses similar to E. coli. If not collected in time and centralized treatment, it will lead to the decay of unstable organic matter and produce a large number of toxic polluting malodorous gases. The continuous reproduction of bacteria and pathogens may lead to the spread of epidemic diseases, so they need to be collected and treated regularly. The main hazards come from hospital sewage, garbage and surface runoff. The microorganisms in it are characterized by their large number and wide distribution and the fact that they can survive for a long period of time and multiply very fast. These microorganisms can enter the human body through various means, such as the respiratory tract and the oesophagus. However, the accumulation of untreated sewage can lead to further problems as various elements can accumulate. The second point is the eutrophication of water bodies, which is caused by the loss of substances containing nitrogen and phosphorus into the water bodies leading to eutrophication and thus leading to the phenomenon of red tides or water bloom. The third point is the saline, acid and alkaline pollution, the rise of the pH value of the water body further jeopardizes the soil. Fluctuation of the pH value creates microorganisms that are stimulated or inhibited, causing great impacts, which can then cause damage to buildings and erosion, for example, in bridge projects. Lastly, the threat to aquatic flora and fauna is also growing (Guardian, 2024).

2.2 Significance of Recycling and Treatment of Wastewater

The recycling and collection of sewage is of great significance to people's lives. The first is that it can effectively wastewater, as the main component of sewage is water, and recycling can effectively wastewater resources. The second is the pollution. The existence of a large number of harmful substances in the domestic sewage may lead to the following results: groundwater contamination spawned by the stench affecting life. The third point is that it can be production costs, recycled water can be recycled repeatedly and re-invested into production, thus realizing the purpose of production costs. Finally, it can be used for urban greening, used to pour greening to improve the greening rate of the city. Now there are a lot of sewage treatments such as plant wetland treatment, which uses plants to absorb water and decomposition characteristics although this can be good treatment does not require a lot of energy, but it occupies a large amount of land that needs to go to this ring tight and processing efficiency is low. The use of sewage treatment plants is the largest scale, filled with physical, chemical and biological treatment to achieve the effect of water purification (Dong, 2024).

3 CURRENT PROBLEMS FACING SEWAGE TREATMENT

There are still many problems with sewage collection and treatment, making it difficult to respond effectively to unexpected water collection and pollution problems. Climatic differences between the north and the south, as well as the amount of precipitation and precipitation cycles in different places, have led to different efficiencies in sewage treatment in different regions. In some areas in the north, the rain and sewage diversion system is imperfect and lacks a reasonable drainage and sewage treatment system. When encountering heavy rainy weather, a large amount of rainwater in the combined rain and sewage pipe for a short time, if the pipe is not smooth enough, the mixed rain and sewage water in the pipe may overflow to the ground through the rainwater wells and overflow wells, exacerbating the phenomenon of flooding the street and polluting the human habitat. If a large amount of rainwater is mixed into the sewage network, it is easy to cause part of the rainwater can not be treated in a timely manner and

transported to the sewage treatment plant through the sewage network, the sewage treatment facility's operating costs will increase, the sewage treatment plant's operational efficiency will decline during this this period, and ultimately lead to the rainwater and sewage straight river, and lead to the river water quality pollution. Failure to effectively investigate the degree of siltation and clogging of the pipe network, making the pipe network maintenance is not timely, resulting in the pipe network siltation, clogging and other serious problems, which in turn leads to a reduction in the capacity of the pipe network to absorb water, resulting in the waste of water resources can not be effectively avoided . It is difficult to ensure the effective reuse of water, and ultimately lead to overflowing, sewage discharged directly into the river, overflow and other problems. In the sewage treatment plant nowadays, sludge treatment is one of the important parts, which can keep up with the times and thus the demand for sludge cleaning in urban cities (Hu, 2024). However, the northern part of my country has low innovative capacity for sludge treatment most of them still use landfills and so on. Not only waste a lot of land resources will also cause secondary pollution to the environment. In addition, the sludge dewatering treatment of water content can not be improved, not effectively rationalize the disposal of sludge, resulting in sludge pollutants leakage environmental issues. Sewage treatment plants need to take effective measures to achieve sludge reduction, stabilization, harmlessness, and resource disposal. China's sludge disposal is still a technological bottlenecks, difficult to break through the economic and efficient sludge conditioning, resulting in dehydration difficulties. Some northern sewage treatment plants have been from the perspective of innovation in equipment, but the harvest is guite small, they just stay on the surface of the sludge water content removal and can not do from the root disintegration. In addition, the mismatch between the chemicals and equipment can also lead to the equipment can not state, resulting in dewatering efficiency. At the same time, the existing flocculants or dehydrating agents are underutilized in the process of use, and the lack of new agents to replace the product, which makes the over- or under-use of agents brings additional economic problems. Strengthening the research and development of new flocculants or dewatering agents has become a key issue to be solved. Therefore, China's sewage disposal measures with optimization need to be, strengthen the reform and innovation of sewage disposal technology (Yan, 2024).

4 ADVANTAGES AND CHALLENGES OF LIVING MUNICIPAL FECAL WASTEWATER TREATMENT

For the living city, faecal waste water has done good results. The establishment of fecal sewage centralized treatment system, mainly refers to the fecal sewage transported to the designated location, the implementation of centralized treatment, in the process of treatment, need to take harmless treatment, focusing on two aspects, respectively, faecal sewage solid-liquid separation and sewage treatment. If this treatment is the supporting equipment covers a large area and huge investment, but also to the surrounding ecological impact. At the same time, in the process of treatment of fecal waste water, because of the various treatment devices concentrated in the same site, the overall transportation distance is relatively large, high transportation costs. Transportation vehicles need to be centralized transportation, but this also brings great pressure to the surrounding traffic. On the contrary, the treatment of fecal waste water has good results when divided into different areas. Decentralized treatment mainly uses sewage treatment equipment such as sewage treatment plants and lift pumping stations. The selection of a larger number of treatment points can be effectively harmless in treatment efficiency. This kind of faecal sewage treatment, mainly using the principle of solidliquid separation, and take the integrated device, covers an area of relatively small, because there is no need to use the supporting sewage treatment system, so the investment is relatively low. Inside the different sites, the construction scale is relatively small, due to the existing sewage treatment plant or sewage pumping station inside, so the impact on the surrounding area is very small. Decentralized treatment is subject to the principle of proximity and the actual transport distance of faecal waste water is relatively small. At the level of resource depletion, such treatment uses less water and electricity, basically does not consume large amounts of pharmaceuticals, and the transportation distance of fecal waste water is relatively short, with low overall transportation costs. Transportation vehicles are decentralized and do not have a large impact on local municipal traffic. Although there are certain problems in the treatment process, the important value of faecal wastewater is reflected in three aspects. The first is a smaller footprint, with the economy, this project is no longer an important indicator, so most cities today choose a decentralized treatment system (Xiang,

2024). In this system, if the scale of the manure treatment system is 1 200 t/d, using decentralized treatment, it can be divided into 6 parts, the treatment capacity of each block can reach 200t/d, the area can reach about 600 m2, the actual area of a single block can reach 100 m2. At the same time, it can be directly built into the sewage pumping station or sewage treatment plant that has already completed the construction, and there is no need to go through the corresponding land acquisition procedures. The corresponding land acquisition procedures can not only save the actual land but also shorten the real construction time of the project (Yan, 2024).

5 WASTEWATER TREATMENT PROCESSES AND TECHNOLOGIES

In addition to treatment, there are also physical and chemical aspects, and to a lesser extent, biological aspects. For example, physical flocculation, etc. using gravity to make impurities out of sewage and biological degradation. The first physical treatment process is the acoustic treatment process in the sewage treatment process, the use of acoustic waves for treatment is called acoustic treatment process this sewage treatment function. It is mainly applied to organic or inorganic wastewater treatment, through the enhancement of the vibration to achieve the separation between the pollutants and the water, and ultimately realize the degradation of pollutants. In the practical application of acoustic wave treatment process, can be applied to a wide range of future a very broad space. Acoustic treatment process can be used in conjunction with other physical degradation techniques to realize pollutant precipitation and filtration. In sewage treatment, high turbidity sewage purification system SPR treatment process belongs to a more complex sewage treatment process. In the SPR treatment process, the need to use chemical reagents, a variety of different pollutants in different sewage successfully resolved, so that a variety of pollutants combined to form solid particles. After that, the staff need to use the adsorbent to adsorb the organic matter in the sewage. In order to completely adsorb the pollutants in the sewage, the staff need to use the physical adsorption method to pollutants through the SPR processor, so that the sewage purification is completed to the level of the state before the sludge Dehydrating agent can be realized. This SPR treatment function is currently a new type of water treatment technology, in the practical application of

the advantages of more, of which the three most prominent are, respectively, in carrying out sewage treatment occupies an area of less, the enterprise or other units of the input cost is low, the entire sewage treatment process is simple and easy to operate. Secondly, the PACT process is the Powdered Activated Carbon Sludge (PACS) process, which is a simpler process than other wastewater treatment processes, using Adsorption properties of activated carbon to purify the wastewater. In the chemical treatment process, there are coagulation flocculation and chemical precipitation. Coagulation and flocculation are the most common chemical treatments in this classification. Through coagulation and flocculation, these two types of sewage treatment, effectively remove some suspended particles, organic matter and other various pollutants in the sewage. In the staff to carry out coagulation and flocculation work, need some chemical agents, and coagulation treatment. Common agents include iron salts, aluminium chloride, etc., these chemicals allow the sewage surface charge neutralization so that the charge is destabilised, composed of large particles, this process of composing large particles is known as coagulation. After coagulation is completed, a flocculation step is required, usually by adding flocculation aids such as polyacrylamide, which promotes the transformation of tiny particles in the coagulation into huge flocs. The resulting flocs are large in size and weight making it possible for staff to filter out large particles in post-treatment . Lastly in biological treatment, activated sludge method is a widely used one. It mainly relies on the active microorganisms in it to ensure that the microorganisms grow in the water to achieve the degradation of the pollutants in the water (He, 2024). As for the ecological treatment technology, the artificial wetland technology realises the removal and degradation of harmful substances in wastewater with the synergistic effect of wetland vegetation and microorganisms to purify the water and protect the ecology, which has the advantages of innovation and environmental protection. Artificial lake technology uses lakes for natural purification to achieve the effect of water purification, the core of the technology is to make full use of the self-purification ability of the lake itself so that the lake water body has a certain degree of hydrodynamics and water circulation, so that pollutants in the water body can be dispersed and degraded in the natural process. Biological treatment is effective in degrading degradable substances in wastewater and protects against the expense of further treatment (Zhang, 2023).

In general, wastewater has a great impact on

human and life. As is the case today, due to the overproduction of wastewater and the improvement of heavy and light industries. In the future, recycling of wastewater and rainwater. Secondly, the control of pollution sources needs to be secured and stopped. The future requires innovations in wastewater treatment. The significance of treating wastewater is obvious to mankind as it does cause a lot of harm. In the future, more water pollution treatments should be developed, and the efficiency of the treatment needs to be further improved so that the goal of going green can be reached as soon as possible and at the same time, the budget can be declined (Zhang, 2024).

6 CONCLUSION

This paper has drawn out the sewage treatment options that are being studied and implemented nowadays from the sewage problems that are being faced by the cities nowadays. Wastewater treatment is an important part of life in today's human society, which is not only related to the ecological well-being but also to the life and health of this human being. Wastewater has a great impact on people and their lives. As is the case today, due to the overproduction of wastewater and heavy and light industry, wastewater is becoming a significant amount of recoverable resources. In the future, recycling of wastewater and rainwater. The significance of treating wastewater is obvious to mankind as it does cause a lot of harm. Today people have various wastewater treatment to the extent that they are able to cope with the current threats and needs. Secondly, the sources of pollution need to be secured and stopped. The future requires innovations in wastewater treatment. In the future. People should favour research on more rapid treatments to cope with the greater wastewater discharges in the future. Also biological treatment deserves to be researched, which is more environmentally friendly and can greatly reduce expenses and thus expand the scope of control.

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