

Problems and Countermeasures in the Operation of Sewage Recycling Project

Rong Tan

Nanjing Normal University, Nanjing 210000, China.

Abstract : China has a vast territory and abundant mineral resources, but water resources are very scarce and unevenly distributed. Nowadays, the shortage of water resources and serious water pollution have become important factors restricting the sustainable development of Chinese cities. Sewage recycling has become one of the effective means to alleviate the shortage of water resources and serious water pollution in China. The main problems existing in the operation of sewage recycling projects in China including technical aspects, cost aspects, environmental impact aspects and management aspects. In view of this series of problems have proposed a series of solutions

Keywords: Sewage Recycling

1. Overview of China's water resources and the significance of sewage regeneration treatment

China has a vast territory and abundant mineral resources, but water resources are very scarce and unevenly distributed^[1]. China's per capita water resources is only 1/4 of the world's per capita water resources, far below the world's per capita level, China's water resources utilization level is still at a low level compared to the developed countries in the world. At the same time, along with nearly 40 years of reform and opening up, our country agriculture and industry has been rapid development, urbanization process significantly faster, with an increasing demand of water resource utilization, and because the national lifestyle changes and improvement of living quality, the pollution of water is in worse. Polluted water usually contains a variety of different pollutants.

If sewage is not treated in a timely and effective manner, it will not only continue to pollute other clean water sources and cause more serious water shortage problem, but also harm human health and life safety through human respiration after some volatile pollutants volatilize into the atmosphere. At present, the use of reclaimed water can not only save resources, also can avoid unnecessary waste, reduce the pollutants in wastewater pollution to the environment, improving people's well-being and the acquisition, accord with the requirement of the sustainable development of our country. The reclaimed water produced by sewage regeneration can be used in a wide range of areas with low water quality requirements. Reclaimed water is mainly used for agricultural irrigation, industrial water, municipal utilities, ecological landscape water and supplementary water sources. Agricultural irrigation, landscape environment and industrial cooling should be given priority in urban reclaimed water in China^[2].

2. Problems faced in the operation of wastewater regeneration and treatment technology in China

At present, the development level of China's sewage regeneration and treatment technology is still in the stage of catching up with the developed countries in the world. In the process of development, it is inevitable to encounter various problems, including technical, cost, environmental impact and management issues.

2.1 The technology of sewage regeneration and treatment lags behind developed countries in the world

2.2 The economic level is not evenly distributed geographically

The establishment and effective and stable operation of the sewage regeneration and treatment system can effectively reduce the volume of polluted water, reduce the pollution and impact on the environment and the threat and harm to human health, while the stable and effective implementation of every step of the sewage regeneration and treatment technology project requires sufficient financial support. Although China's economic situation has been stable since entering the WTO in 2001, the economic level has been growing at a stable rate. In 2020, despite the global recession caused by COVID-19, China still achieved positive economic growth and was the only major economy in the world to achieve this achievement. In this year, China's GDP exceeded 100 trillion yuan for the first time and its per capita GDP also hit a new high. But the economic development level of our country is not evenly distributed geographically, the economic level of less developed areas and developed areas still has a large gap. Although China has long been the second largest economy in the world, there is a large gap between China's per capita GDP and that of developed countries. Therefore, in the field of sewage regeneration and treatment, China can only first learn from the advanced experience of developed countries, imitate the technology of developed countries, and then make technological improvement according to its own actual situation, which leads to the situation that the development level of sewage regeneration and treatment in China is not evenly distributed geographically and the overall level obviously lags behind that of developed countries.

2.3 Polluting the environment

The source of sewage is complex, according to the source can be divided into industrial wastewater, domestic sewage, commercial sewage and surface runoff. The composition of sewage is also very complex, different sewage contains different pollutants, different pollutants have different properties, the way of environmental pollution, pollution degree is also different, which requires different sewage to use different treatment methods, but also increases the difficulty of sewage regeneration treatment. Sewage, industrial wastewater contains a large number of chemicals, the most complex and changing nature of industrial waste water will not only polluted water will cause thermal pollution and contaminated with the pathogen, compared with other sewage pollution to the environment and the influence is bigger, threat to human health and life security. Some pollutants in industrial sewage are very toxic. If discharged into rivers without proper treatment, it will endanger human health and life safety. Minamata disease, one of the world's eight major public hazards, occurred in Minamata City, Kumamoto Prefecture, Japan in 1953-1956. Minamata disease was caused by the discharge of industrial wastewater containing methyl mercury into rivers without effective treatment. In recent years, a number of major water pollution incidents have occurred in China, which are caused by untreated sewage discharge, seriously threatening the drinking water health of Chinese people. These facts are not only a wake-up call for sewage regeneration treatment, but also make people have to pay attention to the impact of sewage regeneration treatment process may have on the environment and pollution.

3. Solutions to the problems faced by sewage regeneration and treatment technology engineering

According to the specific problems faced by China's sewage regeneration technology in terms of technology, cost, environmental impact and management, there are a series of solutions.

3.1 Innovation of sewage regeneration and treatment technology

Improve the level of China's sewage regeneration and treatment technology and achieve reverse superiority, realize the innovation of sewage regeneration and treatment technology to improve the efficiency of sewage regeneration and treatment, improve the quality of sewage regeneration and treatment, and reduce all kinds of energy consumption during the operation of sewage regeneration projects. Reduce or even eliminate the pollution and impact on the environment that may occur in the process of sewage regeneration and treatment, so as to reduce or even eliminate the impact on human health, reduce the input cost, labor cost and operation cost of sewage regeneration and utilization project, but also vigorously research and promote sewage regeneration and treatment methods suitable for different properties. According to different areas of wastewater characteristics do adjust measures to local conditions, according to various different wastewater composition and properties of different sources and the environmental pollution and influence degree of different, use the most appropriate sewage treatment technology, reduce unnecessary link to reduce the waste of resources and energy loss, so as to achieve the maximization of economic benefits and environmental benefits.

3.2 Increase investment, reduce costs

At the same time, we should optimize and streamline the structure of the sewage regeneration and treatment system and remove some unnecessary links while increasing investment to make the sewage regeneration and treatment project meet the requirements of the current society and achieve the healthy and sustainable development of the society. Reduce the cost of technology as much as possible through technological innovation. Optimize and streamline the management structure of sewage regeneration and treatment system, eliminate some unnecessary posts, and reduce the human cost as much as possible through the reasonable arrangement of staff and the high quality requirements of staff. The technology of sewage regeneration and treatment should be optimized to reduce the technical cost as much as possible by reducing energy loss and other aspects. At the same time, the treatment cost should be reduced as much as possible by reducing or even eliminating the impact and pollution on the environment during the operation of sewage regeneration and treatment projects. According to the economic level of different regions to choose the most suitable treatment technology to meet the requirements of local social development, not only to ensure the local stable and healthy development and city construction, but also in line with the local economic development level, and strive to achieve the maximum economic benefits.

3.3 Improve the management level, establish a sound management system

The current situation of the management level is not high and the management system is not perfect requires the sewage regeneration and treatment related enterprises not only to improve the management level, establish an effective management system, scientifically and reasonably classify and distribute the staff, but also to increase the introduction of high-quality management personnel and technical personnel. And for the introduction of high-quality management personnel and technical personnel regular training and assessment, strict requirements at all levels of sewage regeneration treatment management personnel perform their duties, seriously and diligently to do their own work, further strengthen the process of sewage regeneration treatment of each link in the cooperation, improve work efficiency, reduce operating costs. To effectively supervise the working process of the staff, and work for the spot check result, further perfecting the system of rewards and punishments, improve technical personnel and management personnel's work seriously and actively.

4. Conclusion

Behind China's sewage recycling technology lags and the status quo of developed countries in the world and behind the problems in the operation process of sewage recycling projects, not only the technology is in urgent need of innovation and improvement, but also the investment intensity, input cost, public awareness of environmental protection and management level are in urgent need of change. To change this situation, it is necessary to adopt specific and effective measures to solve the specific problems faced by China's sewage regeneration and treatment technology in terms of technology, cost, environmental impact and management. Only in this way can we effectively solve the problems existing in the operation of

China's sewage recycling project, improve the level of China's sewage recycling treatment, and improve the quality of life and living standards of China's people.

References

- [1] Yinghua Wang. Discussion on Relevant Problems of Urban Sewage Recycling Planning[J]. Metallurgical industry management,2019,6.
- [2] Zhonghua Wang, Deqian Xu, Zhifeng Wang, Hui Zhou. Discussion on the Problems of Urban Sewage Reutilization Planning[J]. Environmental Science & Technology.2011,11.
- [3] Cheng Qin. Theories and Methods of Urban Sewage Recycling[J]. China Resources Comprehensive Utilization.2020,9.
- [4] Jinqiang Yue, Yi Zhao, Zhenxiong Jiao. Discussion on the New Mode of Urban Sewage Recycling[J].China Resources Comprehensive Utilization.2019,2.
- [5] Hongying Hu, Qianyuan Wu, Jingjing Huang, Xin Zhao. Urban Sewage Recycling is Facing Important Scientific Issues and Technical Needs[J]. construction technology.2010,2,15.
- [6] Qingwei Bu. Health Risk Assessment and Analysis of Sewage Recycling in Jinan[J]. Shandong Province Water Conservancy.2017,10.
- [7] Yinghua Wu, Kuntu Chen. Talking About China's Urban Sewage Regeneration Status and Solutions[J]. Resources and Environment.2016,1.
- [8] Wenchao Jiang, Chang Huang, Xi Yang, Pin Xiang, Yingyan Wei, Mingyan Chen. Practice and Thinking of Planning and Design of Mountain City Sewage Recycling System[J]. WATER & WASTEWATER ENGINEERING.2019(3,45).