Environmental Monitoring Technology and Pollution Control in Water Treatment in China

Wei Zhou

Yangling Vocational & Technical College, Xianyang, Shaanxi 712100, China

Keywords: Water treatment, Environmental monitoring technology, Pollution control

Abstract: Water environment protection is an important work in the construction of ecological civilization, which is related to the healthy development of society. Therefore, to do a good job in environmental monitoring and pollution control in water treatment can discover the existing problems in time and protect water resources. Environmental monitoring technology is generally divided into automatic monitoring technology and conventional monitoring technology. If the water has been polluted, the technology can send a report in time, start the safety forecasting system and remind the relevant staff to take appropriate pollution prevention and control measures to protect the quality of the water environment, so as to avoid the further expansion of the pollution problem.

1. Introduction

In the process of water treatment, it is necessary to use environmental monitoring technology to strengthen the detection of water quality. We need to pay attention to the application of remote sensing monitoring technology and biological monitoring technology, build a perfect monitoring system, adopt multiple monitoring technologies to cooperate with each other to improve the monitoring efficiency. According to the monitoring results of the water, relevant staff need to formulate the specific plan of pollution control in time, implement the work of pollution control, build a perfect working mechanism and supervision mechanism, optimize the way of pollution prevention and control, improve the effect of water treatment, effectively avoid the occurrence of some pollution problems and ensure the quality of water body.

2. Application of Environmental Monitoring Technology in Water Treatment

2.1 Remote Sensing Technology

Remote sensing technology mainly relies on remote sensors, remote sensing platform, information transmission equipment and image processing equipment, etc. To detect, identify and analyze the water environment can ensure the accuracy and automation of the monitoring results. Remote sensing technology can be used in a wide range of water environment monitoring, with the help of modern flight capabilities, it can quickly capture images, use transmission equipment to transmit information to terminal equipment. It can also analyze the results and improve the monitoring efficiency. In addition, remote sensing technology can also realize dynamic monitoring and real-time monitoring of environmental problems of water, which has a certain degree of automation and high-efficiency, timely detection of pollution problems to avoid further expansion of pollution.

In water monitoring, the application of remote sensing technology reflects in two aspects. The first is to use infrared ray to test the fixed suspended matter in water and analyze it to determine what it is, so as to identify the specific situation of water quality. Generally speaking, a large number of suspended solids in the water will affect the turbidity and optical properties of the water. After mastering these data, relevant staff can use computer technology to build a three-dimensional model to know the specific situation of water pollution and take targeted pollution control measures. The second is to monitor the eutrophication of water. This work mainly depends on the infrared ray to judge the oxygen content of water according to the infrared wave band. When eutrophication

  DOI: 10.25236/icembe.2020.079

occurs in water, phytoplankton and chlorophyll will increase. Remote sensing monitoring also reflects the characteristics of reflection spectrum. It can also be used in monitoring work to enhance the effect of eutrophication monitoring.

2.2 Biotechnology

Biotechnology is mainly to monitor the pollution of water environment by means of the growth of organisms in the water and the stress response of individuals or groups to the environment, etc., which mainly relies on statistics. To do a good job in the statistics of the number of biological species in the water, take this group of data as the monitoring indicators, and judge the pollution of waters according to the change of data during the monitoring process. Benthos is an important index in biological monitoring, because they have high requirements for water quality. In general, when water is polluted, benthos will make corresponding response. We could monitor the water pollution degree and carry out water quality evaluation according to the response degree. With the help of fish, water environment monitoring can also be carried out, and the current situation of water pollution can be judged by the reaction degree of organisms to pollutants.

Microorganisms in water refer to algae, crustaceans, nematodes, protozoa and so on. They are important parts of water ecosystem, which can also play an important role in water monitoring and evaluation. We can use polyurethane foam blocks to collect aquatic microorganisms. If the water is polluted, the protozoa cluster will be affected. The pollution degree is different, and the cluster speed is different. The characteristic can be used to monitor and judge the water pollution. We should send reports to the staff timely, build a perfect safety forecasting system and take corresponding pollution control measures.

Luminescent bacteria monitoring technology is also a relatively mature technology in biotechnology, which has the advantages of rapid operation and high sensitivity. It is mainly used in the water environment monitoring of waterworks and plays an important role in ensuring the safety and health of residents' water use. It mainly uses the specific conditions of the luminous characteristics of biological cells and the genetic toxicity of pollutants as reference data. we introduce advanced instruments and equipment such as water quality toxicity detector for inspection and analysis. After the inspection results are obtained, we will know the specific conditions of water quality, for example, whether there are pollutants and the types of pollutants, then the appropriate measures will be taken according to this situation.

2.3 Other Monitoring Technologies

In addition to the two commonly used monitoring technologies mentioned above, we can also build a real-time monitoring system by virtue of the advantages of information technology, and connect with the monitoring technology to transmit the monitoring data to the monitoring system the first time, so as to improve the treatment effect of water pollution. It can also build a reverse osmosis water-treating system, implement some information monitoring technology, analyze the specific situation of water quality deeply, master more detailed data, and then build a perfect water monitoring system.

3. Study on Pollution Control Measures in Water Treatment

3.1 Key Projects in Pollution Discharge

We need to focus on the monitoring of sewage discharge and implement various sewage control measures, especially strengthen the supervision and control in urban residents' living areas, so as to further solve water pollution and other problems. It is necessary to plan the distribution of wastewater treatment plants in each area reasonably to ensure that the wastewater treatment work is in place and will not affect the safe water environment. We should pay more attention to the work of pollution discharge, build a perfect prevention and control system in combination with water pollution prevention and control measures, and improve the efficiency of prevention and control work.

3.2 Build a Perfect Prevention and Control Mechanism and Implement the Supervision Mechanism

To improve the efficiency of prevention and control of water pollution and ensure the quality of water, we need to build a perfect working mechanism and implement the supervision mechanism. First of all, we should innovate the working ideas in the water treatment work, improve the professional knowledge of the relevant staff and whose attention to the environmental monitoring, and provide strong support for the establishment of the working mechanism. Secondly, it is required to select appropriate pollution control measures according to the specific situation of water environment, improve the implementation effect, so as to improve the quality of water environment. Third, we should pay attention to the implementation of the principle of local suitability in the mechanism and formulate effective monitoring programs and prevention measures according to the water environment to avoid certain impact on the surrounding environment. In the construction of supervision mechanism, we should start from the source of water pollution, do a good job in supervision, build a supervision system, and combine the supervision system with the prevention and control mechanism, which can effectively improve the prevention and control efficiency. In the future development, we should constantly improve the prevention and control mechanism according to the innovation of water monitoring technology and prevention and control technology.

3.3 Effective Combination of Traditional and New Technology

With the continuous development of information technology, environmental monitoring technology has been in the update and development, so the new detection technology monitoring results are more accurate. The effective combination of traditional technology and new technology can build a more perfect monitoring system and ensure the quality of water. We need to monitor the main components of substances in the water, collect statistics of relevant data, do a good job of safety early forecasting, and make relevant prevention and control plans based on these data, then we can improve the prevention and control effect.

3.4 Optimize Pollution Control Methods

In the prevention and control of water pollution, in order to ensure the effectiveness of prevention and control, it is necessary to select specific prevention and control measures according to the actual situation, integrate some advanced information technology, optimize the pollution prevention and control methods, build a monitoring and analysis system based on information technology, integrate the existing resources, apply them to the prevention and control of water pollution, gradually improve the water quality and improve the level of prevention and control technology.

4. Conclusion

To sum up, in the water treatment work, according to the specific situation of the water, remote sensing technology, biotechnology or other monitoring technologies could be applied to optimize the way of pollution prevention and control, realize the effective combination of new and old technologies, build a perfect water monitoring system and prevention mechanism, do a good job in the supervision and control of the water environment, so as to improve the quality of water treatment. Relevant staff shall improve their professional quality, update their working ideas, provide strong support for prevention and control work, follow the principle of adjusting measures to local conditions in work, select appropriate environmental monitoring technology according to the actual situation of local waters, and make effective prevention and control plan based on the comprehensive analysis of monitoring results, improve working efficiency, and protect water environment from pollution, promote the process of ecological civilization construction.

References

[1] Liu Xiaolu. Environmental Monitoring Technology and Pollution Control in Water Treatment.

Intelligent City, vol.6, no.5, pp.126-127, 2020.

[2] Liu Gui. Research on Environmental Monitoring Technology and Pollution Prevention in Water Treatment in China. China Resources Comprehensive Utilization, vol.37, no.07, pp.153-155, 2019.

[3] Cheng Rui. Thoughts on the marketization of environmental monitoring. Inner Mongolia Environmental Protection, vol.31, no.01, pp.135-137, 2019.

[4] Hu Fangfang. The Function and Development of Environmental Monitoring in Environmental Protection. Resources Economization & Environment, vol.01, pp.58, 2019.

[5] Dai Shuya, Yu Jian, Ding Bo, Yin Weiqing. Application and Developmental Tendency of Biomonitoring in Water Environmental monitoring. Pollution Control Technology, vol.26, no.05, pp.62-65, 71, 2013.