

Analysis of Measures to Improve the Quality of Atmospheric Environmental Monitoring

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Abstract: With the continuous deterioration of environmental quality, environmental issues have become one of the important factors restricting China's economic and social development. The levy of the environmental protection tax in 2018 is a major measure of the state in the governance of environmental issues. The theoretical analysis of taxes on environmental governance is particularly important. Environmental monitoring quality has a crucial impact on environmental management. Environmental monitoring is an important part of the environmental protection system. In the current environmental monitoring work, there are many factors that affect the quality of environmental monitoring, and these factors must be comprehensively and carefully analyzed. Pay sufficient attention to various factors affecting environmental monitoring, strengthen the management of environmental monitoring quality, and further improve the quality of environmental monitoring. This paper mainly analyzes and explores the influencing factors of the quality of environmental monitoring, and puts forward corresponding countermeasures based on this.

1. Introduction

With the continuous improvement of the national economy, people have higher and higher requirements for environmental quality, and state departments have also established environmental quality monitoring departments. Environmental monitoring is an important part of environmental protection work [1-3]. The quality of environmental monitoring is directly related to the accuracy and reliability of environmental planning, environmental management, and pollution control. In order to strengthen environmental monitoring quality management and improve environmental monitoring technology, China is working hard to build a scientific environmental monitoring early warning system, carry out environmental monitoring quality activities, and promote the construction of environmental monitoring quality systems. At present, there are many sources of pollutants that cause air pollution, mainly including household fuel combustion, motor vehicle exhaust emissions, dust from building construction, volatilization of agricultural emissions of pollutants, and industrial waste gases emitted during the industrial production process of enterprises. Although the state has taken various measures to control air pollution, the nationwide air pollution control still has a long way to go[4]. The reason is that, on the one hand, China's irrational energy structure, coupled with China's accelerated industrialization and urbanization process, have led to serious emissions of atmospheric pollutants. Although China is continuously promoting the adjustment of energy structure, coal is still used as the main energy source. According to data from China Statistical Yearbook, current energy consumption accounts for more than 60% of coal resources, and the total amount of oil, natural gas and other energy sources is less than China's energy consumption. 30%, which leads to severe air pollution across the country[5]. In addition, the intensification of the industrialization process has caused China's industrial waste gas emissions to increase year after year, reaching 8.386 billion cubic meters in 2017, which is an increase of 61.52% compared with the industrial waste gas emissions of 5.192 billion cubic meters in 2010[6]. On the whole, although some achievements have been made in China's current atmospheric environment governance, the pressure of pollution control still exists, which requires further seeking for effective ways to improve the atmospheric environment.

2. Main Factors Affecting the Quality of Environmental Monitoring

2.1 Sample Collection

In environmental monitoring work, it is often considered that the sampling work is simple and does not get enough attention. In fact, the opposite is true. If the sampling method is incorrect or does not meet certain standards, even if the staff is careful, the laboratory analysis is more accurate, and the quality control is more stringent, the test results obtained will not be accurate. Therefore, environmental monitoring sampling personnel must strictly follow the sampling process and quality control technical regulations for sampling.

The collected samples need to be sent to the laboratory for test analysis as soon as possible. In fact, many samples were not sent to the laboratory in time after the collection meeting. Some samples may be physically or chemically reacted for too long, which will affect the measurement results. If the analysis is not performed in a timely manner, the water sample needs to be reasonably stored, such as refrigerated or added with a preservative.

2.2 Storage of Samples

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2.3 Impact of the Environment Around the Monitoring Point

Various factors such as the geographical location of the sampling site and the surrounding environment and climatic conditions will affect the quality of environmental monitoring. For example, when collecting atmospheric samples, there must be no pollution source within 50 meters around the monitoring point, and it must not be near the boiler chimney, etc., to ensure that the surrounding environment at the monitoring point is in a relatively stable state, otherwise, the quality of environmental monitoring will Make a direct impact.

2.4 Impact of Instruments and Test Systems

The test system will directly bring errors to the analysis results during the sample analysis process. The main reason is that the accuracy and sensitivity of the equipment are not enough. Some data have a very high accuracy for the instrument, which requires analysts to understand and master, be familiar with the use of the instrument and the corresponding requirements, and strictly follow the requirements and procedures in the specific operation process.

2.5 Impact of Related Personnel Quality

The first condition for ensuring the quality of environmental monitoring is the technical level, working attitude, theoretical knowledge, and sense of responsibility of environmental monitoring technicians. If the monitoring personnel's operation is not in compliance or the monitoring technology, methods and regulations are not properly understood, which leads to errors, it will directly affect the accuracy of monitoring results. This is especially the case in the early days of the new regulations. In addition, some monitoring technicians are seriously irresponsible and perfunctory.

2.6 Disregarding on-Site Monitoring Management

Improving the quality of atmospheric environmental monitoring is vital to protecting the environment, and unreasonable monitoring prevents the subsequent protection work from being carried out smoothly. The monitoring methods at this stage are relatively inadequate, and have not made full use of the application of wireless monitoring systems in atmospheric environmental monitoring. A new set of requirements and standards should be made for new technologies of automation and real-time. Although there is a dedicated team to monitor environmental quality, its

work is mainly limited

It is in the laboratory and the investment in the activities of the department is insufficient, so it does not play a practical role in monitoring the atmospheric environment.

2.7 Low Awareness of Atmospheric Environmental Monitoring

The huge economic benefits often make people dazzled. They cannot see that the environment is deteriorating and cannot stop the pace of industrial pollution. Some areas with relatively good air quality are unaware of the seriousness of environmental problems, do not control the behavior of damaging the air environment, and have not strengthened the monitoring of the atmospheric environment. Relevant departments and monitoring personnel have a poor awareness of quality monitoring and are not serious and responsible for their work, which has led to this work being incomplete.

The quality of China's atmospheric environment monitoring has always been improved. The biggest problem is that this work has not been given the attention it deserves, and the training of talents is also lacking. These seriously affect the quality of atmospheric environmental monitoring. The collection should require accurate data, including specific time and place, to reduce one-sidedness, and to make the monitoring results as global as possible.

2.8 Problems with Monitoring Funding

The monitoring system must ensure the normal operation of existing instruments and equipment, and the introduction of high-tech instruments and technologies requires a large amount of investment. The lack of financial investment directly leads to the failure to update the monitoring equipment and stagnation of the monitoring technology. Affects the quality of monitoring.

3. Measures

Table 1 Show the Uaqm Strategies of Developed and Developing Countries.

3.1 Establish and Improve the Quality Assurance System for Atmospheric Environment Monitoring

Establish and optimize the quality assurance system for atmospheric environmental monitoring, ensure the representativeness of the collected samples, ensure the integrity of the atmospheric monitoring data, focus on the accuracy and correctness of the monitoring data, comprehensively analyze and evaluate the monitoring data, and finally implement comparative observation. After analyzing and researching the whole process, a complete monitoring conclusion of the coefficients was reached. The optimized quality assurance system can give full play to the guiding and promoting role of atmospheric monitoring quality work. In addition, the atmospheric environmental monitoring stations at all levels should use the quality assurance system as the working standard, and the monitoring personnel must strictly abide by it.

3.2 Increase Investment in Atmospheric Environment Monitoring Equipment

Unified national air environment monitoring equipment planning, and strive to solve the disadvantages of equipment imbalance. Strengthen investment in monitoring equipment in remote areas, counties and rural areas, and maximize the use of resources for atmospheric environmental monitoring equipment. Especially in areas where the development of environmental monitoring is relatively backward, we must not only focus on local economic development, but also focus on environmental governance and protection. Attention must be paid to the setting of atmospheric environmental monitoring equipment and support in all aspects. At the same time, we must continue to promote new technologies such as three-dimensional monitoring of atmospheric composite pollution, and widely promote their application to further improve the quality and capabilities of China's atmospheric environment monitoring.

3.3 Improve the Scientific and Standardized Level of Monitoring Site Data Collection

Whether the collected samples meet the standards can reflect the actual situation of the monitored objects, and is a key element for effective implementation of environmental quality monitoring. When collecting samples, we must pay great attention to the space-time impact of the collection operation, unify the collection methods, clarify the collection requirements, and scientifically formulate the collection plan to ensure the integrity, authenticity and representativeness of the samples.

3.4 Attention to Details of Atmospheric Environmental Monitoring

When implementing atmospheric environment monitoring, monitoring personnel must do all the details to improve the quality of atmospheric environment monitoring. In past atmospheric environmental monitoring, irrational sampling often affected the quality of atmospheric environmental monitoring. Therefore, when sampling, the staff must ensure the representativeness, authenticity and consistency of the samples. In the formal monitoring of the atmospheric environment, in order to avoid excessive sampling volume errors and affect the quality of the monitoring of the atmospheric environment, atmospheric monitoring personnel should calibrate the sampling flow. When analyzing samples in the laboratory, the monitoring staff must first perform calibration and cleaning of various analytical instruments to ensure the accuracy of the analysis results.

4. Conclusion

Atmospheric environmental monitoring can truly and timely reflect the actual state of the atmospheric environment, provide effective data basis for the treatment of atmospheric pollution, and make people realize the importance of atmospheric environmental protection. This requires China to continuously improve the quality of atmospheric environmental monitoring, choose effective measures to monitor the quality of atmospheric environmental monitoring, continue to improve the level of environmental monitoring technology, prevent and avoid further deterioration of the ecological environment, and further improve the atmospheric environment. Effective measures have improved China's atmospheric ecological environment and embarked on the road of sustainable development. Therefore, each department must fulfill its responsibilities, establish and optimize the atmospheric environment monitoring system, improve the quality of atmospheric environment monitoring, give accurate monitoring data, and provide a scientific basis for environmental management decisions.

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Table 1 Uaqm Strategies Of Developed and Developing Countries

UAQM Strategies	US	UK	EU	Australia	British Columbia	Japan	HK	Singapore	Mexico	Thailand	South Africa	China	India
Alternative fuel option in vehicles	X	X	X	X	X	X	X	X	X	X	O	X	X
Improvement in fuel quality	X	X	X	X	X	X	X	X	X	O	O	X	X
Fitting of catalytic converter	X	X	X	X	X	X	X	X	X	O	O	O	O
Inspection and maintenance program	X	X	X	X	X	X	X	X	X	O	O	O	O
Use of low and zero emission vehicles	X	X	X	X	X	X	X	O	X	O	O	O	O
Banned on street parking	X	X	X	X	X	X	X	X	X	O	O	O	O
Support for cycling	X	X	X	X	X	X	X	O	X	-	X	X	X
Congestion charging	X	X	X	X	X	-	-	-	X	N	N	N	N
Specific bus corridors	X	X	X	X	X	X	O	O	X	O	O	O	O
Pedestrians corridors	X	X	X	X	X	X	O	O	X	O	O	O	O
Low emission zone	-	X	X	O	-	-	-	N	N	O	N	N	N
Banned on entry of old vehicles in air quality control regions	X	X	X	X	X	X	X	X	X	O	O	O	O
Banned on smoky vehicle	X	X	X	-	-	-	-	-	-	O	O	O	O
On-board diagnostic system in vehicle	X	X	X	X	X	X	X	X	X	O	O	O	O
Subsidy on registration tax on environment-friendly vehicles	X	X	X	X	X	X	-	-	-	X	X	X	X
Mass rapid transport	X	X	X	X	X	X	X	X	X	O	X	X	X
Encouraging carpools	X	X	X	X	X	X	X	X	X	X	X	X	X
Maintenances of road infrastructure	X	X	X	O	X	X	O	X	X	O	O	O	O