Research on the Causes of Errors in the Detection of Water Environment Quality Inspection Organizations and Countermeasures

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Abstract: This paper mainly focuses on the errors in the detection of water environment quality inspection institutions, first analyzes the causes and influencing factors of errors, and then strengthens the quality of water environment inspection from the requirements of data science and fairness in the monitoring process of control to analyze how to do a good job in the deployment of relevant work, to modernize quality management concepts, and reduce the detection error of water quality inspection organizations.

1. Introduction

Water resources need to have a major impact on the modern economy, environment and life. Water quality has attracted much attention in the continuous improvement of people's quality of life. The practical significance of the testing measures and quality of water quality inspection organizations is more significant. In the whole process of water quality inspection, due to improper sampling, low quality control effect of water samples, and irregular operation, the final water quality detection error is big, and the results are questioned, especially in laboratory science and data processing. The influence of indirect error and data error will further reduce the level of quality control and weaken the authority and scientificity of water quality inspection institutions. Therefore, in response to the detection error of the water environment quality inspection organization, it is necessary to fully implement the quality control concept throughout the quality inspection process, implement quality supervision for each step of water resources testing, reduce the impact of human factors and potential risks, and ensure the testing process. The scientific and fairness of the data improves the quality of inspections by water quality inspection organizations.

2. The occurrence of errors in the detection of water quality inspection institutions

The water quality inspection of the water environment quality inspection organization is composed of several processes such as water environment sampling, inspection, laboratory testing, and result analysis. The implementation steps of each link are carried out around the sample detection. The error mainly has absolute error and relative two concepts of error, absolute error is the error inherent in the data processing due to the relationship between the data attribute and the test. This is no longer within the scope of this paper. The relative error is the error caused by the external influence and can be defined as the measured value. The difference from the measured true value, where the true value is the measured objective quantity, so the mathematical expression of the error can be Y = y - Y 0. Where Y is the error, y is the measured value, and Y 0 is the true value. In general, the generation of errors is present in any test item, and it is difficult to perform absolute error monitoring. Based on the current difficulty in quality control of water quality testing, it is necessary to continuously improve the results of water quality testing. It is to monitor and improve the controllable error, reduce the relative error as much as possible, and improve the quality control level of water quality testing. The following is the main steps of water environment quality inspection institutions detection errors: First, the same piece acquisition process. The sampling error is different from the different methods used for sample collection. Because the sampling deviation makes the detection data bias to a certain aspect, the detection result is improper; second, after the water quality sample is collected, the composition and proportion of the sample change due to the

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influence of external temperature, air and inspection time. Third, due to the influence of instruments and equipment, detection errors occur in the sample analysis process; Fourth, data analysis and collation. The error is mainly due to data processing problems, most of which are calculation and analysis errors; fifth, when the test report is formed, there is a problem caused by human factors, such as test data and results [1].

3. Analysis of the causes of the detection error of the water quality inspection organization

First of all, the sample collection error is generated, mostly due to the sampling personnel. In order to strictly implement the "Water Environment Monitoring Specification" and related standards, the water sample collection is not sampled at the specified time, place and section and position, resulting in the final water sample collection not meeting. Standard, water sample collection containers and non-standard collection methods can also lead to insufficient representation of samples. Secondly, the error of the sample transportation link is caused by the sample container storage, the sample storage standard is not established, the necessary reagents are added for storage, the storage environment temperature changes greatly, and the laboratory analysis is not performed within the specified time, for example, the iodometric method is dissolved. In the oxygen solubility, a water sample is filled with a non-dissolved oxygen bottle. Furthermore, there are many factors in the error of sample analysis, such as errors in measuring equipment, incorrect use of standard materials and chemical reagents, and insufficient technical ability of the inspectors. Most of the errors in sample analysis are caused by human factors, especially the influence of testing personnel and equipment, and the timeliness of testing and test results are large. Finally, the error of data processing and monitoring documents. On the one hand, after the completion of the sample testing project, the data analysis is not strict, resulting in errors in the test results. On the other hand, due to the wrong results, human factors affect the formation of the report [2].

4. Countermeasures for detection error of water environment quality inspection organization

According to the analysis, most errors in water quality and environmental testing are caused by human and environmental factors, which lead to problems in the test results. In order to improve the quality of water quality environmental monitoring, the author has formulated the following strategies for the environmental quality inspection agency testing process:

(1) Implement whole-process quality control

In order to reduce the impact of personnel factors on the quality of water quality inspection and reduce errors, the whole environmental section of water quality inspection should implement the whole process control concept, and quality assurance should run through the whole process activities. First of all, before the water environment quality inspection, first develop a comprehensive inspection plan, determine sampling standards, testing personnel and inspection routes, etc., and control each link in advance to reduce the actual water quality inspection errors. In addition, the experimenter should have sufficient theory and technology and be able to complete the basic operation technology and ability. Experienced personnel should be sent to lead the team in the selection of personnel to conduct on-site water quality sampling and conformity integration sampling and inspection process, so as to reduce personnel errors in sampling and record the entire sampling process for the convenience of later results analysis. Moreover, professional technicians should be arranged for daily inspection and maintenance of the testing equipment, and special funds should be set for equipment maintenance and optimization to improve the accuracy of data acquisition. In addition, according to the requirements of high precision instruments on the environment, do a good job in laboratory disinfection, cleaning and other work, select appropriate lighting equipment, regulate the humidity and temperature of air conditioning, and ensure that the equipment is in a suitable working environment for a long time. Finally, in order to ensure the implementation of quality control work, the whole process of quality control requires teachers to update the working standards of staff positions and update the working standards, directly monitor the process and on-site record system, and determine the scope and relevant standards of on-site

monitoring. In accordance with the representativeness and completeness of samples collected, the qualification of inspection submitted, and the accuracy of data analysis and detection, etc. as the measurement indexes of work quality and performance of employees in all links, it is necessary to improve the attention paid by inspectors in all links to work, standardize their own operation, ensure smooth handover of each link, and ensure data requirements [3].

(2) Optimize the testing environment and instruments

The generation of data analysis errors is affected by the most factors, and the development of special quality measures for data analysis can effectively reduce the generation of errors. First of all, in view of the errors caused by the instruments and equipment, the requirements of metrological certification should be strictly observed, and the relevant metrological departments should verify within the specified time to ensure the normal operation of the instruments and equipment.

Before every test of project, it should be the first procedure to measure various instruments, and to take care of these equipment and instruments regularly according to the relative test standard and test data and index. Besides, the reagent and medicine should be stored as the regulation of the lab.

Moreover, the production qualification of factory should be verified and checked before use the standard material and chemical reagent, and it is also necessary to sign the record form when use the medicine and to verify the chemical reagent and standard material according to the record form every week, in order to improve the conception of drug using of testify members.

And to discern the levels of all kinds of chemical reagents strictly in daily regulation , to change and replace the expired products on time, to make the good preparation of chemicals and medicine in the processing of the test, and to exert the regulation strictly in the setting to store the containers and the store environment.

Furthermore, as for the using of standard test methods, we need to collect all the test methods from all countries and industries standards continually. To these contents without the relative standards, we need to collect and learn the related standards extensively, to implement the comparing test based on the standards from many countries and industries, in order to reflect the results of the test more really and precisely.

Eventually, the premise to ensure the quality of the test is the competence and experience of the lab staff, thus, the passion of career and the solid attitude to work should be promoted in this institute by all staff themselves. And the regular training and practice is also paramount. To lift the ability of test members, we should refine the related test and repairing works, make the good preparations of theories and basic operations on time and arrange the technical training and period further learning about the work issue.

5. Conclusion

The external environment is able to make a more significant effect on the water quality. And social production and life has everything to do with water. In the management and precaution of water pollution, it has gradually proved the high value for the practical meaning of the water quality test and related institute. There are plenty of completed procedures and deep and wide referred scopes in the test of water quality. From the perspective of the top level design, the reason led to the mistakes are mainly the lack of quality control and it was not obvious for the quality control idea and measurements in the practical water quality test. Therefore, we should follow the quality management conception comprehensively, process the quality control to the whole test processing and test environment and promote the test quality of the institute, in order to reduce the rate of mistakes and faults.

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