

Suggestions on Conducting Ecological Emergency Monitoring

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Abstract The importance of ecological environment monitoring was discussed, and the problems in ecological emergency environment monitoring were analyzed. Based on this, some suggestions were put forward for ecological environment emergency monitoring, in order to provide effective reference for relevant staff.

Key words Environmental pollution emergency; Emergency monitoring; Problem; Countermeasures

Environmental pollution emergency can have a certain negative impact on people's lives, economic development, and social stability. Emergency monitoring, as the primary link in handling emergency monitoring events, can timely and accurately handle pollution accidents that have occurred. Due to the sudden occurrence of environmental emergencies, which are characterized by diverse forms, difficulty in handling, and serious harm, they have become an important factor that poses a threat to human health and damages the ecological environment. Therefore, it is necessary to strengthen environmental pollution emergency monitoring, improve emergency response capabilities, and effectively avoid damage to the ecological environment.

Significance of Ecological Environment Monitoring

Beneficial for addressing environmental pollution issues

Comprehensive monitoring of environmental pollution can be achieved by strengthening the monitoring of the ecological environment. By reviewing the data provided by ecological environment monitoring, relevant staff can have a deep and comprehensive understanding of the actual pollution situation of the environment, and on this basis, develop comprehensive treatment measures to effectively deal with environmental pollution and avoid the spread of pollution as much as possible^[1]. At the same time, environmental protection departments can effectively manage and supervise polluting enterprises through ecological environment monitoring results, promote the implementation of environmental laws and regulations, and truly protect the environment. In addition, monitoring the ecological environment is also beneficial for environmental protection personnel to strengthen the control of environmental pollution. For example, when monitoring and controlling the atmospheric environment through ecological environment monitoring, relevant personnel can detect and analyze pollutants such as sulfur dioxide, PM_{2.5}, and nitrogen oxides in the atmospheric environment, and take targeted measures to achieve the treatment of environmental pollution^[2].

Beneficial for improving the scientificity of environmental assessment

Environmental assessment plays a very important role in environmental protection, and it can effectively promote the development of environmental protection. Environmental assessment can usually be divided into two parts: the initial stage of environmental protection and the integration stage after environmental protection is completed^[3]. In the initial stage of environmental protection, the main focus is to analyze and evaluate the current environmental pollution problems, in order to provide effective basis for subsequent environmental protection work. In the integration stage, the main focus is to evaluate the effectiveness of environmental pollution control. In order to effectively carry out environmental assessment, it is necessary to provide effective data support for ecological environment monitoring work, which is conducive to providing certain guarantees for the accuracy of environmental assessment and effectively improving the effectiveness of environmental protection measures.

Beneficial for coordinating the relationship between ecological environment and economic development

With the continuous development of society, China's economy has also undergone rapid growth. However, due to some historical legacy issues, there are still some contradictions between China's economic development and environmental protection. Currently, many regions have taken measures that may cause pollution to the ecological environment in order to promote rapid economic development, which goes against the requirements of social sustainable development strategy^[4]. Therefore, in the process of developing the economy, China should strengthen environmental protection in order to promote green development of local economies. Ecological environment monitoring can not only make it possible to obtain relevant information about the local environmental situation, but also possible to further understand the problems in the environment and take reasonable measures to protect the environment, which is conducive to coordinating the relationship between ecological environment development and economic development, and promoting common development between the two^[5].

Beneficial for preventing pollution emergencies

The current situation of environmental pollution in China is becoming increasingly serious, and adverse weather conditions such as haze and sandstorms can often be seen. Some regions of China can see frequent pollution emergencies, which are hard to

Received: February 21, 2022 Accepted: April 27, 2023

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control and have the characteristics of fast occurrence and wide impact. Therefore, it is necessary to strengthen monitoring and management of pollution emergencies, so that corresponding measures can be taken in advance to effectively avoid the occurrence of pollution emergencies. Environmental emergency monitoring, as an important component of ecological environment monitoring, can quickly monitor pollutants on site in the face of pollution emergency, accurately identify the type of pollution, and provide scientific basis for on-site emergency rescue and people evacuation^[6]. At the same time, environmental emergency monitoring can accurately identify the nature of the pollutants, as well as the scope, trend, and harm degree of environmental pollutants, providing effective technical support for environmental protection and handling pollution accidents. Environmental emergency monitoring can also track and monitor pollutants that cannot be eliminated or degraded in a short period of time, providing effective suggestions for preventing environmental pollution and repairing ecology. In addition, by conducting environmental pollution monitoring, relevant information can be released in a timely manner, better meeting the needs of the people and government requirements^[7].

Problems in Carrying out Ecological and Environmental Emergency Monitoring

Insufficient crisis awareness in environmental emergency monitoring

The characteristics of environmental emergency means that territorial monitoring should be the main focus when carrying out environmental emergency monitoring work^[8]. After observing the ecological environment department, it has found that the department lacks a strong sense of crisis in environmental emergency monitoring and depends heavily on luck, believing it is impossible to have any environmental emergency, thus resulting in a lack of emergency response when facing sudden environmental events. Some ecological and environmental management departments fail to realize that environmental monitoring is a fundamental task in environmental protection, and have not provided effective support in terms of manpower, financial resources, and material resources for environmental monitoring work, which has had a negative impact on the environmental emergency monitoring capabilities of local environmental monitoring stations^[9]. At the same time, some local monitoring stations are weak in their own monitoring capacity and lack certain crisis awareness of emergency monitoring. Emergency environmental monitoring plans are formulated without fully integrating with the local industrial structure and the distribution of environmental risk source and sensitive targets within jurisdiction, and always are copies of other similar plans. The existence of this situation often leads to inconsistencies between actual actions and emergency monitoring plan information when pollution accidents occur, which is not conducive to the further work.

Unreasonable organizational structure setting

In order to effectively improve the level of environmental emergency monitoring, the organizational structures should be set

up scientifically and reasonably, so as to meet the needs of emergency monitoring for environmental pollution emergencies. However, although the current environmental monitoring stations are divided into main stations, first level stations, second level stations, and third level stations according to hierarchy. When setting up environmental monitoring institutions, only the needs of macro management at the upper level are considered, and the basic structure of lower level environmental monitoring institutions is not taken seriously, resulting in multiple links of the environmental monitoring institutions not operating smoothly^[10]. At the same time, there are some problems with the administrative level of environmental monitoring institutions in China. There are various administrative levels set by secondary environmental monitoring stations in different parts of China, with some being at the deputy county (division) level and others at section chief level, which have led to differences in social status and personnel treatment among environmental monitoring stations in cities with the same level, resulting in some differences in the intensity of environmental monitoring^[11].

Imperfect emergency monitoring mechanism

Priority should be given to institutionalization and three-dimensional measures when establishing an emergency monitoring mechanism for environmental emergencies^[12]. At present, the Ministry of Ecology and Environment of China has formulated technical specifications for emergency monitoring of environmental emergencies, which stipulate technical requirements for the emergency initiation, as well as working principles, preliminary identification of pollution situation, emergency monitoring plan, tracking monitoring, emergency monitoring report, quality assurance and control, and termination of emergency monitoring. However, currently there is a significant lack of three-dimensional construction in establishing environmental emergency monitoring mechanisms. Relevant departments at the provincial, municipal, and county levels should establish regional emergency linkage mechanisms, cooperate with each other, strengthen joint efforts, complement resources, and strengthen communication^[13]. At the same time, various environmental monitoring departments rarely effectively integrate with the monitoring forces in society. Due to the imperfect linkage mechanism of emergency monitoring, it is difficult to complete the prediction work of environmental emergency monitoring and timely predict environmental pollution emergencies.

Lacking in dedicated staff in some posts

With the continuous improvement of people's material living standards, more and more people are paying attention to the development of environmental protection work. The current daily work of the monitoring department mainly includes monitoring surface water, wastewater, noise, drinking water, and inhalable particulate matter^[14]. In actual work, the workload of some work has gone far beyond the number of staff, especially some remote areas where there are only a small number of professional monitoring staff. Due to the lack of dedicated personnel responsible for some

positions, the tasks of monitoring personnel in daily work are usually quite heavy. In addition to completing routine tasks such as on-site sampling and monitoring, there are also times when it is necessary to travel to other cities, which is not conducive to actively responding to uncertain accidents. In this situation, when a pollution emergency occurs, it is difficult for monitoring personnel to arrive at the scene in time and determine the cause of the pollution.

Insufficient funding

At present, some regions do not have a correct understanding of the importance of environmental emergency monitoring, and insufficient funding has been invested in it, resulting in the lack of professional environmental emergency monitoring instruments, equipment, and tools^[15]. On the other hand, when dealing with environmental emergencies, relevant monitoring personnel need to go deep into the accident site, collect and analyze pollutants. Without advanced and convenient monitoring equipment, it is not conducive to providing guarantees for the smooth implementation of monitoring work, and to some extent, it hinders the development of ecological environment emergency monitoring.

Low quality of some personnel

Ecological environmental emergency monitoring is a work that combines physical and mental labor, and requires high quality of environmental emergency monitoring personnel. However, there are problems such as a shortage of personnel, inadequate daily training, and weak professional abilities of the staff in the ecological environment emergency monitoring work in China. And then, when facing an ecological environment emergency, it is difficult to make targeted predictions and prevention.

Countermeasures for Ecological and Environmental Emergency Monitoring

Strengthening institutional construction

When carrying out emergency monitoring of ecological and environmental emergencies, specialized institutions should be established and dedicated staff should be arranged to take the responsibility, which is conducive to providing effective guarantees for the timeliness of monitoring work^[16]. Although the occurrence of environmental pollution emergency has strong uncertainty, corresponding prevention measures should also be taken. Strengthening institutional construction and improving personnel allocation are key issues in carrying out monitoring work. Only in this way can we provide comprehensive material conditions and human resources for the subsequent monitoring work, ensuring that monitoring work is carried out in a strong and timely manner.

Improving early warning system for environmental pollution emergency

Improving the early warning system can carry out effective control of for environmental pollution emergencies. Therefore, environmental protection departments should strengthen the construction of early warning systems for environmental pollution emergencies, establish specialized early warning and investigation teams, identify and promptly eliminate safety hazards in the environment.

During the process, emergency monitoring personnel should be diligent and meticulous, and timely improve and perfect the early warning system based on the actual situation. Improving the early warning system for environmental pollution emergencies is helpful to construct a wide coverage early warning system, which can comprehensively obtain relevant information about pollutants and carry out comprehensive and effective monitoring of environmental emergencies, thereby making active response to various environmental emergencies, truly achieving prevention before the outbreak.

Guaranteeing funding investment

At present, China and all sectors of society have begun to attach great importance to the implementation of environmental protection work. In this context, monitoring departments should seize the opportunity, increase investment in funds, further improve and update the software and hardware equipment used in monitoring work, and promote effective improvement of work effectiveness^[17]. For example, when formulating environmental protection plans, China should increase funding for environmental monitoring so that it can update and improve monitoring equipment. At the same time, it is also necessary to establish sound monitoring standards, configure corresponding equipment and instruments based on the actual situation of monitoring work, improve the application of new technologies and equipment, in order to achieve strong mobility and rapid monitoring and truly adapt to local conditions, which is of great value and significance to promote environmental emergency pollution monitoring work. In addition, the necessary reagents for monitoring work should be supplemented in a timely manner to ensure sufficient monitoring reagents and consumables are input into the monitoring work. Glass analysis instruments should be stored in the accident site laboratory according to the principle of "one for use, one for backup", and the sampling bottles should be cleaned in a timely manner according to regulations. The analysis equipment should be calibrated, verified, and maintained regularly to ensure the normal and stable operation^[18].

Improving personnel quality

The implementation of emergency monitoring work for ecological and environmental events requires the support of a high-quality professional team. Therefore, some measures should be taken to improve the comprehensive quality of monitoring personnel and build a professional monitoring team. Firstly, personnel related to emergency monitoring of ecological and environmental events should be organized to participate in relevant training such as emergency response, typical case analysis, and information reporting, so as to effectively improve the professional technical ability and comprehensive quality of emergency monitoring personnel, thus enabling them to face ecological and environmental emergencies calmly in the face of danger. Secondly, relevant staff should be organized to observe and conduct on-site drills on environmental emergencies, accompanied with comprehensive hone of the team, so as to enhance the business capabilities. At the same time, monitoring personnel should be required to be proficient in using various instruments and equipment as well as monitoring

procedures, and regularly calibrate and verify monitoring equipment and instruments^[19]. Moreover, an appropriate incentive system can be established to stimulate the work enthusiasm of monitoring personnel, thereby building a high-level and high-quality team for the implementation of monitoring work, and achieving effective prevention, response, and resolution of environmental pollution emergencies.

Strengthening practical combat capabilities

In order to better improve the monitoring level and ability of ecological environment, theory and practice should be fully integrated in daily work to enhance practical capabilities^[20]. Firstly, a comprehensive emergency monitoring work procedure should be established to effectively integrate monitoring resources in various regions, and to uniformly mobilize and command them, so as to truly achieve network linkage among monitoring stations and better solve emergent problems. Secondly, an emergency monitoring plan for environmental emergencies shall be formulated, in which environmental risk source and pollutants within the jurisdiction shall be included and dynamic management shall be implemented. The emergency monitoring cases of different types of environmental emergencies should be analyzed, and various forms of joint emergency monitoring drills should be carried out in combination with the environmental risk organizations in each district. Through urban linkage, government enterprise linkage, and multi department linkage, the scenarios of chemical leakage, trans provincial river pollution, earthquake disaster and other scenarios should be pre-set, and the whole process emergency monitoring drills should be carried out to accumulate experience in actual practice, thereby continuously improving the practical capabilities of monitoring personnel and helping them face various emergencies calmly.

Conclusion

Ecological environment emergency monitoring is an important component of the ecological environment security system. With the issuance of a series of documents such as the *Opinions on Strengthening Ecological Environment Emergency Monitoring Work*, higher requirements have been put forward for improving the emergency monitoring system and enhancing emergency monitoring capabilities. Observation on the current actual situation has found that environmental emergency monitoring in various regions is difficult to meet the needs of environmental pollution accident disposal under the new situation. Therefore, relevant departments should strengthen institutional construction, improve the early warning system for environmental pollution emergencies, ensure funding investment, improve personnel quality, and strengthen practical capabilities through various means to well accomplish in emergency monitoring of ecological environment emergencies, ensure the implementation of ecological environment emergency monitoring work at all levels, and vigorously enhance ecological environment emergency monitoring capabilities.

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