

# Significance and Function of Dynamic Data Archives in Pollution Source Monitoring

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**Abstract:** In order to further improve and promote the supervision and monitoring of pollution sources and timely understand and master the pollutant discharge and treatment, we achieve establishing and making good use of the dynamic data files of pollution sources. It's of great significance to better provide data support for environmental management and decision-making of competent departments at all levels of government.

**Keywords:** Pollution Source Monitoring; Dynamic Archives; Function and Significance

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## Introduction

With the rapid development of national economy, the problem of environmental pollution has also intensified in different regions to varying degrees. This situation has attracted great attention of the government and the masses. It has become an urgent problem to strengthen the supervision and monitoring of pollution sources of industrial enterprises. Deal with the monitoring information efficiently and quickly, accurately and vividly characterize the environmental quality status, and predict the environmental pollution situation, which is also an inevitable requirement for the scientific management of environmental monitoring.

## 1. Significance of establishing dynamic data archives of pollution source monitoring

Pollution sources include water pollution sources and air pollution sources, etc. Pollution source monitoring mainly uses environmental monitoring means to determine the emission sources, types and concentrations of pollutants. Therefore, the pollution source monitoring data not only provides the basis for controlling pollution source emission and environmental impact assessment, but also the main basis for solving pollution disputes. Therefore, the establishment of pollution source monitoring dynamic data archives is of great significance.

However, in reality, in the daily pollution source monitoring work, the low utilization rate and poor representativeness of monitoring data are ubiquitous, so the needs of environmental protection cannot be met. After the data is reported, it is rarely comprehensively analyzed, utilized and developed. In addition, despite the rapid development of pollution source monitoring under the promotion of total emission reduction and other work, it is still faced with a series of problems, such as unclear positioning of self-monitoring and supervisory monitoring of pollutant discharge enterprises, unsatisfactory implementation effect, uneven development of social testing institutions, and very weak quality control of self-monitoring data of pollutant discharge units <sup>[1]</sup>.

In order to further improve and promote China's pollution source monitoring, strengthen the supervision and management of pollution sources, timely understand and master the pollutant emission, track the pollution dynamics, and better provide data support for environmental management and decision-making, the measures for the management of pollution source monitoring <sup>[2]</sup> came into being. Aiming at the pollution source monitoring data files, the following are proposed:

- (1) . Implement the supervisory monitoring of the pollution discharge status of pollution sources in the region, and

establish the pollution discharge monitoring archives of pollution sources.

(2) . Establish a pollution source monitoring network, undertake the data center, technology center and network center of the pollution source monitoring network, and be responsible for the daily data management and technical exchange of the monitoring network.

(3) . Review the monitoring results declared by the pollutant discharge unit, and sample the data with objection.

(4) . Participate in emergency monitoring of pollution accidents, investigation of major pollution accidents and Arbitration Monitoring of pollution disputes, and provide data support for superior competent departments as the basis for law enforcement and management.

## **2. Contents of pollution source dynamic archives**

The dynamic data files of pollution sources can generally be divided into five parts: comprehensive documents, instruments and equipment, basic information of pollution sources, supervision and monitoring data, pollution discharge status and trend.

(1) Comprehensive documents: refer to policies, decrees, regulations, national standards, quality control standards, standard quality and standard samples closely related to pollution source monitoring. There are other materials, the latest academic achievements at home and abroad, the feedback of the entrusting unit, the processing results and technical training materials.

(2) Instrument and equipment data: including the data of all measuring instruments and relevant non measuring instruments used for pollution source monitoring, and the latest monitoring instruments and equipment data at home and abroad.

(3) Basic information of pollution sources: those most relevant to pollutant emissions (such as raw material consumption, output, water consumption, etc.) can be listed. In addition, it also includes the production process and discharge flow chart (indicating the production section and source of pollutants) and the distribution map of sewage outlets (indicating the sewage lines and sewage outlet marks, numbers, etc.).

(4) Supervision and monitoring data: including the operation, treatment effect and process change of pollution treatment facilities over the years.

(5) Data on pollutant discharge status and trend: Statistics of pollutant discharge at each stage, treatment of hazardous wastes and recent pollutant discharge law.

## **3. Establishment of dynamic data archives of pollution sources**

Pollution source monitoring and data management must uniformly implement the technical specifications for pollution source monitoring issued by the State Environmental Protection Administration.

With the development of computer software and hardware technology, especially the rapid change of network communication technology, Internet and multimedia technology, we use more superior computer hardware resources and advanced software platform to develop a more practical and effective pollution source monitoring data processing system that is easier to be accepted by sewage enterprises and more vividly represent the environmental status. In this way, the pollution source monitoring data and information can be collected efficiently, quickly and accurately through the network and included in our pollution source data archive. In the establishment of dynamic data files of pollution sources, the following two controls should be paid attention to:

(1) Strengthen the control of accuracy, reliability and effectiveness of monitoring data

The data entering the system is the original monitoring data or associated background data. Due to the error of the original data, it will inevitably lead to the deviation or even error of the post-processing data. Therefore, the inlet data shall be strictly inspected and controlled within the effective value range specified in the technical specification for pollution source monitoring, so as to ensure the accuracy and effectiveness of the subsequent data results.

(2) Strengthen the integrity of monitoring data files control

The data files of pollution sources must be complete, including the basic information of pollution sources, main pollutants, sewage discharge direction and discharge volume, the number and location of sewage outlets in workshops,

factories or regions, and the treatment of waste (sewage) water (slag). Only in this way can we ensure the integrity, comprehensiveness and detail of pollution data archives.

#### **4. Function of pollution source dynamic archives**

(1) Timely Track & update new information to provide scientific basis for pollution source monitoring and evaluation.

In our daily work, we can learn the latest environmental monitoring related information from the archives at any time and update our knowledge in time. For example, the differences and respective discharge standards of the core pollutants of domestic sewage, industrial wastewater and hospital sewage in the monitoring of water pollution sources, find the new technical standards issued by the state, and update the monitoring methods in time, so as to make the monitoring data more comparable and more reliable.

(2) Determine reasonable sampling frequency and appropriate sampling and analysis methods.

The composition of pollution source samples is complex and changes greatly. If they are not analyzed, there will be errors in the monitoring results, which can not truly reflect the pollution situation and waste human, material and financial resources. Before monitoring, the most reasonable sampling point, sampling time and sampling frequency, as well as appropriate monitoring methods and analysis methods can be selected according to the pollution source data file, so as to accurately obtain the monitoring data [3]. Generally, when the variation coefficient of pollution source concentration is less than 10%, instantaneous sampling can be selected; When the depth variation coefficient of pollution source is large, the method of average sampling must be adopted. The average sampling can take 2-12 samples in a production cycle according to the variation coefficient.

(3) Audit of monitoring data.

The monitoring data must be reviewed before reporting. According to the situation provided by the dynamic archives of pollution sources, the computer shall be used for preliminary review, put forward suspicious data, determine whether additional sampling and monitoring is necessary, and find out the reasons in time. If it is a problem in the monitoring process, re-monitor and sample, such as the monitoring difference between organized emission sources and unorganized emission sources in fixed pollution sources; If it is caused by process, it needs to be indicated in the file.

(4) For review of pollutant discharge declaration.

Due to the heavy workload of pollutant discharge declaration, it is more difficult to review once a month. With the dynamic file of pollution sources, we can use the computer to comprehensively analyze the declaration form and submitted by the enterprise and check the audit. Conduct analogy analysis for similar enterprises. If there are significant differences, find out the reasons in time.

(5) Timely grasp the pollution situation and predict its change trend and dynamics.

Using the existing data of the dynamic archives of pollution sources to summarize, analyze and evaluate the emission of each pollution source can timely predict the environmental pollution situation, so as to understand and master the change law of pollution sources at any time.

For example, in the monitoring of waste gas from pollution sources, the exhaust emission in each period is predicted by integrating the influencing factors such as wind force and wind direction at that time. If the enterprise is notified to stop production in time under specific meteorological conditions that are not conducive to the diffusion of waste gas, it is very helpful to the management of air environmental quality.

#### **5. Conclusion**

In short, with the scope expansion of environmental protection work and the enhancement of work intensity, the pressure is also increasing. Moreover, if we can make full use of the dynamic data files of pollution sources, we can find problems, raise problems and solve problems in time. Therefore, the establishment of dynamic data files of pollution sources and the supervision and monitoring of pollution sources can not only avoid the waste of data resources and improve the overall level of pollution source monitoring, but also strengthen the supervision and management of pollution sources, timely understand and master the emission of pollutants, and better provide the basis for environmental management and decision-making for competent departments at all levels of the government, So that environmental protection work to a new

level.

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