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**INDUSTRY STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA**

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Replacing GB/T 12999-1991

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**Water quality. Technical regulation of the preservation and  
handling of samples**

水质采样 样品的保存和管理技术规定

**(English Translation)**

**Issued on: September 27, 2009**

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### Foreword

In order to implement the "Environmental Protection Law of the People's Republic of China" and the "Water Pollution Prevention and Control Law of the People's Republic of China" the body health, standardize the preservation and management of water quality samples, and develop this standard.

This standard stipulates the preservation measures of water samples from the preparation of containers to the addition of protective agents, as well as the label design, transportation and connection of samples.

Accept and guarantee the quality of the sample.

This standard has revised the Technical Regulations for the Preservation and Management of Water Samples (GB 12999-91), the original standard drafting list.

It is the China Environmental Monitoring Center and was first published in 1991. This is the first revision.

The main revisions are as follows.

- Increase the minimum sample size of a single sample and quantify the amount of part of the preservative added.
- Increase the container washing method for the analysis project. Delete the "Analysis Site" and "Recommendations" into a "Remarks".
- Increase the number of items to be tested, including 33 physical and chemical indicators, such as permanganate index, Kjeldahl nitrogen, total nitrogen, formaldehyde, and volatility Organic substances, pesticides, herbicides, phthalates, etc.; increased biological indicators 4; increased radiological indicators 10 items.

The national environmental protection standard "Water quality approved and issued by the former National Environmental Protection Agency on January 25, 1991 since the implementation of this standard.

Technical Regulations for the Preservation and Management of Sampling Samples (GB 12999-91) is abolished.

This standard was formulated by the Science and Technology Standards Department of the Ministry of Environmental Protection.

This standard is mainly drafted by. China Environmental Monitoring Center, Liaoning Provincial Environmental Monitoring Center Station.

This standard was approved by the Ministry of Environmental Protection on September 27, 2009.

This standard has been implemented since November 1, 2009.

This standard is explained by the Ministry of Environmental Protection.

Technical regulations for the preservation and management of water quality samples

## **1 Scope of application**

This standard stipulates the preservation measures of water samples from the preparation of containers to the addition of protective agents, as well as the label design, transportation and connection of samples.

A common technique for collecting and ensuring the quality of sample preservation.

This standard applies to natural water, domestic sewage and industrial wastewater. When the collected water sample (instantaneous or mixed sample) cannot be immediately present Field analysis must be sent to the laboratory for testing. The sample preservation techniques and management procedures provided in this standard are applicable.

## **2 Sample storage**

Water samples of various water quality, from the time of collection to analysis, due to physical, chemical, biological effects will occur to varying degrees Changes, these changes make the sample at the time of analysis no longer the sample at the time of sampling, in order to minimize this change, the sample must be protected at the time of sampling.

### **2.1 Reasons for changes in water samples**

#### **2.1.1**

Physical effects. Light, temperature, standing or vibration, storage conditions such as exposure or sealing and the material of the container will affect the nature of the water sample.

If the temperature rises or strong vibration will cause some substances such as oxygen, cyanide and mercury to volatilize, long-term standing will make  $\text{Al}(\text{OH})_3$ ,  $\text{CaCO}_3$ ,

Precipitation such as  $Mg_3(PO_4)_2$ . The inner wall of some containers irreversibly adsorbs or absorbs some organic matter or metal compounds.

### 2.1.2

Chemical action. The chemical reaction of each component of the water sample and the water sample may change the content and properties of certain components. Such as air the oxygen in the oxygen can oxidize divalent iron, sulfide or the like, depolymerize the polymer, and polymerize the monomer compound.

### 2.1.3

Biological effects. The metabolism of bacteria, algae, and other organisms consumes certain components of the water sample, producing some new groups.

Points, changing the properties of some components, biological effects will be some items in the sample to be tested such as dissolved oxygen, carbon dioxide, nitrogen compounds, phosphorus and the content and concentration of silicon and the like have an influence.

## 2.2 Precautions for sample preservation

The extent to which a water sample changes during storage depends mainly on the type of water and the chemical and biological properties of the water sample, and also on preservation.

Conditions, container materials, transportation and climate change.

These changes are often very fast. Samples often change significantly in a short period of time, so the necessary must be taken in all circumstances Save the measure and analyze it as quickly as possible. Preservation measures are useful in reducing the degree of change or the speed of slow change, but to the point all previous preservation measures have not completely suppressed these changes. And for different types of water, the resulting preservation effect is different, drink Water is easy to store, because it is not sensitive to biological or chemical effects, and general preservation measures can be effectively stored on surface water and groundwater.

But it is different for wastewater. The nature of the wastewater or the sampling location of the wastewater is different, and the preservation effect is different, such as from the urban drainage pipe network and sewage.

The wastewater of the water treatment plant has different preservation effects, and the wastewater from the biochemical treatment plant and the untreated wastewater have different preservation effects.

The analysis project determines the storage time of the wastewater sample. Some analysis projects require separate sampling, and some analysis projects require on-site analysis.

Samples of some items can be stored for a longer period of time. Due to the difference in

sampling location and sample composition, no suitable field has been found so far.

The absolute criterion for the situation of integration. In all cases, the storage method should match the analytical technique used. This standard specifies the most versatile Use technology.

### **2.2.1 Selection of containers**

Containers for collecting and preserving samples should take into account the following aspects (especially when the components being analyzed are present in trace amounts).

#### **2.2.1.1**

Minimize contamination of samples by containers and stoppers. Generally, glass can dissolve sodium, calcium, magnesium, silicon when storing water samples.

For elements such as boron, glass containers should be avoided when measuring these items to prevent new contamination. Some colored corks contain a lot of heavy gold Genus.

#### **2.2.1.2**

The wall of the container should be easy to clean and handle to reduce the surface contamination of the container by trace elements such as heavy metals or radionuclides.

#### **2.2.1.3**

The chemical and biological properties of the container or container stopper should be inert to prevent the container from reacting with the sample components. When measuring fluorine, Water samples cannot be stored in glass bottles because the glass reacts with fluoride.

#### **2.2.1.4**

Prevent the container from absorbing or adsorbing the component to be tested, causing a change in the concentration of the component to be tested. Trace metals are susceptible to these factors.

Others such as detergents, pesticides, and phosphates are also affected.

#### **2.2.1.5**

Dark glass can reduce photosensitivity.

### **2.2.2.1 General rules**

All preparations should ensure that no positive or negative interference occurs.

Use a dedicated container whenever possible. If a special container cannot be used, it is best to prepare a container for the determination of specific contaminants to reduce Less cross contamination. At the same time, care should be taken to prevent the previously collected high-concentration analytes from contaminating the subsequently collected