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

HJ 871-2017

**Ambient air. Determination of chlorine and other hazardous air
pollutants in emergency monitoring. Length detector tube
method**

环境空气 氯气等有毒有害气体的应急监测 比长式检测管法
(English Translation)

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Foreword

In order to implement the Law of the People's Republic of China on Environmental Protection and the Law of the People's Republic of China on Prevention and Control of Atmospheric Pollution, protect the environment and protect people Physical health, standardize environmental air emergency monitoring work, the development of this standard.

This standard specifies the determination of ambient air chlorine, carbon monoxide, hydrogen sulfide, hydrogen chloride, hydrogen cyanide, phosgene, hydrogen fluoride, ammonia, Formaldehyde, styrene, arsine, ozone, sulfur dioxide, nitrogen oxides, benzene and toluene, and other 16 kinds of harmful gases than the long detection tube method.

This standard Appendix A and Appendix B is an informative annex.

This standard is released for the first time.

This standard by the Environmental Protection Department of Environmental Monitoring Division and Science and Technology Standards Division to develop.

This standard was drafted. Shenyang Environmental Monitoring Center Station, Beijing Institute of Labor Protection.

This standard MEP approved on November 28, 2017.

This standard since January 1, 2018 come into operation.

This standard is interpreted by the MEP.

1 Ambient air Chlorine and other toxic and hazardous gas emergency monitoring than the long-type test tube method Warning. The carrier used in this method is toxic and should be kept away from the skin and clothing. Use test tubes or field should be Acute monitoring should pay attention to its own protection.

1 Scope of application

This standard specifies the determination of ambient air chlorine, carbon monoxide, hydrogen sulfide, hydrogen chloride, hydrogen cyanide, phosgene, hydrogen fluoride, ammonia, Formaldehyde, styrene, arsine, ozone, sulfur dioxide, nitrogen oxides, benzene and toluene, and other 16 kinds of harmful gases than the long detection tube method.

This standard is qualitative and semi-quantitative method for the ambient air chlorine, carbon monoxide, hydrogen sulfide, hydrogen chloride, hydrogen cyanide, phosgene, Hydrogen fluoride, ammonia, formaldehyde, styrene, arsine, ozone, sulfur dioxide, nitrogen oxides, benzene and toluene and other harmful gases on-site emergency Monitoring, and screening, census and other preliminary investigations.

The common measurement range of the target is shown in Appendix A.

2 Normative references

This standard references the following documents in the terms. For undated references, the effective version applies to this standard.

GB/T 7230 gas detection tube device HJ 589 emergency environmental monitoring technical specifications

3 Method principle

The toxic and harmful gases in the ambient air enter the test tube, where the target and chemical reagents in the test tube (usually called indicator powder) the reaction produces a color change, within a certain concentration range, the discoloration length is proportional to the target concentration.

The method of measuring the target is shown in Appendix A.

4 Interference and elimination

4.1

When the same or similar chemical substances coexist, these substances react with the chemical reagents in the test tube at the same time, resulting in a high result.

Substance and test tube in the chemical reagents react, and the reaction speed faster than the target, for example, the chemical oxidation, so that the target can not be detected or the result is low. The coexisting material first reacts with the chemical reagent in the test tube, and the reactant produced reacts with the target to show the same the reaction of different colors; the target and the test tube in the chemical reagents react, and the reactants and coexisting substances react to make the color darker, Transform or fade, resulting in inaccurate results.

4.2

Humidity interference determination, the tube should be added before the test tube to eliminate interference. Temperature interference determination, should be in accordance with the test tube manual in the temperature calibration coefficient given calibration. Coexist easily oxidized substances interfere with the determination, the tube should be added before the test tube to eliminate the oxidation Interference, other interfering substances can be removed through the filter tube (layer). Refer to Appendix A for the interference and elimination of the target.

25 Apparatus and equipment

5.1 Sampling device

5.1.1 test tube

Test tube sensitivity, accuracy, color interface and other properties in line with the provisions of GB/T 7230 and requirements.

Than the long tube by the glass tube, indicating powder, tick marks and isolation layer composition, the structure shown in Figure 1.

5.1.2 Sampler

And supporting the use of test tubes manual or automatic sampling device, divided into injection, vacuum and capsule sampling and so on. Sampler should Sampling end point indicating device, the air tightness and sampling volume error should be consistent with GB/T 7230.

5.1.3 Pretreatment tube Drying tube, oxidation tube and filter tube (layer) and so on.

5.2 air bag

Volume of not less than 3L, lining material should be used on the measured object of inert material.

5.3 glass syringe

The volume is 100 ml, which is used when the field is not suitable for direct measurement or needs dilution of the sample.

6 Preparation before sampling 6.1 point layout According to the HJ 589 point layout.

6.2 test tube inspection Test tube before use, you should check the validity period, and the appearance of inspection and found that over the validity of a broken pipe, drug loose, Discoloration or tick marks and other phenomena, shall not be used.

6.3 Sampler inspection the air inlet connected to the sampler and the test tube can not be cracked or deformed and must be tightly connected with the test tube. Before sampling,

check the sample Air tightness of the device, blocked the air inlet by hand, start the sampler, should feel obvious resistance.

1-separator 2-indicator powder 3 scale line 4 glass tube

Figure 1 than the length of the test tube structure diagram

36.4 Air bag inspection

Airtight bag should be checked before use.

7 Sample collection and determination

7.1 Sampling device connection According to the scene to choose the right test tube and supporting pretreatment tube (if necessary), cut off the test tube and supporting the pretreatment tube ends Seal, and the sampler connected. Sampling device connection diagram shown in Figure 2 and Figure 3.

7.2 direct measurement 7.2.1 set the sampler suction flow and extraction time, with the sampling device to measure the gas to be measured to observe the detection tube discoloration Conditions, to achieve the required gas production volume and reaction time to stop the measurement, the discoloration part of the indicated scale, read the data for two consecutive measurements.

Note 1: The color of the discolored portion may change over time, fade or scatter, and the sample should be read immediately after collection. Reading, when seized Tube color change part of the tidy section, the discoloration of the interface and the place where the discoloration is the measured value of the gas concentration of the target object; when the discoloration part of the cross section Inclined or inclined, convex or concave, it should be discolored part of the scale position where the highest and lowest values were averaged.

Note 2: If the sample concentration exceeds or falls below the detection range of the detection tube, and there is no detection tube in line with the scope of the measurement can be changed by changing the sampling volume Mode determination, this time should pay attention to the detection range of the test tube to expand the concentration requirements.

7.2.2 When the test tube gives the indication unit is mass concentration, the monitoring results need to be converted into the standard conditions of mass concentration, sample determination Simultaneously, the ambient temperature, humidity (when necessary) and atmospheric pressure of the monitoring site need to be measured simultaneously.

7.3 Indirect determination when the field environment is not suitable for direct determination, collect it with a glass syringe (5.3) and transfer the sample to an air bag (5.2) gas 1- pretreatment tube (connected when needed); 2-detection tube; 3-sampler.

Figure 3 Sampling device connection diagram (for vacuum or capsule sampler)

1-sampler; 2-pretreatment tube (connected when needed); 3-test tube.