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

GB 18483-2001

Replacing GWPB 5-2000

Emission standard of cooking fume

饮食业油烟排放标准

(English Translation)

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1.1 Subject content

This standard specifies the maximum allowable emission concentration of cooking fume of the catering industry and the minimum removal efficiency of cooking fume's purification facilities.

1.2 Scope of application

1.2.1

This standard applies to urban built-up areas.

1.2.2

This standard is applicable to the emission management of cooking fume from existing catering business organizations, as well as the management of the cooking fume emission during the design, environmental impact assessment, completion acceptance and operation period of environmental protection facility of newly established catering business organizations. The food processing organizations and the internal staff canteens of non-profit organizations that emit cooking fume shall refer to this standard.

1.2.3

This standard does not apply to emission of household cooking fume.

2 Normative references

The provisions contained in the following standards constitute provisions of this standard through quotation in this standard.

GB 3095-1996 Ambient air quality standard

GB/T 16157-1996 The determination of particulates and sampling methods of gaseous pollutants emitted from exhaust gas of stationary source

GB 14554-1993 Emission standards for odor pollutants

3 Definition

This standard uses the following definitions.

3.1 Standard status

It refers to the state when the temperature is 273 K and the pressure is 101325 Pa. The standard concentration value as specified in this standard is the value of dry cooking fume under standard conditions.

3.2 Cooking fume

It refers to the volatile oil, organic matter and its thermally decomposed or pyrolysis products during food cooking and processing, collectively referred to as cooking fume.

3.3 City

It is the same as the definition of city in the Urban Planning Law of the People's Republic of China, that is, municipalities, cities, towns established by the state in accordance with the administrative system.

3.4 Catering business organizations

All fume exhausting stoves, that are in the same building and belong to the same legal person, are counted as one catering business organization.

3.5 Unorganized emission

Emission of cooking fume that has not been purified by any cooking fume's purification facility.

3.6 Cooking fume's removal efficiency

It refers to, after the cooking fume is processed by the purification facility, the percentage OF the mass of the cooking fume that has been removed AND the mass of cooking fume before the purification.

$$P = [(c \text{ before} \times Q \text{ before} - c \text{ after} \times Q \text{ after}) / c \text{ before} \times Q \text{ before}] \times 100\%$$

Where.

P - Removal efficiency of cooking fume, %;

c before - Concentration of cooking fume in front of treatment facility, mg/m³;

Q before - The exhaust air volume in front of the treatment facility, m³/h;

c after - Concentration of cooking fume behind the treatment facilities, mg/m³;

Q after - The exhaust air volume behind the treatment facility, m³/h.

4 Standard limit

4.1

The limit of minimum removal efficiency of the cooking fume's purification

5 Other requirements

5.5

When the catering industry produces special odors, it shall follow the index of odor concentration index in the "Emission standard for odor pollutants".

6.1 Sampling position

The sampling position shall be preferentially selected in the vertical pipe segment. It shall avoid flue elbows and sharply changing cross-sections. The sampling position shall be that, in the downstream direction of the elbow and the reducer, it is not less than 3 times the diameter; meanwhile in the upstream direction of the above components, it is not less than 1.5 times the diameter.

For a rectangular flue, the equivalent diameter $D = 2AB/(A + B)$, where A and B are side lengths.

6.2 Sampling point

When the cross-sectional area of the exhaust pipe is less than 0.5 m², it measures only one point, which takes the median value of the dynamic pressure. When the cross-sectional area exceeds the above-mentioned cross-sectional area, follow the relevant provisions of

GB/T 16157-1996.

6.3 Sampling time and frequency

When implementing the emission limit index system as specified in this standard, the sampling shall be performed during the normal operation of the organization which emits cooking fume; the sampling number shall be 5 consecutive samplings, 10 minutes for each sampling.

6.4 Sampling conditions

Sample collection shall be carried out during the peak hour of the operation of the organization which emits cooking fume (cooking, food processing or other operations that produce cooking fume).

6.5 Processing of analytical results

Among the five sampling analysis results, compare any one of the data with the maximum value. If the data is less than a 1/4 of the maximum value, the data is invalid and cannot be used in the average calculation. After the data are rounded off, at least three data will participate in the average calculation. If the data does not meet the above conditions, it requires sampling again.

Appendix A (Normative)

Sampling method and analysis method of cooking fume from catering industry Sampling and analysis method for determine of cooking fume by metal filter cartridge absorption and infrared spectrophotometry

6.6

When monitoring the emission concentration, the measured emission concentration shall be converted into the emission concentration at the reference air volume.

A.1 Principles

Use the isokinetic sampling method to extract the gas in the fume exhaust pipe.

Absorb the cooking fume in the cooking fume collection head. Put the collection filter element that has collected the cooking fume in a PTFE sleeve which is equipped with a cover. After returning to the laboratory, use carbon tetrachloride as a solvent for ultrasonic cleaning. Move it into a colorimetric tube to make the volume reach to the mark. Use infrared spectrophotometry to determine the content of the cooking fume.

The content of cooking fume is calculated, respectively, by the absorbance A₂₉₃₀, A₂₉₆₀, A₃₀₃₀ at the band where the wave numbers is 2930 cm⁻¹ (the stretching vibration of the