Offensive Odor Control Law

Ordinance of the Prime Minister's Office for Offensive Odor Control Law

Ordinance of the Prime Minister's Office No.39 of 1972
Last Amended by Ordinance of the Prime Minister's Office No.10 of 1999

Chapter 1. Regulations

Article 1
(Calculation of odor index)

The odor index for gases as stipulated in Paragraph 2, Article 2 of the Offensive Odor Control Law (hereinafter referred to as the "Law") shall be calculated according to the methods devised in the ordinance of the Director-General of the of the Environment Agency, as a multiple of the dilution (hereinafter referred to "odor concentration") in cases where the gas has been diluted until an offensive odor is no longer detectable to the human sense of smell and by multiplying ten to the logarithm of odor concentration.

*"The Director-General of the Environment Agency" = Notification No.63 of 1995 (Calculation method for odor index)

Article 2
(Range of regulation standard for concentration of the specified offensive odor substances at the boundary of the site)

The range in the stipulation of the Ordinance of the Prime Minister's Office in Subparagraph 1, Paragraph 1, Article 4 of the Law shall be listed in the right column of Attached Table No.1 according to the type of the specified offensive odor substances stipulated by the ordinance of paragraph 1, Article 2 of the Law (hereinafter referred as "the specified offensive odor substances").

Article 3
(Definition of regulation standard for the flow rate or concentration of the specified offensive odor substances at the point of emission from facilities)

The methods in the stipulation of the Ordinance of the Prime Minister's Office in Subparagraph 2, Paragraph 1, Article 4 of the Law shall be the methods that calculate each flow rate per specified offensive odor substance (except methyl mercaptan, methyl sulfide, methyl di-sulfide, acetaldehyde, stylene, propionic acid, n-butyric acid, n-valeric acid and iso-valeric acid).

$$q = 0.108 \times He^2 \cdot Cm$$

where q, He and Cm are as follows;

q : flow rate (unit : cubic meter per hour converted into condition of zero degree Celsius and 1 atm.)
He : height of emission point corrected using method stipulated in following paragraph (unit : meter)
Cm : value that is specified as regulation standard of Subparagraph 1, Paragraph 1, Article 4 of the Law (unit : parts per million)

This formula shall not be applied in cases where the height of the emission point is less than 5 meters.

2. The height of the emission point shall be corrected using the following equations;

$$He = Ho + 0.65(Hm + Ht)$$

$$Hm = \frac{0.795\sqrt{Q \cdot V}}{1 + \frac{2.58}{V}}$$

$$Ht = 2.01 \times 10^{-3} \cdot Q \cdot (T - 288) \cdot \left(2.30 \log J + \frac{1}{J} - 1\right)$$

$$J = \frac{1}{\sqrt{Q \cdot V}}\left(1460 - 296 \times \frac{V}{T - 288}\right) + 1$$

where He, Ho, Q, V and T are as follows;

He : corrected height of the emission point (unit : meter)
Ho : height of the emission point (unit : meter)
Q : flow rate of the emission gas at 15 Celsius (unit : cubic meter per second)
V : velocity of the emission gas (unit : meter per second)
T : temperature of the emission gas (unit : absolute temperature)

Article 4
(Definition of regulation standard for the concentration of the specified offensive odor substances in the water)

The methods in the stipulation of the Ordinance of the Prime Minister's Office in Subparagraph 3, Paragraph 1, Article 4 of the Law shall be the methods that calculate each concentration in

the water per specified offensive odor substance (except ammonia, tri-methyl amine, acetaldehyde, propionaldehyde, n-buthylaldehyde, iso-buthylaldehyde, n-valericaldehyde, iso-valericaldehyde, iso-buthylalcohol, ethylacetate, methyl-iso-buthylketone, toluene, stylene, xylene, propionic acid, n-butyric acid, n-valeric acid and iso-valeric acid).

$$C'_{Lm} = k \times Cm$$

where CLm, k and Cm are as follows;

*CLm :*concentration in the water (unit : milligrams per liter)
k : value listed in the fourth column of the attached table 2, per effluent pursuant from the place of the business to the outside of the site listed in the third column of the said attached table, for type of the offensive odor substances in the second column of the said attached table (unit : milligrams per liter)
Cm : value that is specified as regulation standard of Subparagraph 1, Paragraph 1, Article 4 of the Law (unit : parts per million)

Article 5
(Measurement method for the specified offensive odor substances)

The specified offensive odor substances shall be measured using the method as defined by the Director-General of the Environment Agency, in cases of applying regulation standard in Paragraph 1, Abstract 4 of Law.

* "Definition" of the Director-General = Environment Agency Notification No.9 of 1972

Article 6
(Range of regulation standard for the odor index at the boundary of the site)

The range in the stipulation of the Ordinance of the Prime Minister's Office in Subparagraph 1, Paragraph 2, Article 4 of the Law shall be valued from ten to twenty for odor index of the air.

Article 6-2

The method used in the stipulation of the Ordinance of the Prime Minister's Office in Subparagraph 2, Paragraph 2, Article 4 of the Law shall be the method that is defined in the following subparagraphs for the height of the emission point of the said paragraph. In cases of defining the regulation standard in Subparagraph 2, Paragraph 2 of the article for odor index of emission gas, the value shall be equal to or less than the value of the regulation standard in Subparagraph 1, Paragraph 2 of the article

1. Facilities where practical height of the emission point exceeds 15 meters
   The method to calculate the value of the odor intensity (the value that is calculated by the method specified by the Director-General of the Environment Agency based on the odor index and flow rate) with equation defined by i).

   i)The value of the odor intensity shall be calculated using the following equation;

$$q_t = \frac{60 \times 10^A}{F_{max}}$$

$$A = \frac{L}{10} - 0.2255$$

where qt, Fmax and L are as follows;

qt : Odor intensity of the emission gas (unit : cubic meter converted to condition of 0 degree Celsius and 1 atm.)

Fmax : Maximum of F(x) (the odor concentration on ground surface at wind downstream distance x (unit: meter) from emission point) that is calculated by the equation of the attached table 3. In cases where the value that is calculated as maximum value of F(x) exceeds the value that is one divided by flow rate of gas (unit: cubic meter converted to condition of 0 degree Celsius and 1 atm.), the value shall be one divided by flow rate of gas.

L : The value that is stipulated as the regulation standard in Subparagraph 1, Paragraph 2, Article 4 of the Law.

ii)The value of Emax shall be calculated in the conditions for the following cases;

(1)In cases where the initial height of the emission point, which is calculated by the method in the following paragraph, equals or exceeds 2.5 times the height of the largest surrounding building (The highest building located in the site of the place of business (structure as stipulated in Paragraph 1, Article 2 of Building Standard Law (Law 201 of 1950) and creation that is stipulated in Paragraph 3, Article 138 of the Ordinance of Building Standard Law (Cabinet Order 338 of 1950)), a part and whole of the building is included in the area within a distance of ten times the height of said building. Hereinafter referred as the same.) (hereinafter referred to "the height of the largest surrounding building"), the maximum in the section where the distance toward downstream of the wind exceeds shortest distance from the emission point to the boundary of the site.

(2)In cases where the initial height of the emission point that is calculated by the method in the following paragraph is less than 2.5 times of the height of the largest surrounding building, the maximum in the section where the distance x toward downstream of the wind equals to or exceeds R specified in the following provisory clause. The value R shall be the lesser value of the shortest distance from the emission point to the boundary of the site or the shortest distance from the largest surrounding building to the boundary of the site that is calculated by method specified by the Director-General of the Environment Agency.

2. Facilities where practical height of the emission point is lower than 15 meters
The method used to calculate the odor index of the gas is the following equation;

$$I = 10 \times \log C$$

$$C = K \times H_b^{\,2} \times 10^B$$

$$B = \frac{L}{10}$$

where I, K, Hb and *L* are as follows;

I : the odor index of the gas

K : the value listed in the right column for the diameter of the emission outlet listed in the left column in the following table. In cases of non-circular emission outlet, the diameter of the emission outlet is calculated as the diameter from the sectional area of the outlet.

The diameter of the outlet less than 0.6 meters	0.69
The diameter of the outlet equals or exceeds 0.6 meter but less than 0.9 meters	0.20
The diameter of the outlet equals or exceeds 0.9 meters	0.10

Hb :the height of the largest surrounding building (unit : meter). In cases where the calculated value is less than 10, or equals or exceeds 10 and exceeds height of 1.5 times of practical height (unit : meter) of the emission outlet, the height calculated by the equation listed in the third column for the value listed in the first column and the practical height of the emission outlet.

less than 10 meter	equal to or greater than 6.7 meters	10 meters
	less than 6.7 meters	1.5 times of practical height of emission outlet
equal to or greater than 10 and equal to or greater than 1.5 times of practical height (unit : meter) of emission outlet		1.5 times of practical height of emission outlet

L : the value of regulation standard in stipulation of the Subparagraph 1, Paragraph 2, Article 4 of the Law

2. The initial height of the emission point shall be calculated by the following equation. In cases where the calculated value exceeds the practical height of the emission point, the initial emission height shall be the practical height of the emission point (unit : meter).

$$H_i = H_o + 2(V - 1.5)D$$

where *Hi, Ho, V* and *D* are as follows;

Hi : the initial height of emission point (unit : meter)
Ho :the practical height of emission point (unit : meter)
V : the velocity of emission gas (unit : meter per second)
D : the diameter of emission outlet (unit : meter). In cases of non-circular emission outlet, diameter of the emission outlet is calculated as the diameter from the sectional area of the outlet.

Article 7
(Announcement)

Announcements, as stipulated in of the Article 6 of the Law, shall be made through the public announcement by the prefecture or the city that is stipulated in Paragraph 2, Article 2 of the Ordinance of Offensive Odor Control Law (Cabinet Order No.207 of 1972).

Article 8
(Identification of inspection)

The format of the identification in the Paragraph 2, Article 18 of the Law shall be the Format No.1.

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Chapter 2. Delegation of Measurement

Article 9
(Persons who can appropriately undertake measurement)

A person as stipulated in the Ordinance of the Prime Minister's Office shall be stipulated in the paragraphs below for the cases listed.

1. Delegation of measurement of the concentration of the specified offensive odor substances
   A person that is registered to carry out measurements of air (including gas emitted to the air) or the concentration of the substances by prefecture as stipulated in the Measurement Law (Law No.51 of 1992) and country or prefecture in the stipulation of the provisory clause of the article.
2. Delegation of measurement of the odor index and odor intensity (hereinafter referred to "odor index and so on")
   Country or local public organizations and odor judges (A person who has received license of the odor judge in the Paragraph 1, Article 12 for business of measurement of odor index and so on. Hereinafter referred to in the same manner.) and legal persons whose employee in charge of measurement of odor index and so on is the odor judge.

Article 10
(Process of Delegation)

The Delegation of the measurement of odor index and so on shall be conducted by preparing a contract, including the following items. However, in cases of delegation to the country or local public organization, it shall not be applied.

1. The delegator can ask for report presentation from the trustee if required and the trustee must reply.
2. The delegator can cancel the contract in cases where the trustee is not eligible as a person stipulated in paragraph 2 of the previous article or is found to be illegally involved in delegated measurement.

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Chapter 3. Odor judge

Clause 1 Responsibilities

Article 11

The odor judge shall carry out strictly the measurement of odor index and shall not act illegally

Clause 2 License of Odor judge

Article 12
(License of Odor judge)

The license of odor judge (hereinafter referred to "license") shall be issued to the person who has passed the odor judge examination of the Article 18 and smell inspection of the Article 21 by the Director-General of the Environment Agency.

2. The license is effective for 5 years.

3. The Director-General of the Environment Agency shall not issue the license to the person who falls under one of following paragraphs.

(1) a person whose license has been canceled and one year has not passed since the day of the cancellation.
(2) a person who was made to pay a penalty and two years has not passed since the day of termination of the execution or expiration of the effect.

Article 13
(Application of the license)

A person to whom a license is given in accordance with the stipulation of Paragraph 1 of the previous article is to submit the following materials together with the application form in No.2 to the Director-General of the Environment Agency.

(1) a copy or abstract of his/her census register
(2) a copy of certificate of the odor judge examination in Article 18
(3) a copy of certificate of the smell inspection in Article 21

Article 14
(License renewal)

A person who requires renewal of the effective term of their license (hereinafter referred to as "License renewal") shall receive the smell inspection of the Article 21 and submit the application of the form given in No.3 and a copy of the certificate of the smell inspection to the Director-General of the Environment Agency within 6 months before the date of expiration. However, in cases where inspection and submission have not been completed within the date of the expiration due to unavoidable situations such as disaster and illness, the license shall be renewed by submitting material stating the situation and the application and the copy of certificate within one month from the date of termination of the situation.

Article 15
(Reissue of the License)

The licensee can apply for reissue of the license to the Director-General of the Environment Agency in case of breakage, contamination or loss of license.

2. The application of the previous paragraph shall be conducted by submitting application of form given in No.4.

3. The applicant shall submit the license in case of breakage or contamination as per Paragraph 1.

4. In case of discovery of the original license after reissue of license, licensee has to return original license to the Director-General of the Environment Agency within 5 days from the date of discovery.

Article 16
(Rewriting of license)

Licensee can apply for rewriting of the license by submitting the license with a copy or abstract

of his/her census register in cases where the contents of the license have changed.

2. The application shall be conducted with application of form as given in No.5.

Article 17
(Cancellation of issued license)

The Director-General of the Environment Agency shall cancel the issued license in cases where the odor judge is recognized to be illegal in his measurement of odor index and so on, or to commit a claim in stipulation of the Law.

2. In case of cancellation of the issued license, the odor judge must return the license to the Director-General of the Environment Agency within 5 days from the date of cancellation.

3. In cases of the licensee dying or going missing, the person in charge of the death or missing report in stipulation of Law of Census (Law No.224 of 1947) has to return the license to the Director-General of the Environment Agency within one month.

Clause 3 Odor judge examination

Article 18
(Odor judge examination)

Odor judge examination (hereinafter referred to as "examination") shall test the knowledge required to measure the odor index and so on.

2. The examination is held by the Director-General of the Environment Agency.

3. The Director-General of the Environment Agency shall announce the date and place of the examination and the terms, and the address to which to submit the application in a government report in advance.

4. The subjects of the examination are as follows:

(1) General smell function
(2) Offensive odor administration
(3) General measurement of offensive odor
(4) General analysis and statistics
(5) Practical measurement of odor index and so on

5. The applicant shall be aged over 18 years old.

Article 19
(Application)

Applicant shall submit application as given in format No.6, proof of age and photo (taken 6 months before application, front view shot of the face without hat, size 6 cm × 4 cm, with the date when the photo was taken and name written on the back surface of the photo) to the Director-General of the Environment Agency.

Article 20
(Certificate)

The Director-General of the Environment Agency shall issue certificates to the persons who pass the examination.

Clause 4 Smell inspection

Article 21

The smell inspection (hereinafter referred to "inspection") shall be a test of eligibility of the smell for odor index measurement.

2. The stipulations in Paragraph 2, 3 and 5 of Article 18, Article 19 and previous article shall be applied to the inspection. In this case, "format No.6" in Article 19 shall be read as "format No.7".

Clause 5 Designated organizations

Article 22
(Designated organization)

The Director-General of the Environment Agency can delegate designated administrations (Administrations of the license (except administrations of cancellation of issued license in stipulation of the Paragraph 1, Article 17) and examination and inspection. Hereinafter referred to in the same manner.) to the designated organization (hereinafter referred to "designated organization"). However, in cases of delegation of the designated administration to the designated organization, no designated administration is conducted by the Director-General of the Environment Agency.

2. The Director-General of the Environment Agency shall specify the execution manner of the designated administration for the designated organization.

3. The designated organization can delegate a part of the administration of the inspection in the stipulations of Paragraph 1 according to the standard that is specified at the permission of the Director-General of the Environment Agency.

4. Description of "the Director-General of the Environment Agency" shall be read as "the designated organization in stipulation of Paragraph 1, Article 22" for application of stipulation of Article 12 through 16, Paragraph3 Article 17, Article 19 (including application in Paragraph 2 of the previous article) and Article 20 (including application in Paragraph 2 of the previous article), in cases where the designated organization conducts the designated administration.

Article 23
(Applying designation)

Designation of designated organization shall be conducted on application by applicant who conducts the designated administration.

2. The applicant in the previous paragraph shall submit application of format No.8 with the following materials:

i) the article of association, contribution and a transcript of register
ii) the list of directors and their curriculum vitae
iii) the inventory of property and balance sheet at the end of fiscal year just before the fiscal year that the date of application is included.
iv) the business plan and balance sheet of the budget of the fiscal year that the date of application is included and materials that describe the business and financial plan from the next fiscal year of the year that the date of application is included to the fiscal year that the date after 5 years from the date of application is included.
v) the material that describes the organization of the administration for designated administration
vi) the material that is a proof of achievement of designation standard in the stipulation of next article.

3. The materials that are listed in Subparagraph 4 of the previous paragraph shall describe the business related to designated administration separate from items related to other business.

Article 24
(Standard of designation)

The Director-General of the Environment Agency can only designate a designated organization in cases where no organization is designated and application of Paragraph 1 of the previous article is recognized to satisfy the following requirements.

i) Plans for officer, facility, process of designated administration and other items shall be reasonable for proper management of the designated administration.
ii) Financial and technical basis and administrative ability shall be established to realize the plan properly for designated administration.

2. The Director-General of the Environment Agency must not designate a designated organization in cases where the application in Paragraph 1 of the previous article falls under one of the following:

i) The applicant is not a legal person as established in stipulation of Article 34 of the Civil Law (Law No.89 of 1896).
ii) The applicant is not likely to conduct the designated administration fairly, due to business that is not related to the designated administration.
iii) The applicant is a person who was condemned to a penalty and two years have not passed since the day of termination of the execution or expiration of the effect.
iv) The applicant is a person whose designation was cancelled and two years have not passed since the day of cancellation.
v) Director who falls under the Subparagraph 3 is included in the organization of the applicant.

Article 25
(Attached article of designation)

Designation of Paragraph 1, Article 22 shall be applied to the expiration date or to the required conditions for items listed below:

i) Selection or dismissal of director of the designated organization
ii) Selection or dismissal of test committee (person who conducts the judgement on

knowledge of licensee among the administrations of examination by the designated organization) and inspection committee (persons who conduct the judgement of knowledge of licensee among the administrations of examination by the designated organization).
iii) Preparation or renewal of regulations for designated administration.
iv) Report to the Director-General of the Environment Agency on results of examination and inspection.
v) Cancel of designation.
vi) Items required for designated administration, which are not listed in previous subparagraphs.

Article 26
(Announcement of designation)

The Director-General of the Environment Agency shall announce the following items on the public announcement in case of designation in Paragraph 1, Article 22.

i) Name of the designated organization, address and name of representatives
ii) Term for designated administration by designated organization
iii) The date of designation

Clause 6 Handling fee

Article 27

The persons listed in the following subparagraphs shall pay the said amount of handling fee, stipulated in the following subparagraph, to the country (the designated organization in cases where the designated administration is conducted by the designated organization in stipulation of Paragraph 1, Article 22)

i) Issue of license, renewal of license, re-issue of license or rewrite of license 4,000 yen
ii) Application of examination 18,000 yen
iii) Application of inspection 8,000 yen

2. Handling fee that is paid to the designated organization shall be the income of the designated organization.

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Supplemental provision

The Ordinance is effective from the date of enforcement (31 May 1972).

(the Ordinance of Prime Minister's Office No.23 of 1994)

i) The Ordinance is effective from the date of 1 April 1995.
ii) For methyl mercaptane, the permitted limit of the concentration in the water of less than 0.002 mg per litter that is calculated by the method in stipulation of Article 3 of the modified Ordinance of Offensive Odor Control Law is maintained at 0.002 mg per litter for while.

(the Ordinance of Prime Minister's Office No.42 of 1995)

i) The Ordinance is effective from the date of enforcement of the law for modification of the Offensive Odor Control Law. However, the stipulation of Article 23 of the modified ordinance of Offensive Odor Control Law (hereinafter referred to "Partly modified Ordinance of Offensive Odor Control Law") is effective from the date of the official announcement.
ii) In the period when the Ordinance of the Prime Minister's Office, as stipulated in Subparagraph 3, Paragraph 2, Article 4 of the Law, is enforced, for definition of regulation standard in stipulation of Paragraph 2, Article 4 of the Law that is read in stipulation of Article 3 of supplemental provision of the Law for partly modified Offensive Odor Control Law, the regulation standard of Subparagraph 1, Paragraph 2, Article 4 instead of the regulation standard of Subparagraph 1, Paragraph 1 of the article, and the regulation standard of Subparagraph 2, Paragraph 2 of the article instead of Subparagraph 2, Paragraph 2 of the article instead of the regulation standard of Subparagraph 1, Paragraph 1 of the article shall be defined.

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Attached Table

Attached Table 1 (related to Article 1)

1	Ammonia	Concentration in the air equals or is greater than one 1 part per million and equals or is less than 5 parts per million
2	Methyl mercaptan	Concentration in the air equals or is greater than one 0.002 part per million and equals or is less than 0.01 part per million
3	Hydrogen sulfide	Concentration in the air equals or is greater than one 0.02 part per million and equals or is less than 0.2 part per million
4	Methyl sulfide	Concentration in the air equals or is greater than one 0.01 part per million and equals or is less than 0.2 part per million
5	Methyl di-sulfide	Concentration in the air equals or is greater than one 0.009 part per million and equals or is less than 0.1 part per million
6	Tri-methyl amine	Concentration in the air equals or is greater than one 0.005 part per million and equals or is less than 0.07 part per million
7	Acetaldehyde	Concentration in the air equals or is greater than one 0.05 part per million and equals or is less than 0.5 part per million
8	Propionaldehyde	Concentration in the air equals or is greater than one 0.05 part per million and equals or is less than 0.5 part per million
9	n-Buthylaldehyde	Concentration in the air equals or is greater than one 0.009 part per million and equals or is less than 0.08 part per million
10	Iso-Buthylaldehyde	Concentration in the air equals or is greater than one 0.02 part per million and equals or is less than 0.2 part per million
11	n-Valericaldehyde	Concentration in the air equals or is greater than one 0.009 part per million and equals or is less than 0.05 part per million
12	Iso-Valericaldehyde	Concentration in the air equals or is greater than one 0.003 part per million and equals or is less than 0.01 part per million

13	iso-Buthylalcohol	Concentration in the air equals or is greater than one 0.9 part per million and equals or is less than 20 part per million
14	Ethylacetate	Concentration in the air equals or is greater than one 3 part per million and equals or is less than 20 part per million
15	Methyl-iso-buthylketone	Concentration in the air equals or is greater than one 1 part per million and equals or is less than 6 part per million
16	Toluene	Concentration in the air equals or is greater than one 10 part per million and equals or is less than 60 part per million
17	Stylene	Concentration in the air equals or is greater than one 0.4 part per million and equals or is less than 2 part per million
18	Xylene	Concentration in the air equals or is greater than one 1 part per million and equals or is less than 5 part per million
19	Propionic acid	Concentration in the air equals or is greater than one 0.03 part per million and equals or is less than 0.2 part per million
20	n-Butyric acid	Concentration in the air equals or is greater than one 0.001 part per million and equals or is less than 0.006 part per million
21	n-Valeric acid	Concentration in the air equals or is greater than one 0.0009 part per million and equals or is less than 0.004 part per million
22	iso-Valeric acid	Concentration in the air equals or is greater than one 0.001 part per million and equals or is less than 0.01 part per million

Attached table 2 (related to Article 3)

1	Methyl mercaptan	Equals or is less than one 0.001 cubic meter second	16
		Greater than one 0.001 cubic meter second equals or is less than one 0.001 cubic meter second	3.4
		Greater than one 0.1 cubic meter second	0.71
2	Hydrogen sulfide	Equals or is less than one 0.001 cubic meter second	5.6
		Greater than one 0.001 cubic meter second equals or is less than one 0.001 cubic meter second	1.2
		Greater than one 0.1 cubic meter second	0.26
3	Methyl sulfide	Equals or is less than one 0.001 cubic meter second	32
		Greater than one 0.001 cubic meter second equals or is less than one 0.001 cubic meter second	6.9
		Greater than one 0.1 cubic meter second	1.4
4	Methyl di-sulfide	Equals or is less than one 0.001 cubic meter second	63
		Greater than one 0.001 cubic meter second equals or is less than one 0.001 cubic meter second	14
		Greater than one 0.1 cubic meter second	2.9

Attached table 3 (related to Article 6-2)

$$F(X) = \frac{1}{3.14\sigma_y\sigma_z}\exp\left[-He(X)^2/\left(2{\sigma_z}^2\right)\right]$$

Note:
where *X*, σ_y, $\sigma_z$and *He(X)* are as follows;

X : distance toward downstream of wind from emission point (unit : meter)
σy: horizontal diffusion width of emitted gas related to the distance toward downstream of wind from emission point that is calculated by the method defined by the Director-General of the Environment Agency with consideration of effect of the largest surrounding building (unit : meter)
σz: vertical diffusion width of emitted gas related to the distance toward downstream of wind from emission point that is calculated by the method defined by the Director-General of the Environment Agency with consideration of effect of the largest surrounding building (unit : meter)
He(X) : height of central axis of gas flow that is calculated by the following equation for the distance toward downstream of wind (unit : meter). However, 0 meter in case where the summation of Hi and Hd is lower than 0.5 multiplied height of the largest surrounding building.

where *Hi,* ΔH and ΔHd are as follows;

Hi : initial emission height that is calculated by the method listed in Paragraph 2 (unit: meter)
ΔH *:* increased height of center axe of gas flow that is calculated by the method that defined by the Director-General of the Environment Agency for the distance toward downstream of wind. (unit : meter)
ΔHd *:* lowered distance of center axe of gas flow by effect of the largest surrounding building that is calculated by the equation listed in the right column for range of initial emission height listed in the left column in the following table (unit : meter)

Hi is less than *Hb.*	-1.5*Hb*
Hi equals to or is greater than *Hb* and less than 2.5 times of *Hb.*	*Hi*-2.5*Hb*
Hi equals to or is greater than 2.5 times of *Hb*.	0

In the table, *Hi* shall be the initial emission height that is calculated by method listed in Paragraph 2 (unit : meter) and *Hb* shall be height of the largest surrounding building (unit : meter).

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