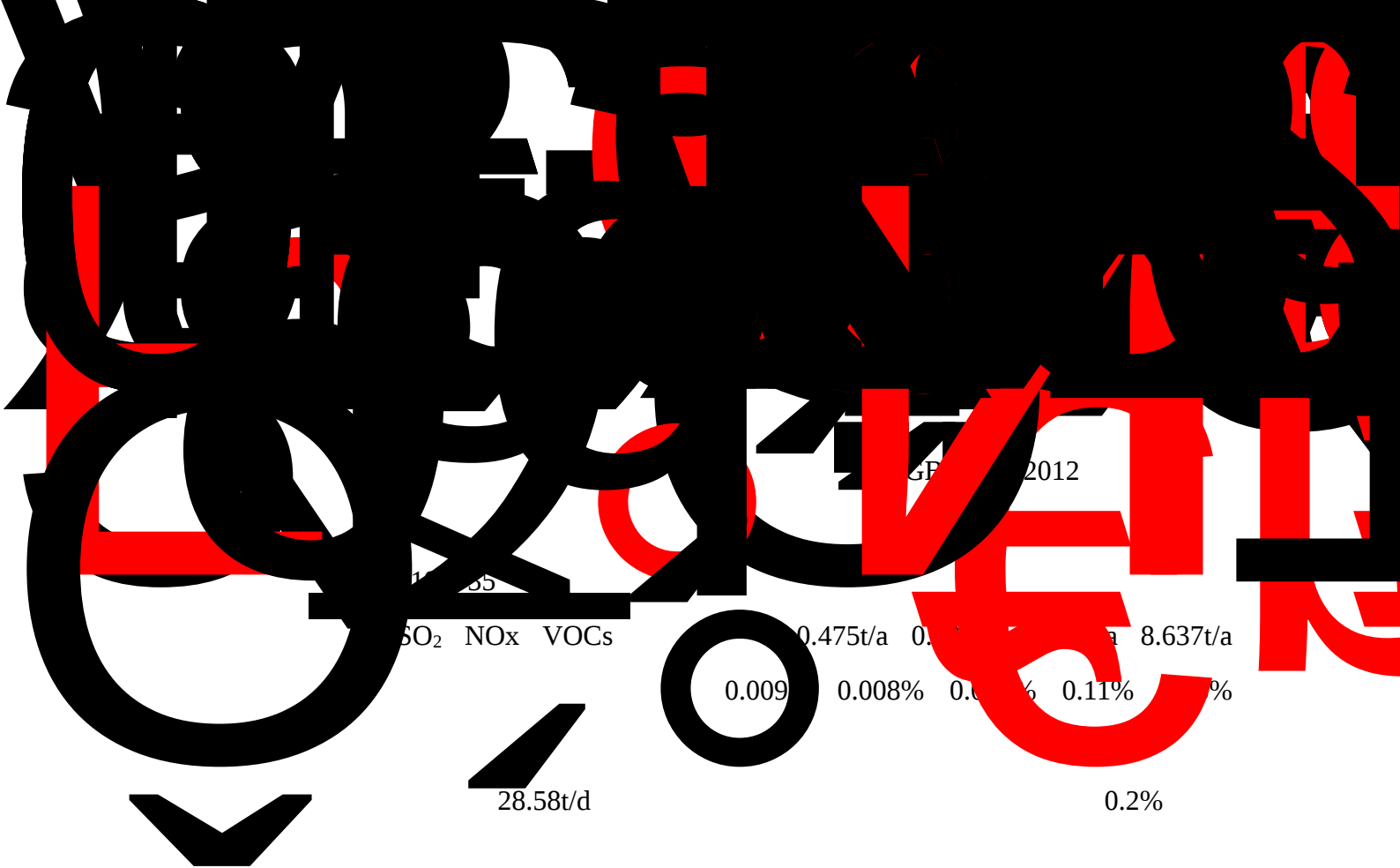


10

2026 2



HJ610-2016

4

2022-2035

2.

C339

2.

C3130

3.

C3130

90%

4.

3.

5.

1.1-1

100m

75%

6.

4.

100m

5.

500m

7.

100m

6.

100

7.

1.

	2. 2035 SO₂ 3131.28 0.009% 0.008% 0.003% / NO_x 7110.10 / 5030.58 / VOCs 189.68 0.11% 4.55% / 189.03 / 431.61 / 46.64 / 4.57 / 7.87 / 1.62 / 3. 2035 4.6 / 839.50 / 83.95 / 251.85 3. / 8.40 / 0.84 / 1.68 / 0.84 / 16.79 / 4. 2035 1497.58 tCO₂ 28.58t/d 5. ó ô VOCs 0.2% VOCs 4. 6. 5. VOCs 8.637t/a 6.		
	1. + 2. 3.	1. 2. 3. HJ610-2016	
	1. ô95% ô98% ô20mg/Nm³ ô30mg/Nm³ ô6060kJ/m³	1.	

1.1.2

2022-2035

1.1.3

1

2020 2025

-

- - - - -

10

2021-2035

1.1-2

2021-2035

1.2.3

1.2.1

		1.	1.5	1. GB28665-2012 3 2019 35	
		2.		2.	
		3.			

1.2.5

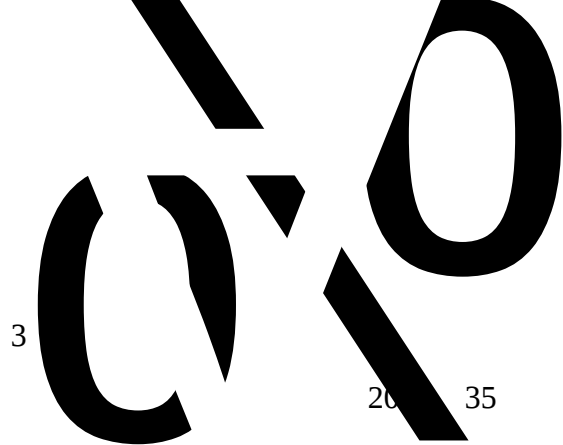
2014 5 14

2014 160

1

2

3



GB28665-2012

1.2.6

2015 7 22

2015 218

1

2

2020

(GB13456-2012) 2

1.2.7

2017 3 27

2017 49 '

1.2.8

“ ”

1

GB28665-2012

3

2019 35

2

2024

3

4

J 入 Ⅲ Ⅱ Ⅲ Ⅲ

5

i ...* @.)

III

2015 4

1.2.9

“ ”

2022 4 21

2022 23

MC> J } E M

H @ 7\$ \$ K H @ ó

acn.

Q LT

Q Q n

!n.

à 0H 03LE. n.

à 0001H.0X@ .Q. @ Ð 1' V

B
1

	2.1
	2.4

2.1

2025	1	24
	10	
2025	2	7
[2025]J020021	2502-350981-04-01-335880	
	2021	
	63	
10		2025 5
	10	

2.1.1		()			
					10
31					
61	311		/	/	
62	312 314		/	/	
63	313	50		/	

2.2

2.2.1

	1	10
	2	
	3	
ÅCt k	4	50000
	5	53414.32m² 37886.68m²
	6	100
	7	330

2.2.2

		2		1		1		1		
		20			3	4		2		2
	1		6			2		7		20
5		1			10					
	10									

2.2.1

	2	4
1#	2	
	1	

		1 27m 5 DA001~DA005 DA001 30000Nm³/h H=27m Ñ0.8m DA002 30000Nm³/h H=27m Ñ0.8m DA003 60000Nm³/h H=27m Ñ0.8m DA004 80000Nm³/h H=27m Ñ0.8m DA005 80000Nm³/h H=27m Ñ0.8m 2 1 27m 2 DA006~DA007 DA006 3000Nm³/h H=27m Ñ0.6m DA007 3000Nm³/h H=27m Ñ0.6m
		1 + +
		1000m ³ /d
		20m² 20m²
		600m ³

2.2.3

10

0.05 mm 0.8 mm

300 mm 650 mm

└508 mm

└2000 mm

12 t

Max.25mg/m²

GB

JIS EN ASTM API

2.2.4

2.2.2

2.2.2

3		φ300mm~650mm 120m/min		2
4		0.15 1.5mm I 650mm		6
5		650mm		2
6		650mm		7
7		16		20
8		/		5
9		650mm		1
10		20 /h		1
11		/		10
12		600m³/h		1
13		27Nm³/min 0.7MPa		2
14		YPH-200-5N 200m³/h		1

2.2.5

1

2.2.3

2.2.3

1		t/a	10.3	4000
2		t/a	15	
3		t/a	10	
4		kWh/a	200	/
5		Nm³/h	360	/
6		m³/a	110579.4	/
7		m³/a	100	
8		m³/a	917.4	/
9	PSA	kg/a	200	
10		kg/a	700	
11		m³/a	77600	/
12		t/a	5	

200 300

450~650mm

0.63-1.0mm

2.2.6

1

2.2.6

2.2.6

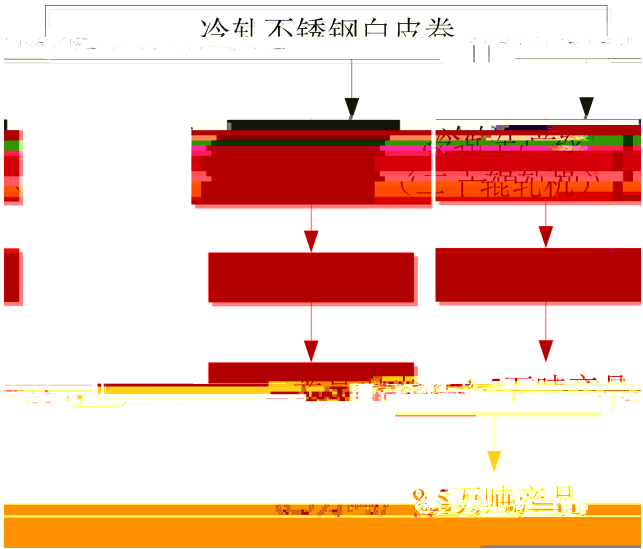


2.3

2.3.1

10 /

2.3-1



2.3-1

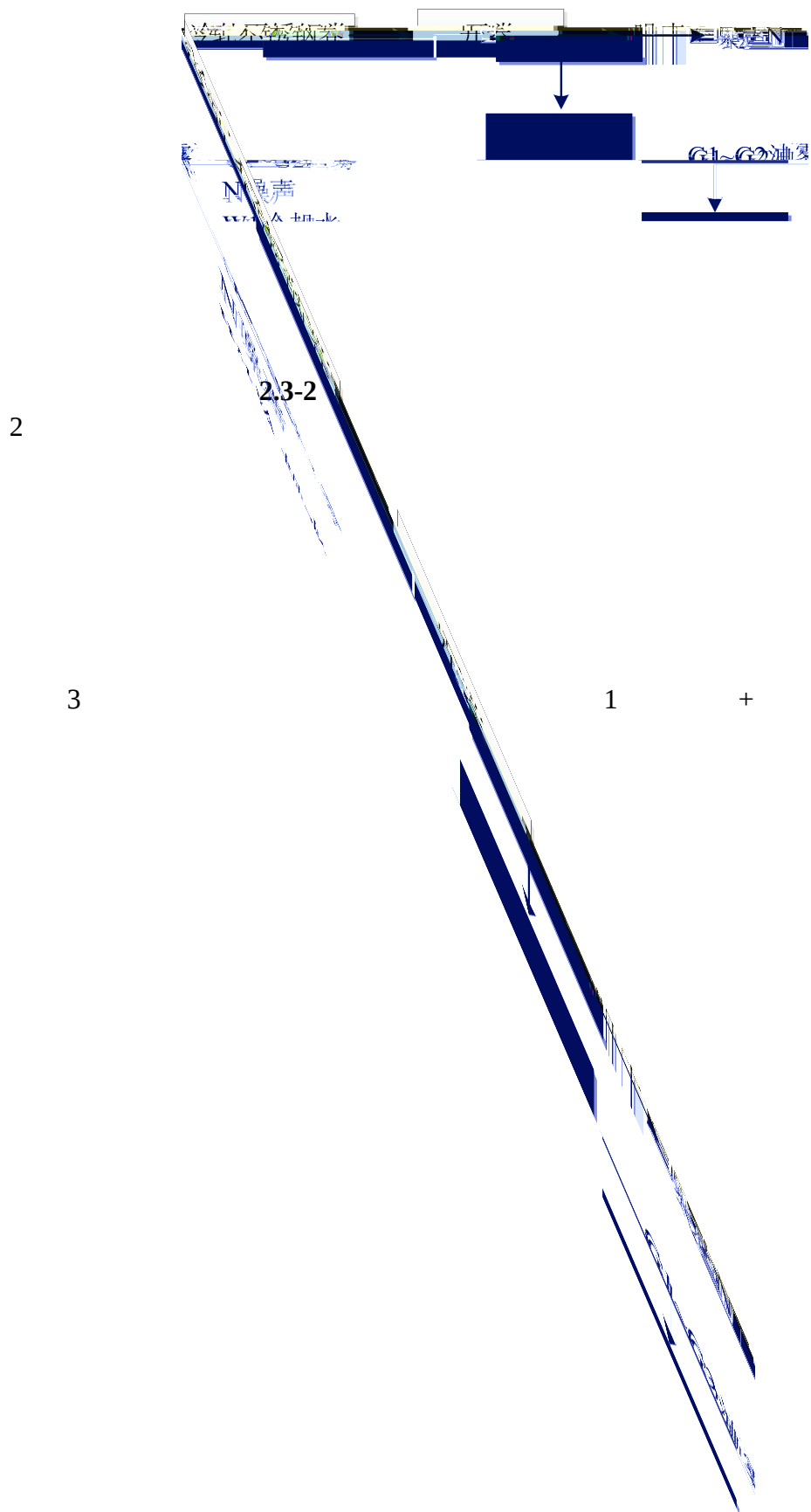
2.3.1.1

1

2

1

+



S1

S2 Ö

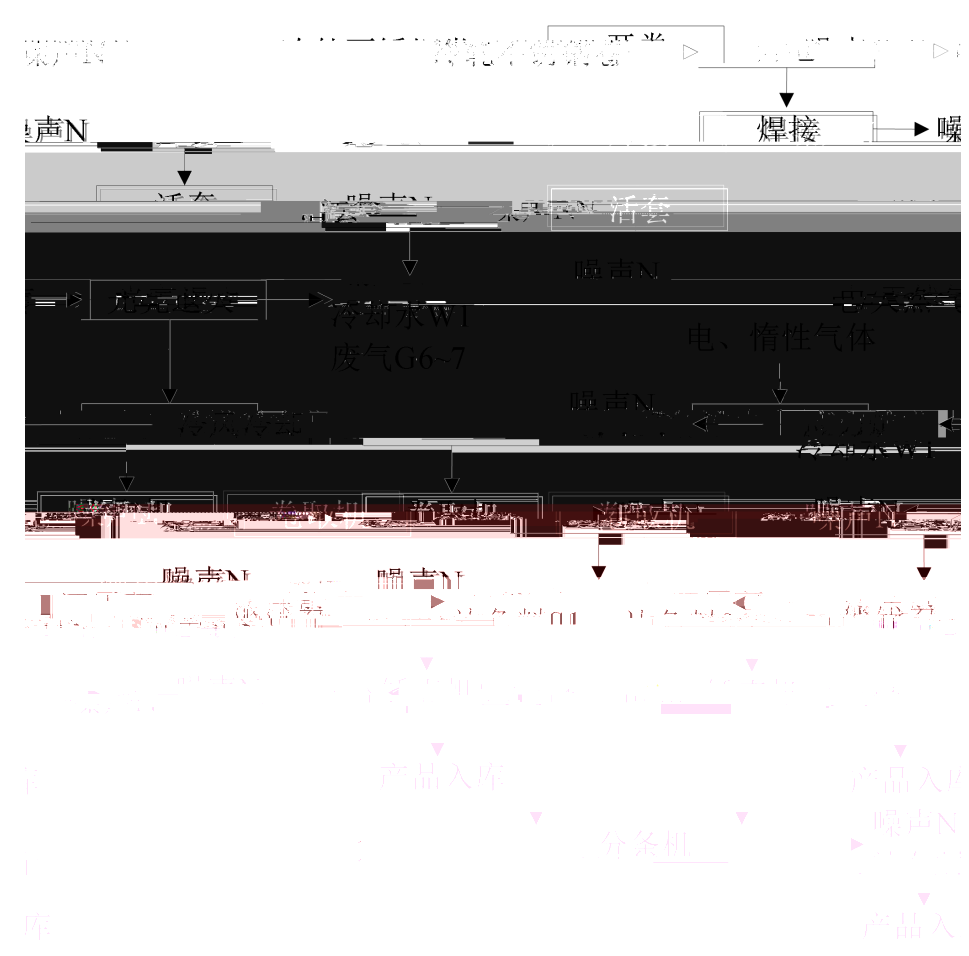
S3



3

W2

COD pH



2.3-5

2

W1

G6~G7

1#~2#

SO₂ NO_x

3#~5#

800

SO₂ NO_x

N

S1

2.3.2

1

1

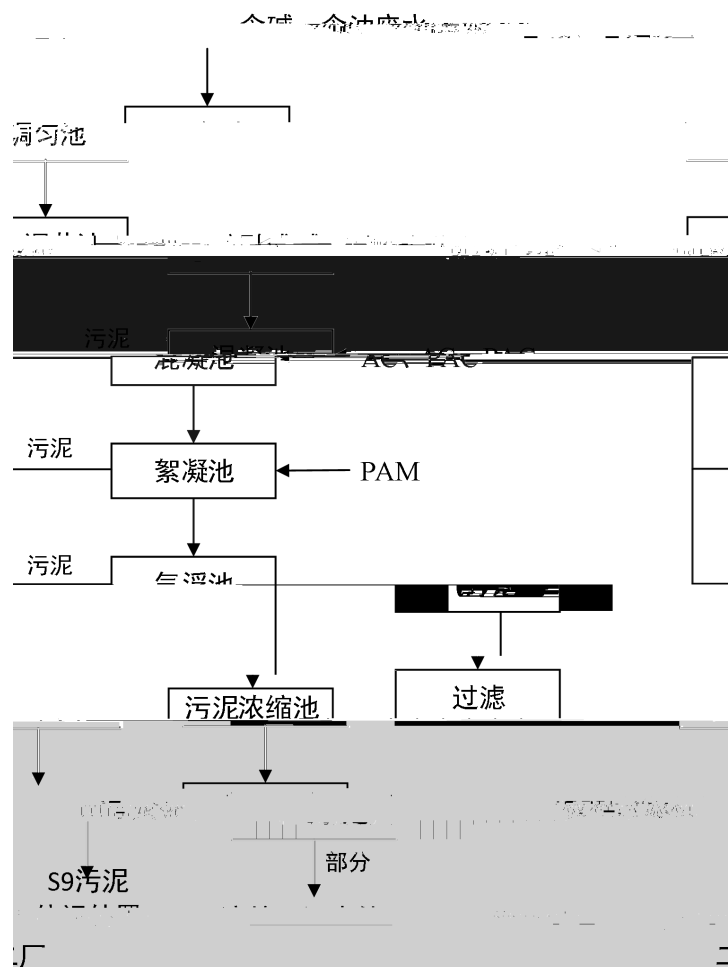
220 ~280

		2.		
>10bar	RO	RO	RO	0.0001

U1

S5

S6



2.3-8

S9

3

III , ,

2.3.1

W1	SS	
W2	COD	pH
W3	COD	
W4	COD	SS
W5	COD	SS
G1		27
G2		27
G3		

C3

	3.1
	3.2
	3.3
	3.4

3.1

3.1.1

14

3.1.2

3.1.2.1

(HJ2.2-2018)

20242024

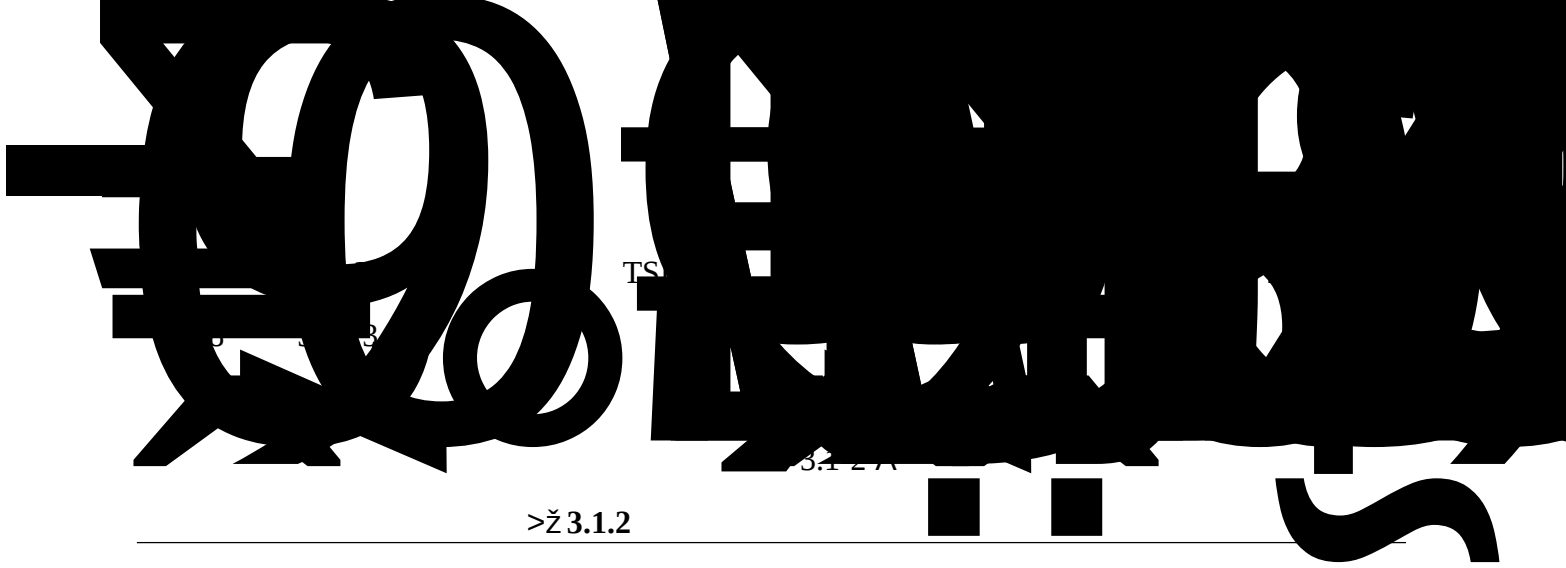
99.5%

GB3095-2012

3.1.12024

			PM ₁₀	PM _{2.5}	CO	
	g/m ³	g/m ³	g/m ³	g/m ³	mg/m ³	g/m ³
	5	10	29	18	1.2	110
	60	40	70	35	4	160

SO₂NO₂PM₁₀



>Ž3.1.2

TSP

7

2024

7

18

26

3

2025

2

28

3

3

3.1.3

1

5# 6# 7# 12# 13# 14#

B2	26.0	B7					
			2mg/L	44mg/L		31.5mg/L	44mg/L
B7		2mg/L	B1				
			0.81mg/L	1.47mg/L		1.13mg/L	
1.47mg/L	B8		0.81mg/L	B7			
pH	pH	7.68	7.99	Pi	0.02	0.19	
			7.99	B8			

3.1.4

50

210m

50

3.1.5

53414.32m²

3.1.6

3.1.7

3.2

500

3.2.1

			210m	350	GB3095-2012
			290m	2234	
			290m	40	
			385m	1000	
	50m				
	500m				

3.3

3.3.1

2020

12

2019 35

2014 1

GB28665-2012 3

3.3.1

GB16297-1996

2

DB35/1782-2018 3

3.3.2

3.3.1

mg/m³

		20		(GB28665-2012) 3
		10		2019 35
		50		
		200		

3.3.2

mg/m³

	12		GB16297-1997 2
	2.0		DB35/1782-2018 3

3.3.2

(GB13456-2012) 2 + +

GB18918-2002 A

3.3.3		mg/L pH		
		GB13456-2012 2		
1	pH	6~9	6~9	6~9
2		100	120	100
3	COD _{Cr}	200	360	200
4	BOD ₅	/	100	100
5		15	30	15
6		35	40	35
7		2.0	3	2.0
8		10	15	10

3.3.4 mg/L A

1 pH 6~9 6~9
2 COD 050 075
- O

3.3.4

GB18599-2020

GB18597-2023

3.4

ó ô
() [2014]24

< >

[2014]9

[2014]43 COD_{Cr}

NH₃-N SO₂ NO_x

3.4.1

SO₂ NO_x VOC_s 3.4.1

3.4.1

	t/a	0.415	t/a
COD		0.208	
		0.021	
		0.47	

	4.1
	4.2
	4.3
	4.4
	4.5
	4.6
	4.7
	4.8

4.1

4.1.1

4.1.1.1

1

60%

TSP

50 100m

2

CO CO₂ O₃ NO_x CH₄

CO

3

CO

60-80mg/m³

THC

80-100mg/m³

4.1.1.2

1

10

1

0.3t

4.1.1

4.1.1

	dB	A	m
2	82		5
5	85		5
5	79		1
10	95		1

I

4.2

4.2.1

2

4

SO₂ NO_x

HJ885-2018 A.1

4.2-1

4.2.1

			1. 2.	1. 2.
		SO ₂	1. 2.	1. 2. 3.
		NO _x		1. 2.
				1.
				2.

4.2.1.1

1

30

4 1 20 2 28m 15

20m 2 24m 3 1 10 /

4 20

95%

90% + 95%

90% 2024 6 2

2025 4.2.1

ND~2.0mg/m³ SO₂ NO_x

81~160mg/m³ 0.6~1.0mg/m³

0.3~2.9mg/m³

2

30

20

6

3#~6#

K_N	1
M	32.04
P Pa	12970
K_C 1.0	1
kg/m ³	0.174
t/a	0.205

4.2.3

	2
t/a	0.410
kg/h	0.052

7920h

$$L_B = 0.191 \left[M(P/(100910-P))^{0.68} \right] D^{1.73} \left[H^{0.51} \right] T^{0.45} \left[F_P \right] C \left[K_C \right]$$

LB kg/a

M

P Pa

D m

H m

T 10

F_P 1.39 1.02

C 0~9m C=1-0.0123

D-9 2 9m C=1

K_C K_C 0.65 1.0

4.2.4

M	32.04
P Pa	12970
D m	3
H m	0.4
T 10	10
F 1.39 1.02	1.20
C	0.5572
K_C K_C 0.65 1.0	1.0
	0.9
t/a	0.0118
kg/h	0.0014

4.2.5

	2
t/a	0.0237
kg/h	0.0030

7920h

4

4.2.1.3

0

4.2.6

4.2.7

		m	m	m		kg/h
M1		90	20	3		0.045
M2		180	23	3		0.33
M3		15	11	7.3		0.003

4.2.8

		(mg/m ³)	(kg/h)
G1		15	0.45
G2		15	0.45
G3		15	1.8
G4		15	2.4
G5		15	2.4

4.2.2

4.2.2.1

1

90%

4.2.2.2

1#~2#	SO ₂		
		HJ-BAT-006	
	SO ₂	NO _x	
≤160mg/m ³	≤2.0mg/m ³		
[2019]35			
1#~2#			
NO _x SO ₂			2019
35		≤10mg/m ³ SO ₂	
≤50mg/m ³ NO _x	≤200mg/m ³		

4.2.2.3

	200m	23.9m
	27m	(GB28665-2012)
200m		3m

4.2.2.4

- 1
- 2

4.2.4

GB/T16157-1996

4.3.2

4.3.2.1

4.3.2

4.3-1

4.3.2

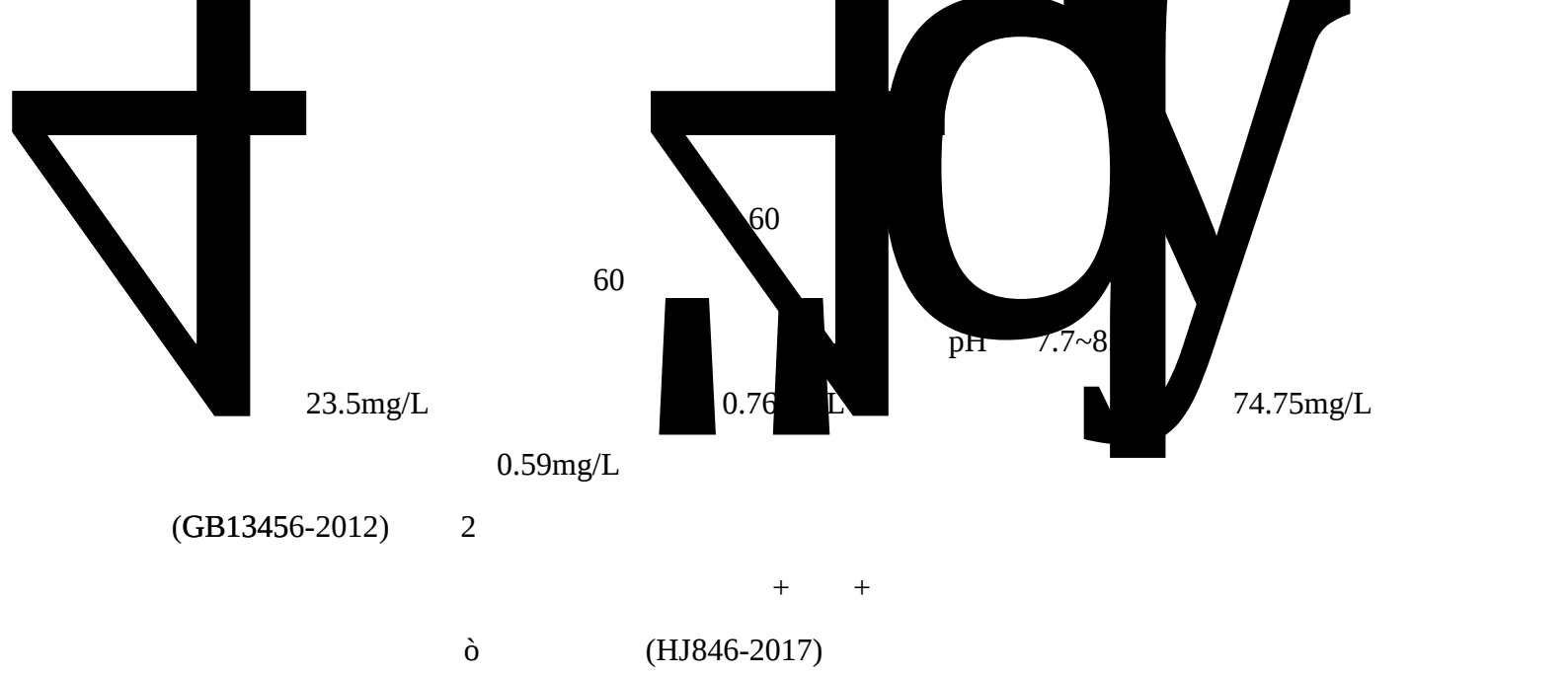
1

60t/
+

+

Gy

20aE\$



3

1.5 t/d

2026

1

2026 12

4.3.3

(GB13456-2012) 2

(GB18918-2002) 1 A

4.3.4

HJ 819

HJ 878

4.3.4

		pH COD	1 /
		SS	1 /

4.4

4.4.1

(HJ885-2018) G

85 95dB(A)

4.4.2

1

A

2

HJ2.4-2021

3

3

4

5

6

4.4.4

HJ1301-2023

4.4.3

	1m	A	1 /

4.5

4.5.1

1

RO

2

3

100

1.0kg/d

33t/a

4.5.2

/

1

RO

RO

1

20m²

GB18599-2020

GB15562.2

2

HW08 HW49

20m²

(GB18597-2023)

4.5.2

			t/a		t		
1		HW08(900-204-08)	6.8		2	3	2m ²
2		HW08(900-213-08)	5.6		1.5	3	1.5m ²
3	()	HW08(900-210-08)	80		10	1	10m ²
4		HW49(900-041-49)	1/5a		/		/
5		HW08(900-249-08)	10		2		/
6		HW08(900-249-08)	1		1	6	1m ²
7		HW49(900-041-49)	0.5		0.5	6	1m ²

3

4.5.3

1

20m²

GB18597-2023

GB18599-2020

GB18597-2023

2

4.6

4.7

4.7.1

4.7.2

1

HJ610-2016

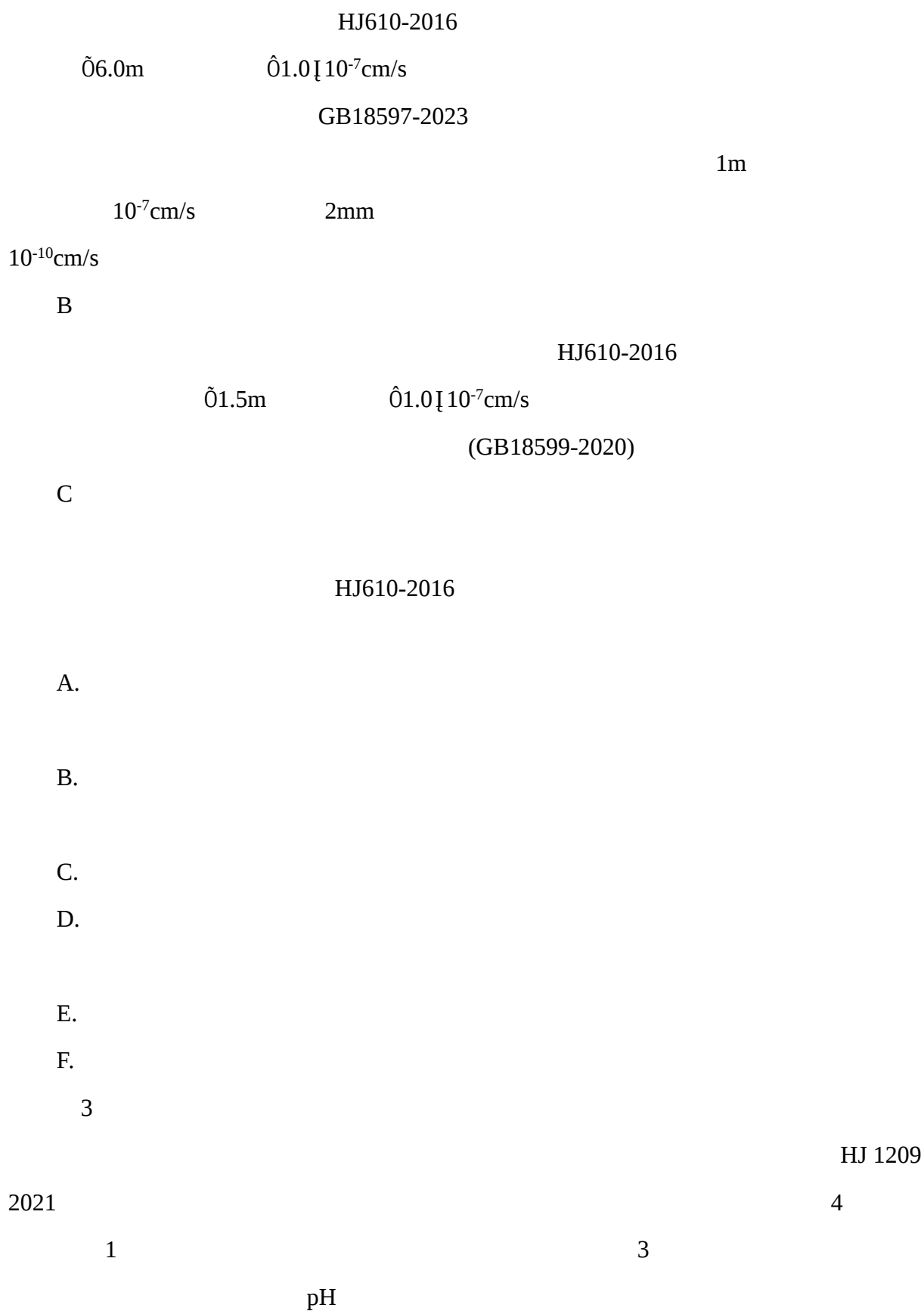
4.7.1

				Mb06.0m K0110-7cm/s	
	ò				
		ò		Mb01.5m K0110-7cm/s	
	ò				
	ò				

4.7.2

- 1
- 2
- 3
- 4





1

4.8

4.8.1

1

4.7.2

2

3

1000-1250

À

°

f €

74

À

!

≤10mg/m³

pH COD_{Cr}
BOD₅ SS
NH₃-N TP
TN

pH6-9
COD≤200mg/m³
BOD₅≤100mg/m³
SS≤100mg/m³
≤15mg/m³
≤2.0mg/m³
COD≤35mg/m³

A

(GB12348-2008) 3
(≤65dB(A)
≤55dB(A))

GB18599-2020

	2				48
		2019			
			2017	84	

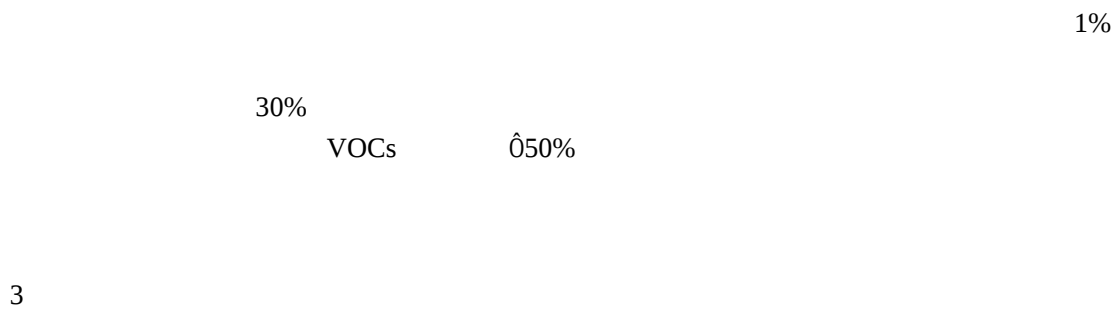
10

2026 2

5	2015	
6	2017	
7	2003	
8		445
2		HJ169-2018
	HJ169-2018	
2.1		
	2.1.1	
		m

E

E1



2.3

1

2

2.2.2

			1
			2
			3
			4

/

3

4

5

2.4

2.4.1

1
2
5 3 11 9

q 11 11

(3 11

7 9 11 11 9

4

5

3.1.1

Q

Q

Q=8.065

10

3.2

M

HJ169-2018

C.1

M

1

M

20

2

10

Mô20

3

5

Mô10

4

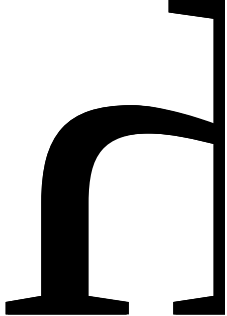
M=5

M1

M2

M3

M4



3.2.1

3.4.1

E1	5km	500m			5
		200m		1000 200	
E2	5km	5	500m	500	1000
			200m	100	200
E3	5km	500m	500		1
				100	200m
	500m	3624	5 km	16060	
	E1				

$E = \frac{1}{2} \rho V^2$

3km

15

+

(GB13456-2012) 2

$\frac{1}{2} \rho V^2$

5

600m³

2000m³

Ä

10000m³

F

D

3.4.5

	G1	G2	G3
D1	E1	E1	E2
D2	E1	E2	E3
D3	E1	E2	E3

3.4.6

G1

G2

a

G3

G3

G3.4.6

3.5.1

E	P		P	
	P1	P2	P3	P4
E1	IV ⁺			III
E2	IV	III	III	II
E3	III	III		
		IV ⁺		

4

4.1

Ã

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4.3.1

50m³

CO

4.3.1

	2	50m³		
	CO		CO	

5

5.1

1

EIAproA

AFTOX

AFTOX

2

F 1.5m/s

25 50%

5.2

1

2 50m³

30min

10mm

HJ 169 - 2018 F.1.1

$$Q_L = C_d A \sqrt{\frac{2(P - P_0)}{\rho}} \quad 2gh$$

QL ò ò kg/s

Cd ò ò Re 100 0.65

A ò ò 10mm 0.0000785m²

$\rho = 791 \text{ kg/m}^3$
 $P - P_0 = 0 \text{ Pa}$
 $g = 9.81 \text{ m/s}^2$
 $h = 1 \text{ m}$
 $t = 30 \text{ min}$

5.2.1

5.2.1 a n

	n	a
	0.2	3.846×10^{-3}
	0.25	4.685×10^{-3}
	0.3	5.285×10^{-3}

5.2.2

		(cm ²)	(kg/s)	(min)	(kg/30min)
		0.785	0.18	30	324

40m²

64.7

HJ169-2018

Q_3

$$Q_3 = a \cdot p \cdot M / R \cdot T_0 \cdot u^{(2-n)/(2-n)} \cdot r^{(4-n)/(2-n)}$$

$Q_3 = \text{kg/s}$

$\dot{U}_n = 5.2.1$

$p = \text{Pa}$

$M = \text{kg/mol}$

$R = \text{J/mol}\cdot\text{K}$

$T_0 = \text{K}$

$u = \text{m/s}$

$r = \text{m}$

5.2.3

5.2.3

m^2 m/s (kg/s)
 41 $1 \ll$ m'' $(E \text{ } F)$

5.3.1

5.3.1 CO

		CO	kg/s
	CO		0.0094

2

AFTOX

a

AFTOX

F

1.5m/s 25 50% -1 380mg/m³
-2 95mg/m³ 70m 180m 5.3.2

5.3.2 CO

	kg/s		(m)
(F)	0.0094	-1(380mg/m ³)	70
1.5m/s		-2(95mg/m ³)	180

b

AFTOX

CO 5.3.3 4426.90mg/m³ 0.11min
10m -2 95mg/m³ 2m 0.33min
30m 5.3-1

5.3.3 CO

m	min	mg/m ³
10	0.11	4426.90
20	0.22	1762.20
30	0.33	1096.40
40	0.44	798.24
50	0.56	617.19
60	0.67	493.55
70	0.78	404.36
80	0.89	337.75
90	1.00	286.65
100	1.11	246.60
110	1.22	214.61
120	1.33	188.64
130	1.44	

160	1.78	121.70
170	1.89	110.75
180	2.00	101.27

5.4.1 LC50

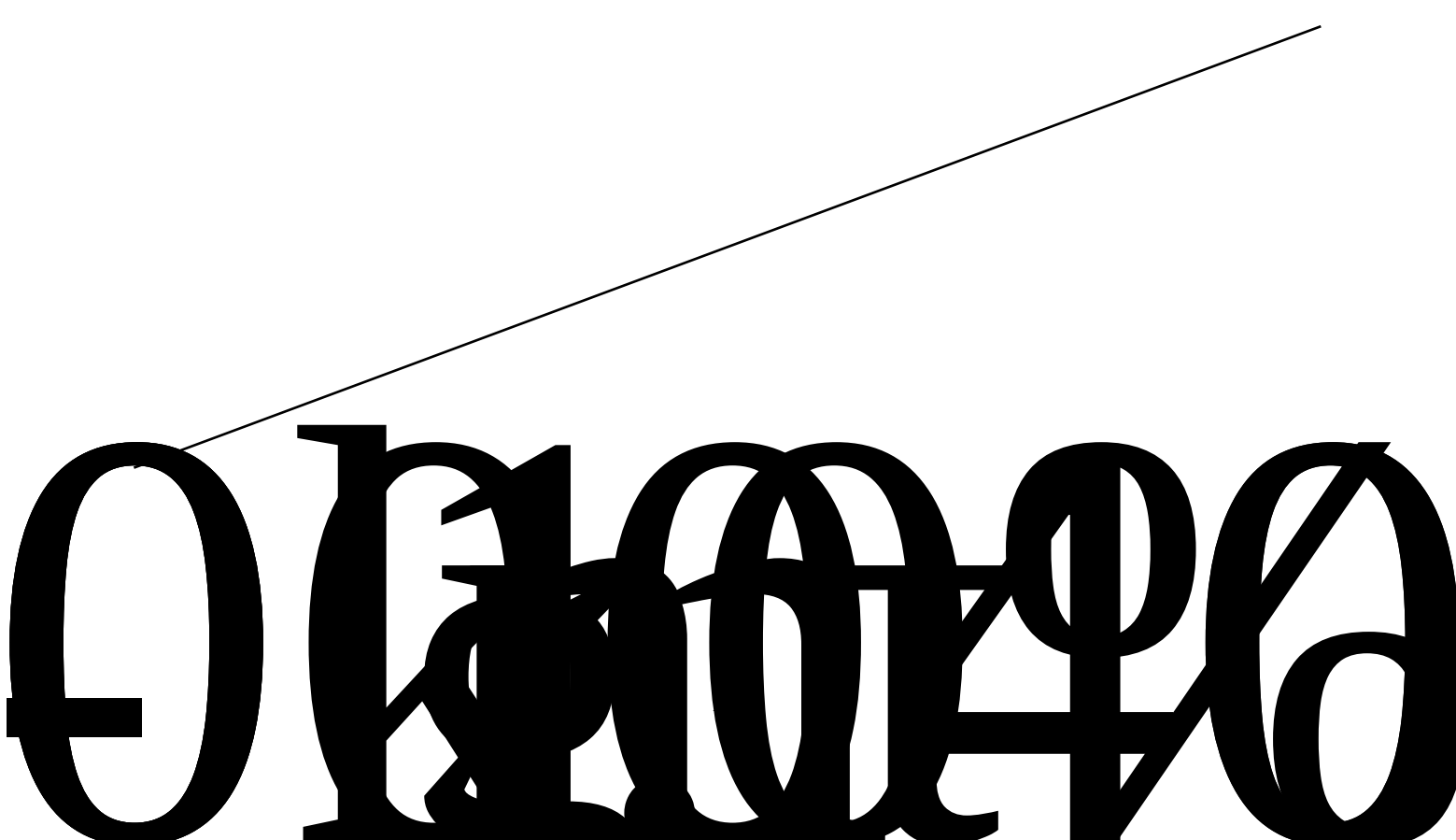
5.4.1 10%

5.4.1 %

Q	LC50					
	200	200 1000	1000 2000	2000 10000	10000 20000	20000
100	5	10				
100 500	1.5	3	6			
500 1000	1	2	4	5	8	
1000 5000		0.5	1	1.5	2	3
5000 10000			0.5	1	1	2
10000 20000				0.5	1	1
20000 50000					0.5	0.5
50000 100000						0.5
LC50		mg/m ³ Q		t		

0.017kg/s*10%=0.0018kg/s

5.4.2



m	min	mg/m ³
1		

		/	/
--	--	---	---

5.5

1

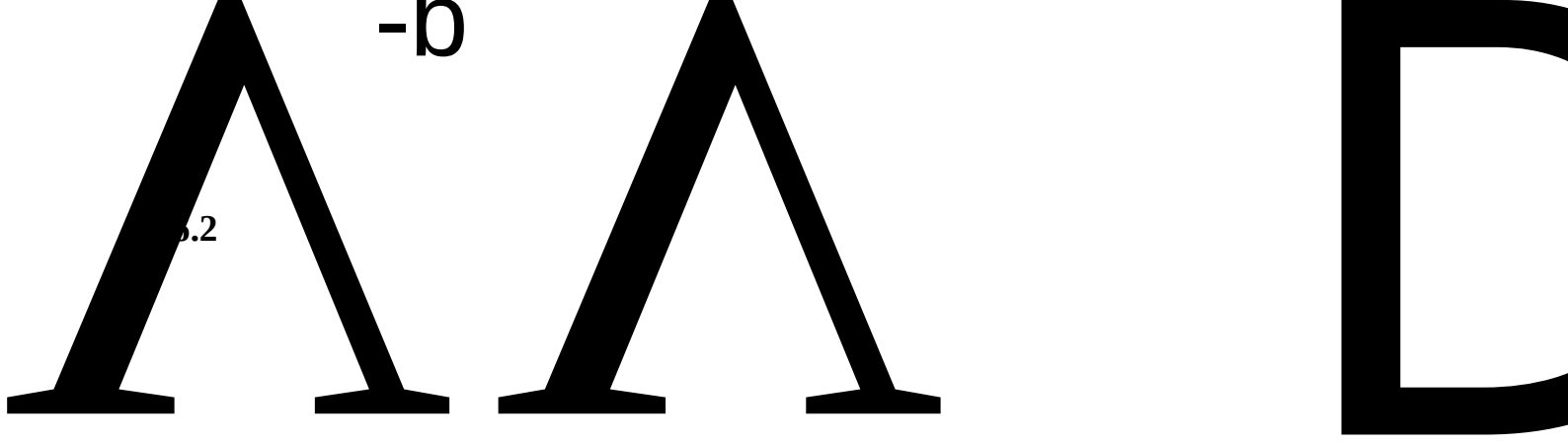
2

3

4

6

6.1



6.2

1

2

6.3

Q/SY08190-2019

$$V = V_1 + V_2 - V_{3\max} + V_4 + V_5$$

$$V_2 = \dot{U}Q \cdot t$$

$$V_5 = 10q \cdot f$$

$$V_1 + V_2 - V_{3\max}$$

$$V_1 + V_2 - V_3$$

$$V_1 \text{ 或 } V_2 \text{ 或 } V_3 \text{ 或 } V_4 \text{ 或 } V_5 \text{ 或 } q \text{ 或 } t \text{ 或 } f \text{ 或 } V_1 + V_2 - V_{3\max} \text{ 或 } V_1 + V_2 - V_3 \text{ 或 } V_2 = \dot{U}Q \cdot t \text{ 或 } V_5 = 10q \cdot f$$

$$V_1 \text{ 或 } V_2 \text{ 或 } V_3 \text{ 或 } V_4 \text{ 或 } V_5 \text{ 或 } q \text{ 或 } t \text{ 或 } f \text{ 或 } V_1 + V_2 - V_{3\max} \text{ 或 } V_1 + V_2 - V_3 \text{ 或 } V_2 = \dot{U}Q \cdot t \text{ 或 } V_5 = 10q \cdot f$$

$$V_1 \text{ 或 } V_2 \text{ 或 } V_3 \text{ 或 } V_4 \text{ 或 } V_5 \text{ 或 } q \text{ 或 } t \text{ 或 } f \text{ 或 } V_1 + V_2 - V_{3\max} \text{ 或 } V_1 + V_2 - V_3 \text{ 或 } V_2 = \dot{U}Q \cdot t \text{ 或 } V_5 = 10q \cdot f$$

$$V_1 \text{ 或 } V_2 \text{ 或 } V_3 \text{ 或 } V_4 \text{ 或 } V_5 \text{ 或 } q \text{ 或 } t \text{ 或 } f \text{ 或 } V_1 + V_2 - V_{3\max} \text{ 或 } V_1 + V_2 - V_3 \text{ 或 } V_2 = \dot{U}Q \cdot t \text{ 或 } V_5 = 10q \cdot f$$

$$V_1 \text{ 或 } V_2 \text{ 或 } V_3 \text{ 或 } V_4 \text{ 或 } V_5 \text{ 或 } q \text{ 或 } t \text{ 或 } f \text{ 或 } V_1 + V_2 - V_{3\max} \text{ 或 } V_1 + V_2 - V_3 \text{ 或 } V_2 = \dot{U}Q \cdot t \text{ 或 } V_5 = 10q \cdot f$$

$$q \text{ 或 } t \text{ 或 } f \text{ 或 } V_1 + V_2 - V_{3\max} \text{ 或 } V_1 + V_2 - V_3 \text{ 或 } V_2 = \dot{U}Q \cdot t \text{ 或 } V_5 = 10q \cdot f$$

1

2

50m³

V₁=100m³

2

GB50974-2014

/

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Д

3

0

$V_3=50$

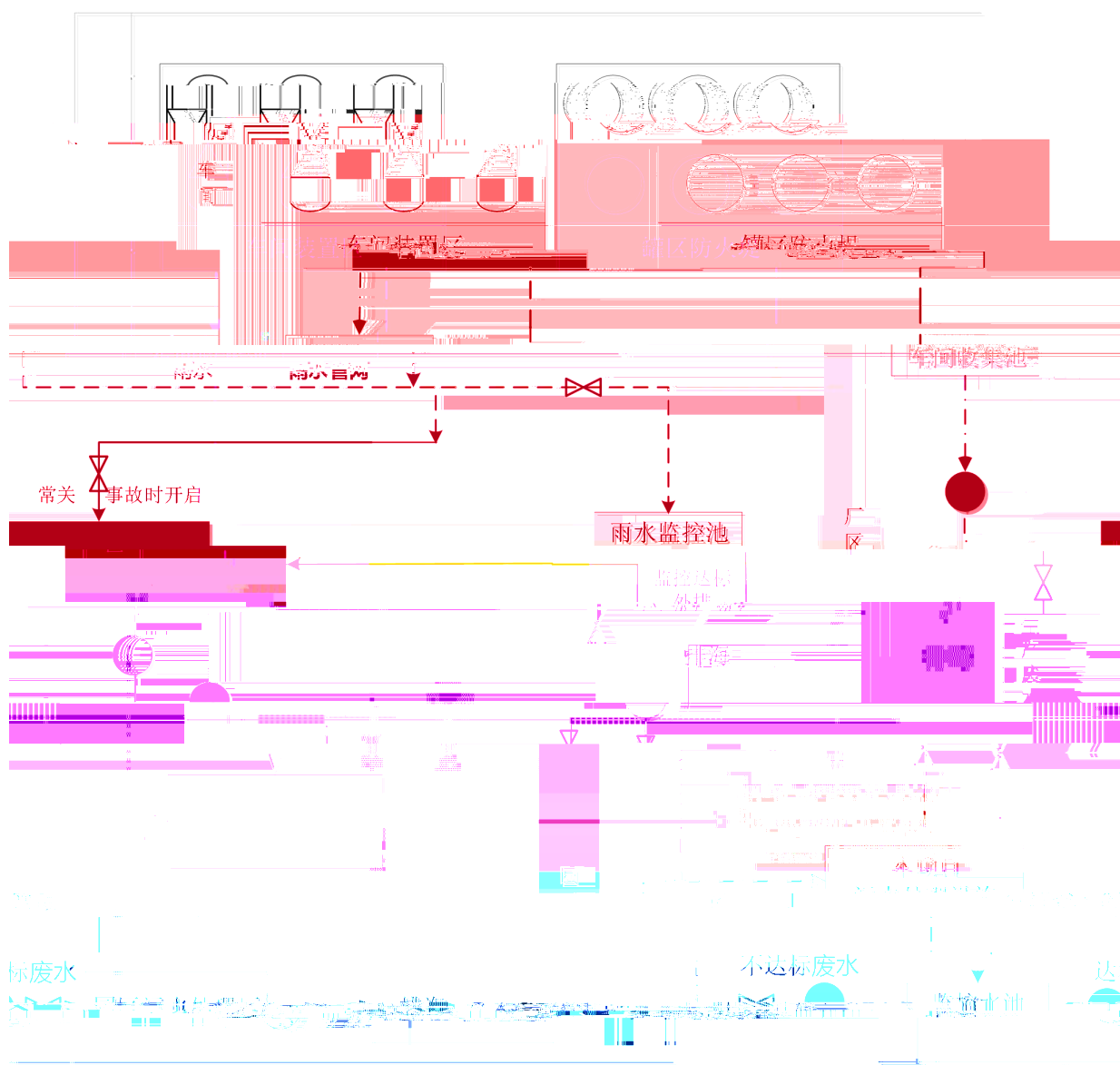
d.

20mm

600m³

2000m³

10000m³



7

1

+

+

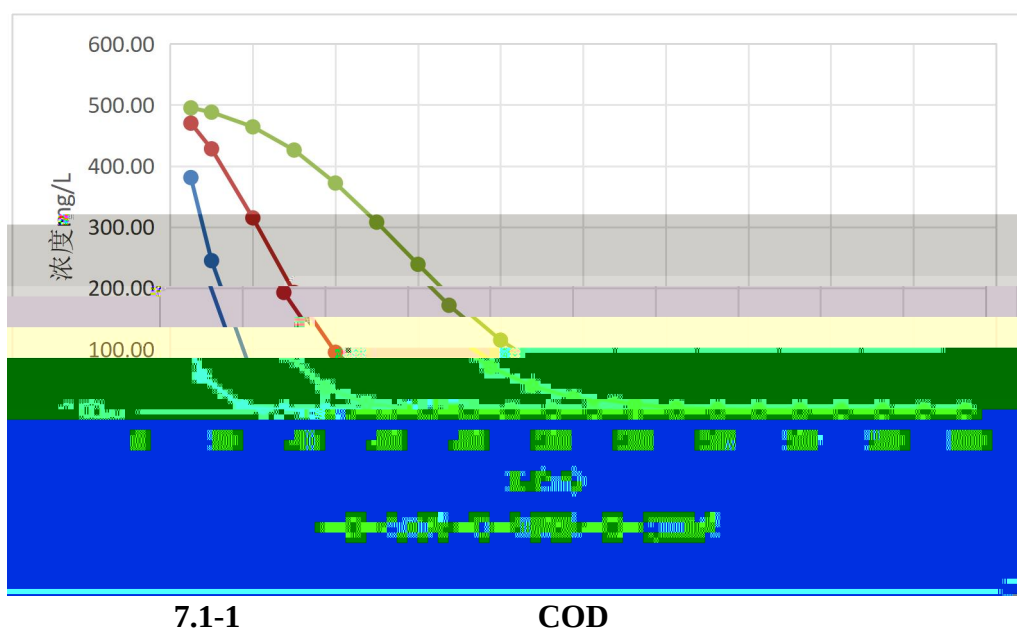
(GB13456-2012) 2

2

90m³

COD 500m

155			0.35
160			0.20
165			0.11
170			0.06
175			0.03
180			0.02
185			0.01
190			0.00



7.1.2

X(m)	100	mg/L	365	mg/L	1000	mg/L
5		200.00		200.00		200.00
10		152.00		188.00		198.00
15		98.00		171.00		195.00
20		52.10		150.00		191.00
25		22.50		126.00		186.00
30		7.84		101.00		178.00
35		2.18		77.10		170.00
40		0.48		55.70		160.00
45		0.08		38.00		149.00
50		0.01		24.50		137.00
55		0.00		14.90		123.00
60				8.53		109.00
65				4.58		95.50
70				2.32		81.90
75				1.10		68.90
80				0.49		56.90
85				0.20		46.00

90		0.08	36.50
95		0.03	28.30
100		0.00	21.50
105			16.00
110			11.70
115			8.30
120			5.77
125			3.93
130			2.61
135			1.70
140			1.08
145			0.70
150			0.41
155			0.24
160			0.14
165			0.08
170			0.04
175			0.02
180			0.01
185			0.01
190			0.00



7.1-2

			COD	100	365	1000
50m	105m	190m		100	365	1000
55m	100m	190m				

1

1

2

GB/T50934

-

HJ 610-2016

GB/T50934

4.6.2

8

6.4

1

2

3

1

2

3

2

3

MSDS

4

5

6

1

2

3

4

1

2

CO

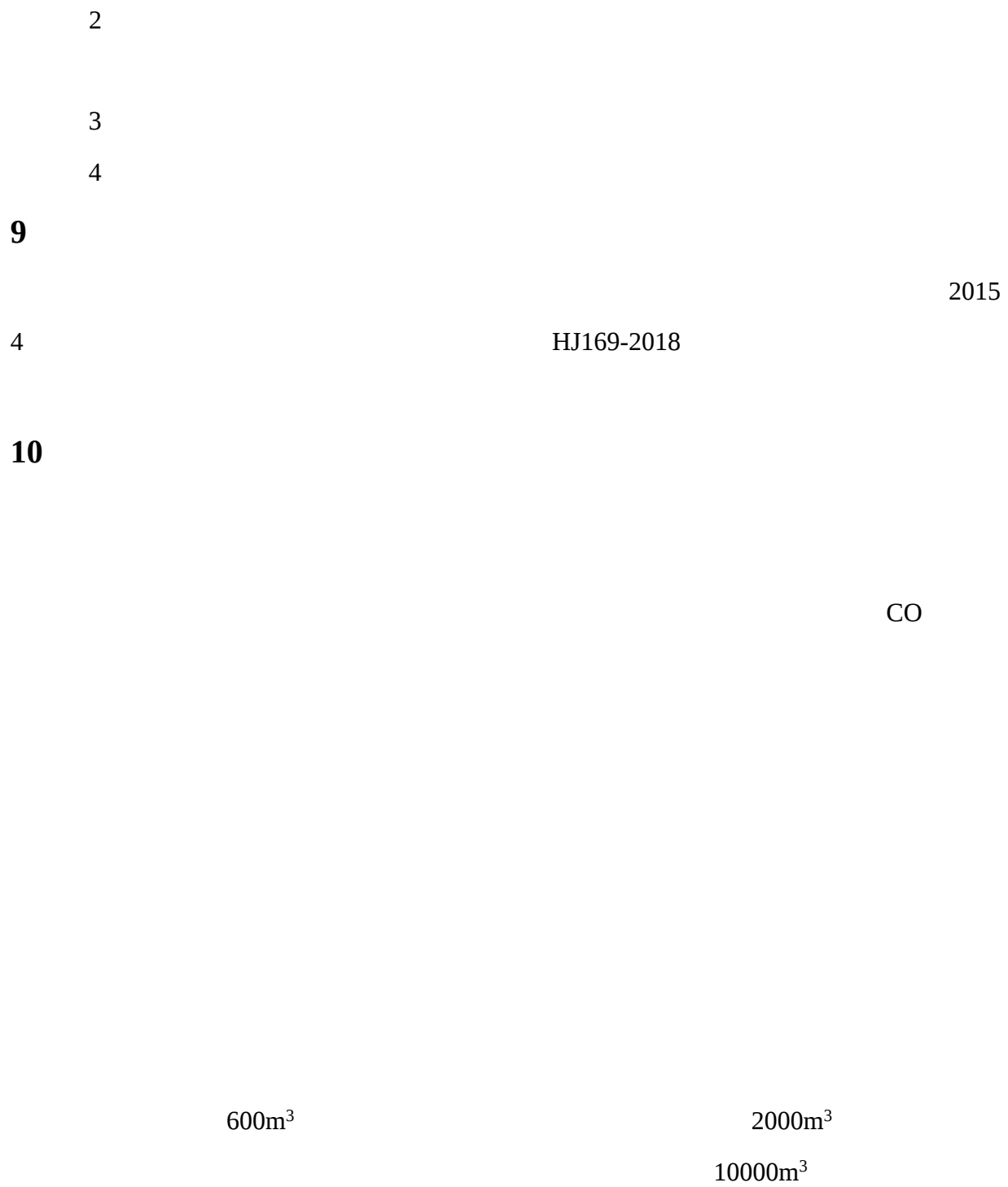
3

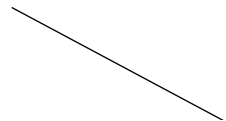
CH₄

CH₄

1

2





	0	0	0	0.475	/	0.475	+0.475
SO ₂	0	0	0	0.238	/	0.238	+0.238
NOx	0	0	0	7.603			