

Annual performance report for Hanson Cement Ltd, Ketton works.

Permit number BM0486IT / LP3532SL

Calendar year 2019

This report is required under the Waste Incineration Directive (WID) Article 12(2): - requirements on access to information and public participation. This requires the operator of an incineration or co-incineration plant to produce an annual report to the Regulator on the functioning and monitoring of the plant and to make this available to the public. To satisfy the requirements of the Directive the following information should be provided clearly in the report:

1. Introduction

Name of company	Hanson Cement
Name of plant	Ketton works
Permit number	BM0486IT
Address	Ketton Stamford Lincs PE9 3SX
Telephone	01780 720501
Contact name	T Fox
Position	Quality & Environment Manager

2. Plant description

The principle purpose of the activities at the installation is to manufacture cement.

Limestone and clay are extracted from an adjacent quarry. This material is then crushed in a dedicated crushing plant together with a number of minor additives to produce a raw material that is no larger than 100 mm. The crushed stone and clay is, after homogenisation in a blending store fed to a vertical roller mill to produce raw meal, a fine powder that is the feedstock for both of the cement kilns.

The site operates two kilns that for historic reasons are known as kiln 7 and Kiln 8.

Kiln 7

Remained mothballed throughout 2019.

Kiln 8

This is a “pre-calciner” kiln and was commissioned in 1986. The ground raw meal is heated in a series of cyclones by the exhaust gases from the kiln. An additional combustion chamber is located between the base of the lowest cyclone and the kiln inlet. This raises the meal temperature to 880°C while providing sufficient residence time at this temperature to achieve partial calcination or decomposition of the meal (to oxides). This is achieved using a combination of coal, Profuel® and MBM. The partially reacted material then enters the kiln, a refractory lined steel tube 4.2 metres in diameter and 68 metres long. The kiln is inclined downwards from the feed end (a few degrees only) and rotates up to 4 revolutions per minute meaning that the material gradually moves towards the discharge end of the kiln undergoing complex chemical reactions to produce clinker.

The heat required for the reactions is provided by two 63 MW burners, one in the kiln burning coal, Cemfuel®, Profuel® and MBM and the second, in the pre-calciner burning coal, Profuel® and MBM. The clinker leaves the kiln via a series of moving grate coolers to a purpose built store.

The clinker is ground in one of 6 cement mills. Gypsum, limestone, Tin chloride and Ferrous sulfate may also be added in the milling process to control the properties of the finished cement. The cement is transported pneumatically to storage silos before being despatched in bulk road or rail tankers or in palletised paper or plastic sacks.

3. Summary of plant operation

a) Plant details

Two cement kiln burning waste materials operates on site, for historic reasons these are known as kiln 7 and Kiln 8.

b) Annual waste throughputs

The amount of waste burned in 2019 is summarised in the table below.

Waste type	EWC code	Tonnes used	
		Kiln 7	Kiln 8
Cemfuel	19 02 08	0	19984
Tyres	16 01 03	0	-
Profuel+SRF	19 02 10	0	76319
Meat and bone meal (MBM)	02 02 02	0	20.3

c) Operational hours

The total hours of operation of the kiln and the total tonnage of cement clinker produced in 2019 is summarised in the table below.

Equipment	Annual production	Operational hours
Kiln 7	0	0
Kiln 8	Confidential	Confidential

During the year two shutdowns occurred on the kiln system.

- January the first planned scheduled maintenance shutdown took place.
- August the second planned schedule maintenance shut down took place.

d) Residues

The following residues were produced during the year.

Residue	EWC code	Annual production
Cement kiln dust (CKD)	10-13-12	0 t
Cement Kiln dust (CKD)	19-02-04	4125 t

The material produced for EWC code 10-13-12 can be disposed of in the landfill at Grange Top Quarry (Permit Number BV14531R). The material produced for EWC code 19-02-04 is stored on site prior to being used offsite for soil conditioning.

4. Summary of plant monitoring.

a) Pollutants measured.

Emissions from kiln 7 & 8 stacks are monitored continuously for particulate matter, carbon monoxide, sulfur dioxide, hydrogen chloride, oxides of nitrogen, total organic carbon and ammonia. In addition to this periodic spot sampling is carried out for metals, dioxin and furans, dioxin like PCBs, hydrogen fluoride and Benzene . The table below summarises the emissions measured and frequency.

Emission	Continuously	Periodically
Particulates	✓	
Carbon monoxide	✓	
Sulfur dioxide	✓	
Oxides of nitrogen	✓	
Hydrogen chloride	✓	
Total organic carbon	✓	
Hydrogen fluoride		✓
Mercury and its compounds		✓
Cadmium and thallium and their compounds		✓
Group III metals* and their compounds		✓
Benzene		✓
Dioxins and furans		✓
Dioxin-like PCBs		✓

* Group III metals are antimony, arsenic, chromium, cobalt, copper, lead, manganese, nickel, and vanadium.

b) Availability of continuous emissions monitors

The percentage of time during the year when the kiln was in operation that the continuous emission monitors were operating normally is summarised in the table below.

Emission monitor	% time operating normally	
	Kiln 7	Kiln 8
Particulates	-	100
Carbon monoxide	-	100
Sulfur dioxide	-	100
Oxides of nitrogen	-	100
Hydrogen chloride	-	100
Total organic carbon	-	100

c) Summary of continuous emissions monitor data.

Continuous emission data is submitted quarterly to the Environment Agency. This information is required by the permit and shows the average daily emission result for each day of the month.

A summary of emission data is shown graphically in Appendix 1.

d) Results of periodic monitoring.

Results of periodic monitoring of emissions are shown in the table below. The permit requires that periodic monitoring is carried out in the first and second half of each year for the species listed in the table.

	Unit	Kiln 7		Kiln 8	
		1 st half	2 nd half	1 st half	2 nd half
Hydrogen fluoride	mg/m ³	Kiln off	Kiln off	<0.027	<0.024
Mercury and its compounds	mg/m ³	Kiln off	Kiln off	0.0015	0.0024
Cadmium and thallium and their compounds	mg/m ³	Kiln off	Kiln off	0.0011	<0.00032
Group III metals and their compounds	mg/m ³	Kiln off	Kiln off	0.020	0.0048
Dioxins and furans (I-TEQ)	ng/m ³	Kiln off	Kiln off	0.050	0.0014
Dioxin like PCBs (WHO-TEQ)	ng/m ³	Kiln off	Kiln off	0.00050	0.00011

Summary of plant compliance

Kiln 7

Kiln off.

Kiln 8

Continuous Emission Monitoring – Breaches of the emission limits are reported to the Environment Agency within 24 hours. Routinely prior to formally reporting the breach, the site contacts the Environment Agency and discusses the cause and potential corrective actions with the relevant inspector.

During the year there were four limit breaches related to NO_x. Two of these were related to the cessation of Ammonia injection prior to a schedule kiln stop, where work is taking place internally on the calcining tower. This is for the safety of personnel working in the tower and has been pre-agreed with the Environment Agency. Two other breaches were for NO_x, one was experienced upon the kiln start-up after the main shutdown and the other related to ammonia stock which was not sufficient due to unforeseen exceptional circumstances.

5. Summary of plant improvements.

No plant improvement relating to the kiln in 2019.

Summary of information made available

Emission data reported to the Environment Agency is published in the public register and can be obtained from the Environment Agency.

Hanson Cement hosts a Liaison Committee that meets two times a year. This meeting provides a forum for elected representatives of local parish and District councils to discuss matters of concern with the company. Representatives of the Environment Agency also attend this meeting.

Hanson Cement operates an 'open door' policy where members of the public can contact the company to arrange a visit to the site or obtain information. The company can be contacted by the following methods:

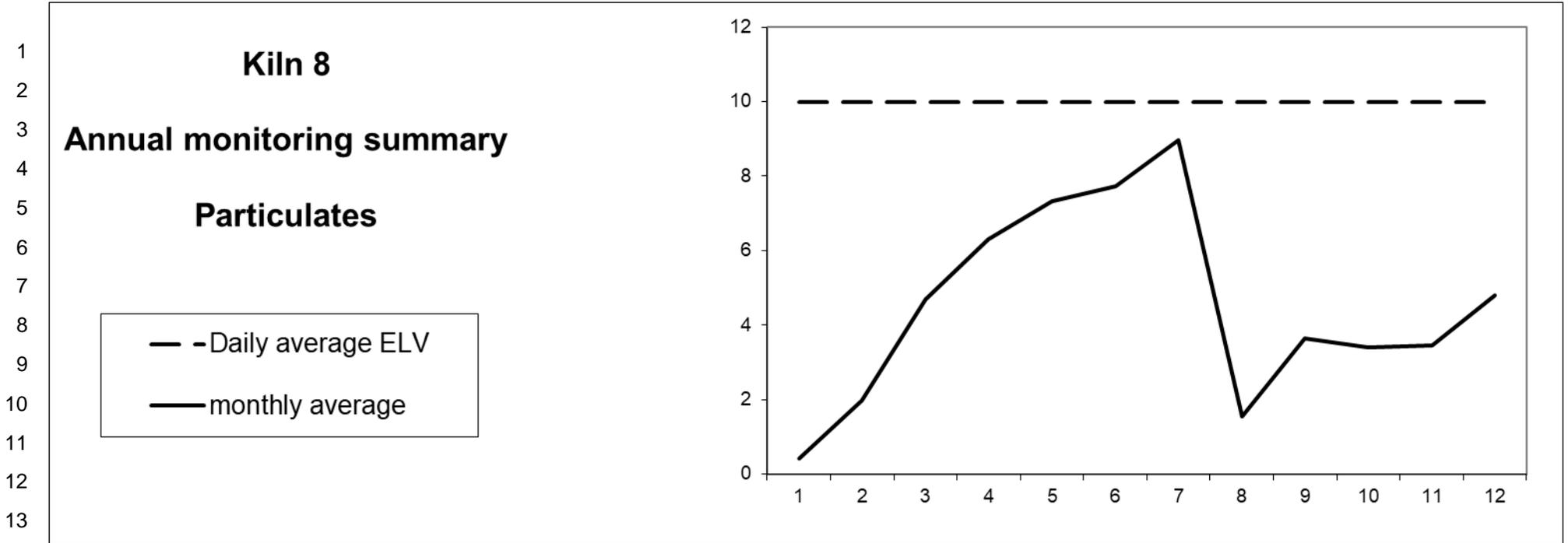
By post: Hanson Cement Ltd, Ketton, Stamford, Lincs, PE9 3SX

By e mail: enquiries@hanson.com

By 'phone: 01780 720501

Hanson Cement plans to publish a community newsletters titled 'Open Door' in 2020 and this will be delivered to every household in the villages around Ketton works.

Appendix 1



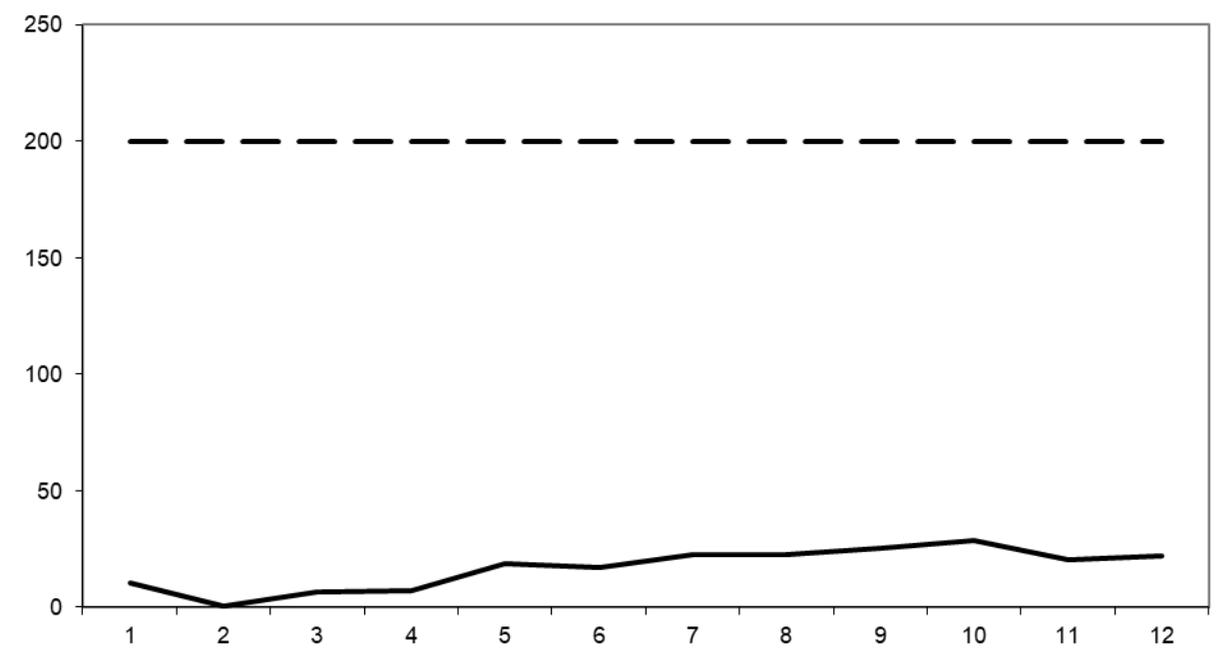
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Annual summary	Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	Daily average ELV	10	10	10	10	10	10	10	10	10	10	10	10	
Annual average	10	monthly average	0	2	5	6	7	8	9	2	4	3	3	5
Annual maximum	10	Monthly maximum	1	3	7	7	8	9	10	2	5	6	5	6

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Kiln 8
Annual monitoring summary
Sulfur dioxide

— - Daily average ELV
— monthly average

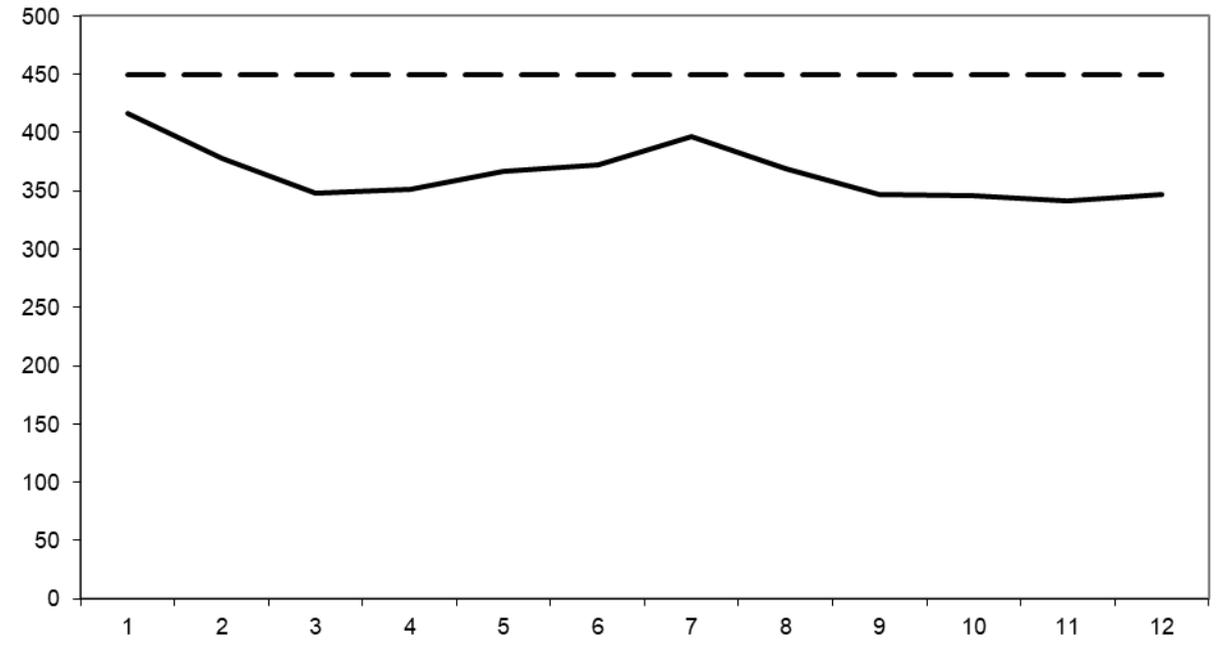


Annual summary	Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Daily average ELV		200	200	200	200	200	200	200	200	200	200	200	200
Annual average	200	11	0	7	7	19	17	22	23	25	29	21	22
Annual maximum	134	12	5	60	46	90	81	103	130	134	94	90	80

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Kiln 8
Annual monitoring summary
Nitrogen oxides

— - Daily average ELV
— monthly average

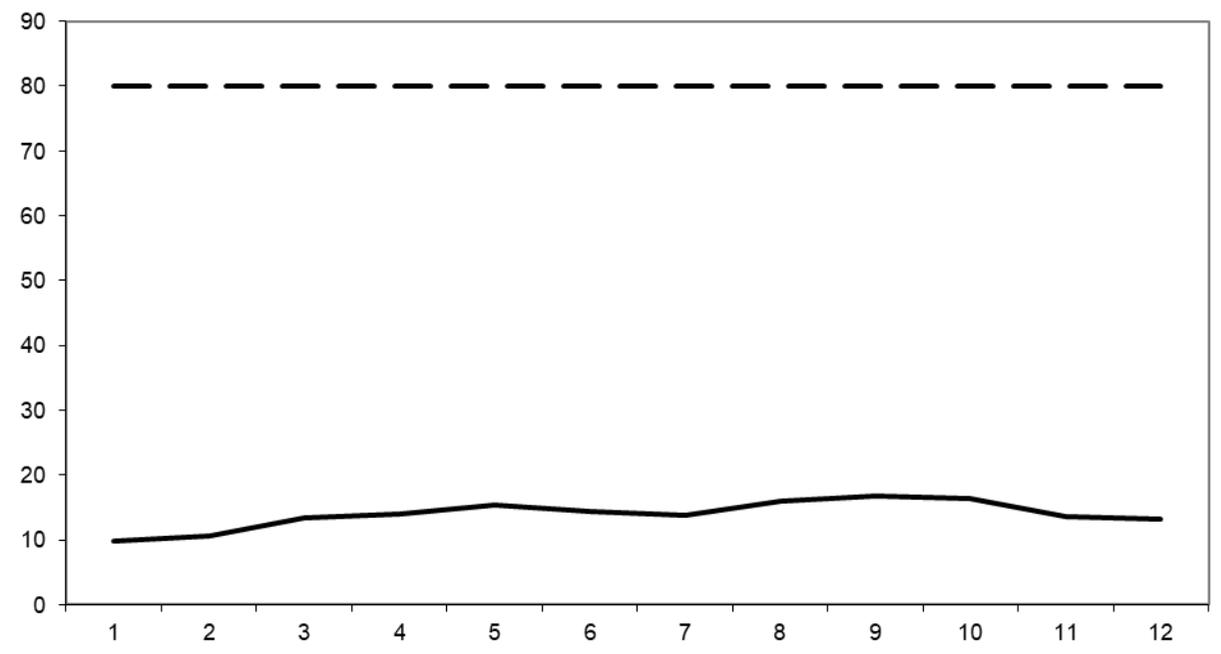


Annual summary	Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Daily average ELV		450	450	450	450	450	450	450	450	450	450	450	450	
Annual average	450	monthly average	416	378	347	351	367	373	396	369	347	345	342	347
Annual maximum	680	Monthly maximum	447	588	373	401	411	396	680	481	366	359	352	363

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Kiln 8
Annual monitoring summary
Volatile organic carbon

— -Daily average ELV
— monthly average



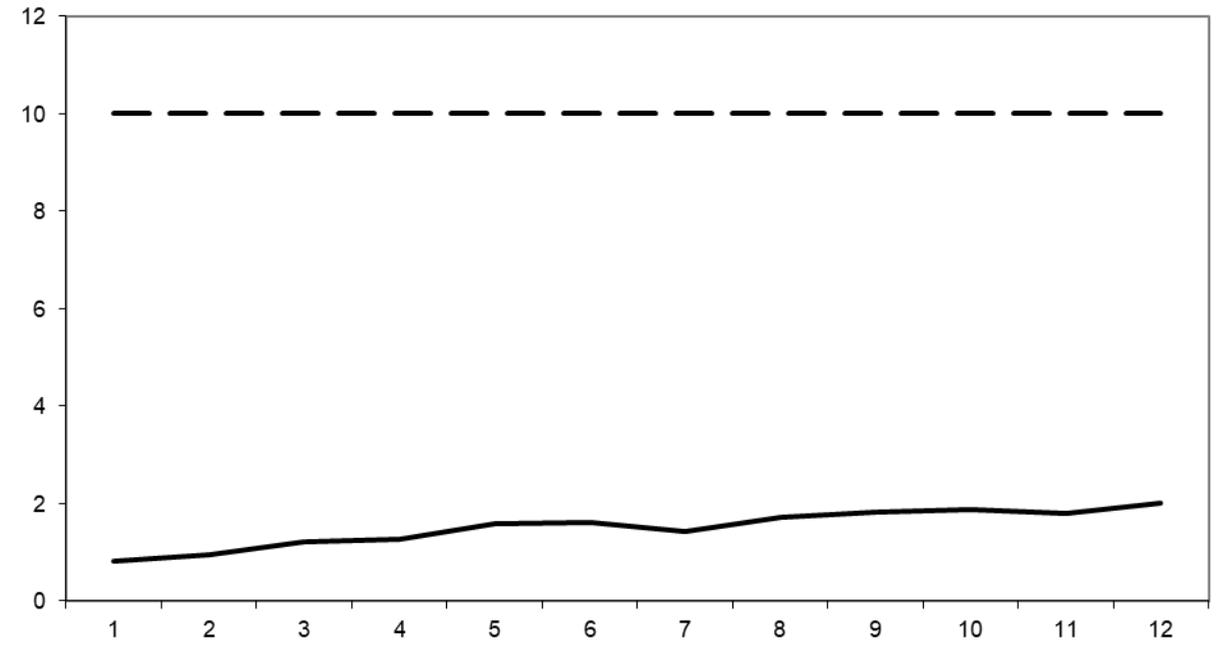
	Annual summary		Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			Daily average ELV	80	80	80	80	80	80	80	80	80	80	80	80
	Annual average	80	monthly average	10	11	13	14	15	14	14	16	17	16	14	13
	Annual maximum	21	Monthly maximum	12	20	18	18	18	17	18	20	21	19	17	16

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Kiln 8

Annual monitoring summary

Hydrogen chloride



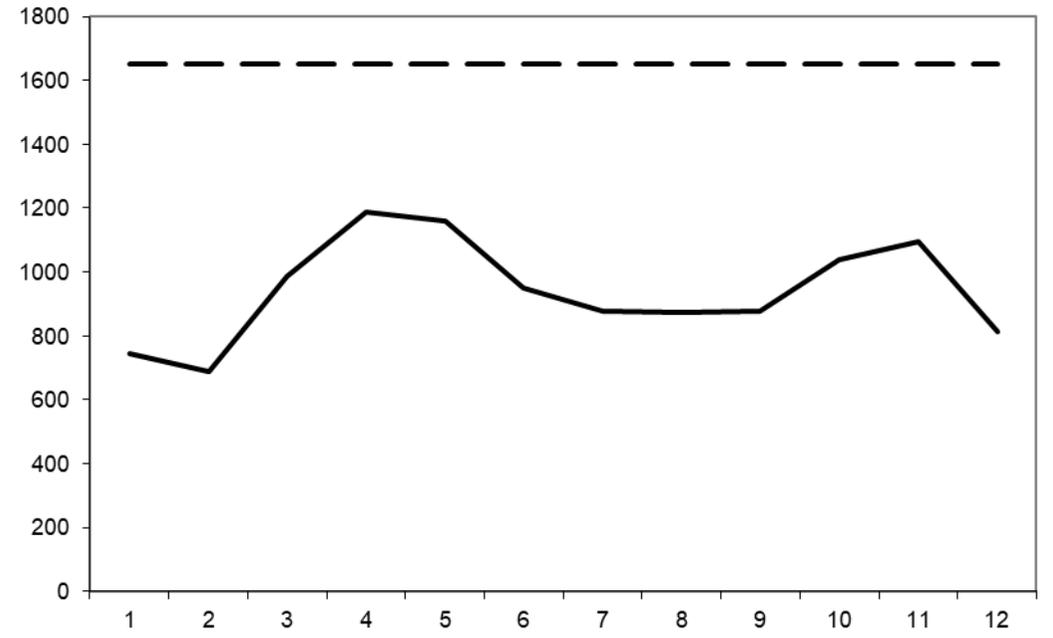
Annual summary		Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		Daily average ELV	10	10	10	10	10	10	10	10	10	10	10	10
Annual average	10	monthly average	1	1	1	1	2	2	1	2	2	2	2	2
Annual maximum	6	Monthly maximum	2	1	4	3	6	4	4	5	5	4	6	4

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Kiln 8

Annual monitoring summary

Carbon monoxide



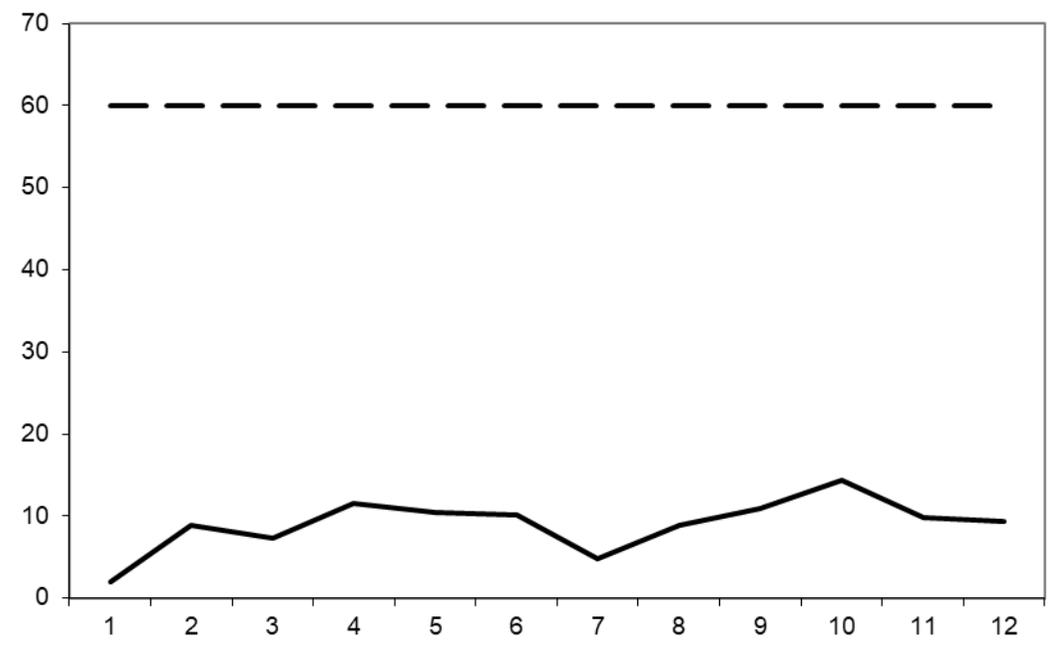
Annual summary	Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	Daily average ELV	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	
Annual average	1650	monthly average	745	687	987	1188	1160	948	875	873	876	1039	1093	811
Annual maximum	1495	Monthly maximum	1093	938	1147	1399	1495	1170	1178	1215	1022	1402	1399	985

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Kiln 8

Annual monitoring summary

Ammonia



Annual summary	Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Daily average ELV		60	60	60	60	60	60	60	60	60	60	60	60
Annual average	60	2	9	7	12	11	10	5	9	11	14	10	9
Annual maximum	54	6	30	34	51	48	34	21	50	54	41	41	33