LIST OF ACTIVITIES WHICH RESULT IN ATMOSPHERIC EMISSIONS WHICH HAVE OR MAY HAVE A SIGNIFICANT DETRIMENTAL EFFECT ON THE ENVIRONMENT, INCLUDING HEALTH, SOCIAL CONDITIONS, ECONOMIC CONDITIONS, ECOLOGICAL CONDITIONS OR CULTURAL HERITAGE

Published under

GN 248 in GG 33064 of 31 March 2010
[with effect from 1 April 2010]

I, Buyelwa Patience Sonjica, Minister of Water and Environmental Affairs, hereby establishes the list of activities as contemplated in section 21(1)(a) of the National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) and the minimum emission standards for these listed activities as contemplated in section 21(3)(a) and (b) of the Act as set out in the Schedule hereto.

In terms of section 21(3)(c) of the Act, 1 April 2010 is the date on which this Notice takes effect.

(Signed)
BUYELWA SONJICA, MP
Minister of Water and Environmental Affairs
DATE: 2010-03-09

SCHEDULE

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SCHEDULE A - METHODS FOR SAMPLING AND ANALYSIS

**Part 1: Definitions**

1 Definitions

(1) In this Notice a word or expression to which a meaning has been assigned in the Act has that meaning and, unless the context otherwise indicates:


'Alternative fuels and resources' means general and hazardous waste materials or secondary products from other industries which are used to substitute conventional or primary fossil fuel and/or virgin raw materials in cement kilns and other industrial processes.

'Atmospheric Emission Licence' means an atmospheric emission licence contemplated in Chapter 5 of the Act.

'Biomass' means non-fossilised and biodegradable organic material originating from plants, animals and micro-organisms excluding - (a) sewage; and (b) treated or coated wood waste which may contain halogenated organic compounds or heavy metals.

'Design capacity' means capacity as installed.

'Existing Plant' shall mean any plant or process that was legally authorised to operate before the date on which this Notice takes effect or any plant where an application for authorisation in terms of the National Environmental Management Act 1998 (Act 107 of 1998), as amended, was made before the date on which this Notice takes effect.

'Flare' means a combustion device that uses an open flame to burn combustible gases with combustion air provided by ambient air around the flame. Combustion may be steam or air assisted. Flares may be either continuous or intermittent. This term includes both ground and elevated flares.

'Fugitive emissions' means emissions to the air from a facility for which an emission licence has been issued, other than those emitted from a point source.

'Licensing authority' means an authority referred to in sections 36(1), (2), (3) or (4) responsible for implementing the licensing system set out in Chapter 5 of the Act.

'Listed activities' includes the singular.
'New Plant' shall mean any plant or process where the application for authorisation in terms of the National Environmental Management Act 1998 (Act 107 of 1998), as amended, was made on or after the date on which this Notice takes effect.

'Normal operating condition' means: any condition that constitutes operation as designed.

'Oxides of nitrogen (NO\textsubscript{x})' means the sum of nitrogen oxide (NO) and nitrogen dioxide (NO\textsubscript{2}) expressed as nitrogen dioxide (NO\textsubscript{2})

'Particulate Matter (PM)' means total particulate matter, that is the solid matter contained in the gas stream in the solid state as well as the insoluble and soluble solid matter contained in entrained droplets in the gas stream, as measured by the appropriate method listed in section 4.

'Petrochemicals' means ethylene and its polymers, ethylene oxide, ethylene glycol, glycol ethers, ethoxylates, vinyl acetate, 1,2-dichloroethane, trichloroethylene, tetrachloroethylene, vinyl chloride, propylene, propyl alcohols, acrylonitrile, propylene oxide, isomers of butylene, butyl ethers, butadienes, polyolefins and alpha-olefins, all alcohols (except those produced during the production of beverages), acrylic acid, allyl chloride, epichlorohydrin, benzene and alkylbenzenes, toluene, o-, m- and p-xylene, ethylbenzene, styrene, cumene, phenols, acetone, cyclohexane, adipic acid, nitrobenzene, chlorobenzene, aniline, methylene diphenyl diisocyanate (MDI), toluene di-isocyanate or other di-isocynates of comparable volatility, benzoic acid.

'Point source' means a single identifiable source and fixed location of atmospheric emission, and includes smoke stacks and residential chimneys.

'SANAS' means the South African National Accreditation System established by section 3 of the Accreditation for Conformity Assessment Calibration and Good Laboratory Practice, 2006 (Act 19 of 2006).

'Sulphur Recovery Plant' means a process unit that processes sulphur containing gases obtained from the processing of crude mineral oil or the coking or gasification of coal and produces a final product of elemental sulphur.

'Upset conditions' means any temporary failure of air pollution control equipment or process equipment or failure of a process to operate in a normal or usual manner that leads to an emission standard being exceeded.

'Total Volatile Organic Compounds' means any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions.

Part 2: General (2-9)

2 Applicability of the Notice

(1) Minimum emission standards as contained in this Notice shall apply to both permanently operated plants and for experimental (pilot) plants with a design capacity equivalent to the one of a listed activity.

(2) Minimum emission standards are applicable under normal working conditions.

(3) Should normal start-up, maintenance, upset and shut-down conditions exceed a period of 48 hours, section 30 of the National Environmental Management, 1998 (Act 107 of 1998), as amended, shall apply unless otherwise specified by the Licensing Authority.

3 Averaging Period

Unless where specified, minimum emission standards are expressed on a daily average basis, under normal conditions of 273K, 101.3kPa, specific oxygen percentage and dry gas.
4 Emission measurement

(1) The manner in which measurements of minimum emissions standards, as required by section 21(3)(a)(ii) of the Act, shall be carried out must be in accordance with the standard sampling and analysis methods listed in Schedule A of the Notice.

(2) Methods other than those contained in Schedule A may be used with the written consent of the National Air Quality Officer.

(3) In seeking the written consent referred to in 4(2), an applicant must provide the National Air Quality Officer with any information that supports the equivalence of the method other than that contained in Schedule A to a method contained in Schedule A.

5 Compliance time frames

(1) New plant must comply with the new plant minimum emission standards as contained in Part 3 on the date of publication of this Notice.

(2) Existing plant must comply with minimum emission standards for existing plant as contained in Part 3 within 5 years of the date of publication of this Notice.

(3) Existing plant must comply with minimum emission standards for new plant as contained in Part 3 within 10 years of the date of publication of this Notice.

6 Postponement of compliance time frames

(1) As contemplated in section 5.4.3.5 of the 2007 National Framework for Air Quality Management in the Republic of South Africa (2007) published in terms of section 7 of the Act, an application may be made to the National Air Quality Officer for the postponement of the compliance time frames in section 5 for an existing plant.

(2) The application contemplated in 6(1) must include-

(a) an Atmospheric Impact Report in terms of section 30 of the Act, compiled by a person registered as a professional engineer or as a professional natural scientist in the appropriate category;

(b) a detailed justification and reasons for the application; and

(c) a certified copy of the announcement of the intention to seek postponement in, at least, one newspaper distributed in the area affected by the specific plant.

(3) The National Air Quality Officer, with the concurrence of the Licensing Authority as contemplated in section 36 of the Act, may grant a postponement of the compliance time frames in 5 for an existing plant for a period, not exceeding 5 years.

(4) The National Air Quality Officer, with the concurrence of the Licensing Authority, may-

(a) from time to time review any postponement granted in terms of 6(3) should ambient air quality conditions in the affected area of the plant not conform to ambient air quality standards; and

(b) on good grounds, withdraw any postponement following-

(i) representations from the affected plant; and

(ii) representations from the affected communities.

7 Compliance monitoring

(1) Where continuous emission monitoring is required for a listed activity in terms of the minimum emission standards as contained in Part 3-
(a) the averaging period for the purposes of compliance monitoring shall be one calendar month or as prescribed in the Atmospheric Emission Licence as contemplated in section 22 of the Act;

(b) the emission monitoring system must be maintained to yield a minimum of 80% valid hourly average values during the reporting period;

(c) no more than five half-hourly average values in any day, and no more than ten daily average values per year, may be discarded due to malfunction or maintenance of the continuous measurement system;

(d) continuous emission monitoring systems must be audited by a SANAS accredited laboratory at least once every two (2) years.

(2) Where periodic emission monitoring is required for a listed activity in terms of the minimum emission standards as contained in Part 3-

(a) emission measurement will be conducted in accordance with section 4;

(b) measurements shall take place on, at least, an annual basis unless otherwise prescribed in the Atmospheric Emission Licence as contemplated in section 22 of the Act;

(c) sampling will take place using the permitted feed-stock or raw material and under operating conditions that are representative of operating conditions in the reporting period;

(d) all tests will be conducted by SANAS accredited laboratories or laboratories accredited by similar foreign authorities.

8 Reporting Requirements

(1) Notwithstanding the compliance time frames established in terms of section 5, the Atmospheric Emission Licence holder shall submit an emission report in the form specified by the National Air Quality Officer to the Licensing Authority-

(a) within one (1) year of the date of publication of this Notice; and

(b) annually thereafter unless otherwise prescribed in the Atmospheric Emission Licence as contemplated in section 22 of the Act.

(2) The report contemplated in 8(1) shall include-

(a) The name, description and licence reference number of the plant as reflected in the Atmospheric Emission Licence.

(b) Where periodic emission monitoring is required for a listed activity in terms of the minimum emission standards as contained in Part 3-

(i) the name and address of the accredited measurement service-provider that carried out or verified the emission test, including the test report produced by the accredited measurement service-provider;

(ii) the date and time on which the emission test was carried out;

(iii) a declaration by the Atmospheric Emission Licence holder to the effect that normal operating conditions were maintained during the emission tests;
(iv) the total volumetric flow of gas, expressed in normal cubic meters (Nm3) per unit time and mass flow (kg per unit time) being emitted by the listed activity or activities measured during the emission test, as the average of at least two (2) measurements;

(v) the concentration or mass of pollutant for which emissions standards have been set in this Notice emitted by listed activity or activities as the average of at least two (2) measurements; each measured over a minimum sample period of 60 minutes and a maximum of 8 hours to obtain a representative sample, and

(vi) the method or combination of methods used for determining the flow rate and concentration as contemplated in section 4.

(c) Where continuous emission monitoring is required for a listed activity in terms of the minimum emission standards as contained in Part 3-

(i) results of the spot measurements or correlation tests carried out to verify the accuracy of the continuous emission measurements;

(ii) the most recent correlation tests; and

(iii) the availability of the system as contemplated in 7(1)(b) in terms of the number of full hours per annum that valid results were obtained.

(d) Following the compliance time frames established in terms of section 5, an explanation of all instances where minimum emission standards were exceeded and remediation measures and associated implementation plans aimed at ensuring that the exceedences do not reoccur.

(e) Any other relevant information as required by the National Air Quality Officer from time to time.

(3) Within three (3) years of the date of publication of this Notice, the National Air Quality Officer will establish an internet-based National Atmospheric Emission Inventory as a component of the South African Air Quality Information System (SAAQIS). Once established, the reports contemplated in 8(1) must be made in the format required for the internet-based National Atmospheric Emission Inventory.

9 General special arrangement

A fugitive emissions management plan must be included in the Atmospheric Emission Licences for listed activities that are likely to generate such emissions.

Part 3: Minimum Emission Standards (10-19)

10 Category 1: Combustion Installations

(1) Subcategory 1.1: Solid fuel combustion installations

<table>
<thead>
<tr>
<th>Description:</th>
<th>Solid fuels (excluding biomass) combustion installations used primarily for steam raising or electricity generation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application:</td>
<td>All installations with design capacity equal to or greater than 50 mW heat input per unit, based on the lower calorific value of the fuel used.</td>
</tr>
</tbody>
</table>
(a) The following special arrangement shall apply-

(i) Continuous emission monitoring of PM, SO\textsubscript{2} and NO\textsubscript{x} is required.

(2) **Subcategory 1.2: Liquid fuel combustion installations**

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm\textsuperscript{3} under normal conditions of 10% O\textsubscript{2}, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>New</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>3 500</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>New</td>
<td>750</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>1 100</td>
</tr>
</tbody>
</table>

(a) The following special arrangements shall apply-

(i) Reference conditions for gas turbines shall be 15\% O\textsubscript{2}, 273K and 101.3kPa

(ii) Continuous emission monitoring of PM, SO\textsubscript{2} and NO\textsubscript{x} is required.

(iii) Combustion of waste oil shall be subject to emission standards of Category 8: Disposal of hazardous and general waste.
(3) **Subcategory 1.3: Solid biomass combustion installations**

**Description:**
Solid biomass fuel combustion installations used primarily for steam raising or electricity generation.

**Application:**
All installations with design capacity equal to or greater than 50 MW heat input per unit, based on the lower calorific value of the fuel used.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 10% O2, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
<td>Chemical symbol</td>
<td>Plant status</td>
</tr>
<tr>
<td>Particulate matter</td>
<td>N/A</td>
<td>New</td>
</tr>
<tr>
<td>Existing</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>SO2</td>
<td>New</td>
</tr>
<tr>
<td>Existing</td>
<td>3 500</td>
<td></td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>NOx expressed as NO2</td>
<td>New</td>
</tr>
<tr>
<td>Existing</td>
<td>1 100</td>
<td></td>
</tr>
</tbody>
</table>

(a) The following special arrangement shall apply-
(i) Continuous emission monitoring of PM, SO2 and NOX is required.

(4) **Subcategory 1.4: Gas combustion installations**

**Description:**
Gas combustion (including gas turbines burning natural gas) used primarily for steam raising or electricity generation, except reciprocating engines.

**Application:**
All installations with design capacity equal to or greater than 50 MW heat input per unit, based on the lower calorific value of the fuel used.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 3% O2, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
<td>Chemical symbol</td>
<td>Plant status</td>
</tr>
<tr>
<td>Particulate matter</td>
<td>NA</td>
<td>New</td>
</tr>
<tr>
<td>Existing</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>SO2</td>
<td>New</td>
</tr>
<tr>
<td>Existing</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>NOx expressed as NO2</td>
<td>New</td>
</tr>
<tr>
<td>Existing</td>
<td>300</td>
<td></td>
</tr>
</tbody>
</table>

(a) The following special arrangements shall apply-
(i) Reference conditions for gas turbines shall be 15% O2, 273K and 101.3kPa.
(ii) The limit for sulphur dioxide for new installations using low-calorific value gases from coal or refinery waste gasification and coke production shall be 400 mg/Nm³.

11 Category 2: Petroleum Industry, the production of gaseous and liquid fuels as well as petrochemicals from crude oil, coal, gas or biomass

(1) Subcategory 2.1: Combustion installations

| Description: | Combustion installations not used primarily for steam raising or electricity generation. |
| Application: | All combustion installations (except test or experimental) including catalytic cracking regenerators. |

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
<td>Chemical symbol</td>
<td>Particulate matter N/A New 50 Existing 120</td>
</tr>
<tr>
<td>Oxides of nitrogen NOₓ expressed as NO₂</td>
<td>New 250 Existing 1 700</td>
<td></td>
</tr>
<tr>
<td>Sulphur dioxide SO₂</td>
<td>New 0.4 Existing 0.8</td>
<td></td>
</tr>
</tbody>
</table>

Daily average kg SO₂ / ton of crude oil throughput.

(a) The following special arrangements shall apply:

(i) The oxides of nitrogen shall be calculated as a flow-weighted average over all combustion processes.

(ii) No continuous flaring of hydrogen sulphide-rich gases shall be allowed.

(iii) Allowable SO₂ emissions from a refinery will be calculated as the sum of emissions from combustion, sulphur recovery units, flares and catalytic cracking units. For purposes of this calculation, catalytic cracking emissions will be calculated as if feed is not hydro-treated by the most appropriate method for each facility as approved by the licensing authority.

(2) Subcategory 2.2: Storage and Handling of Petroleum Products

| Description: | Petroleum product storage tanks and product transfer facilities, except those used for liquefied petroleum gas. |
| Application: | All permanent immobile liquid storage tanks larger than 500 cubic meters cumulative tankage capacity at a site. |
(a) The following transitional arrangements shall apply:

(i) Leak detection and repair (LDAR) program approved by licensing authority to be instituted, within two (2) years following the date of publication of this Notice.

(b) The following special arrangements shall apply for control of TVOCs from storage, loading and unloading of raw materials, intermediate and final products with a vapour pressure of > 14kPa at operating temperature, except during loading and unloading. Alternative control measures that can achieve the same or better results may be used:

(i) Storage vessels for liquids shall be of the following type:

<table>
<thead>
<tr>
<th>True vapour pressure of contents at storage temperature</th>
<th>Type of tank or vessel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 14kPa</td>
<td>Fixed roof tank vented to atmosphere.</td>
</tr>
<tr>
<td>Above 14kPa up to 91kPa</td>
<td>External floating roof tank with primary and secondary rim seals for tank diameter larger than 20 m, or fixed roof tank with internal floating deck fitted with primary seal, or fixed roof tank with vapour recovery system.</td>
</tr>
<tr>
<td>Above 91kPa</td>
<td>Pressure vessel</td>
</tr>
</tbody>
</table>

(ii) The roof legs, slotted pipes and/or dipping well on floating roof tanks (except for doomed floating roof tanks or internal floating roof tanks) shall have sleeves fitted to minimise emissions.

(iii) Relief valves on pressurised storage should undergo periodic checks for internal leaks. This can be carried out using portable acoustic monitors or if venting to atmosphere with an accessible open end, tested with a hydrocarbon analyser as part of an LDAR programme.
(iv) Loading/unloading: All installations with a throughput of 5 000 m³ per annum must be fitted with vapour recovery units. All liquid products with a vapour pressure above 14kPa shall be loaded/unloaded using bottom loading, with the vent pipe connected to a gas balancing line. Vapours expelled during loading operations must be returned to the loading tank if it is of the fixed roof type where it can be stored prior to vapour recovery or destruction. Where vapour balancing and/or bottom loading is not possible, a recovery system utilising adsorption, absorption and condensation and/or incineration of the remaining VOC, with a collection efficiency of at least 95% shall be fitted.

(v) The actual temperature in the tank must be used for vapour pressure calculations.

(3) Subcategory 2.3: Industrial fuel oil recyclers

| Description: | Installations used to recycle or recover oil from waste oils. |
| Application: | Industrial fuel oil recyclers with a throughput > 5 000 ton/month. |
| Substance or mixture of substances | Chemical symbol | Plant status | mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa. |
| Carbon monoxide | CO | New | 130 |
| | | Existing | 250 |
| Sulphur dioxide | SO₂ | New | 500 |
| | | Existing | 3 500 |
| Total volatile organic compounds from vapour recovery/destruction units. | N/A | New | 40 |
| | | Existing | 90 |

(a) The transitional arrangements contained in 11(2)(a) shall apply.

(b) The special arrangement contained in 11(2)(b) shall apply.

(c) Combustion of waste oil shall be subject to emission standards of Category 8: Disposal of hazardous and general waste.

12 Category 3: Carbonization and Coal Gasification

(1) Subcategory 3.1: Combustion installations

| Description: | Combustion installations not used primarily for steam raising or electricity generation. |
| Application: | All combustion installations (except test or experimental installations). |
| Substance or mixture of substances |
### Table 1

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>New</td>
<td>700</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>2 000</td>
</tr>
<tr>
<td>Total volatile organic compounds (from non-coke oven operations)</td>
<td>New</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>90</td>
</tr>
</tbody>
</table>

### (a) The following special arrangement shall apply:

(i) Sulphur-containing compounds to be recovered from gases to be used for combustion with a recovery efficiency of not less than 90% or remaining content of sulphur-containing compounds to be less than 1 000 mg/Nm³ measured as hydrogen sulphide, whichever is strictest.

### (2) Subcategory 3.2: Coke production and coal gasification

<table>
<thead>
<tr>
<th>Description:</th>
<th>Coke production, coal gasification and by-product recovery from these operations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application:</td>
<td>All installations</td>
</tr>
</tbody>
</table>

### Table 2

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen sulphide</td>
<td>New</td>
<td>7(i)</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>10(i)</td>
</tr>
</tbody>
</table>

Notes: (i) from point source

### (a) The following special arrangements shall apply:

(i) Charging must be carried out 'on the main' with additional draught in the ascension or riser pipes produced by high-pressure water jets in the goosenecks. Even coal feeding must be ensured using screw feeders or rotary valve feeders. Telescopic seals are to be used around the charging holes. Visible emissions are limited to 12 sec per charge.

(ii) For pushing, evacuation from the coke guide and the quench car using stationary ducting and gas cleaning or any other technology yielding the equivalent or better results is required.
(iii) For quenching, the quench tower must have suitable baffles; quench water must have less than 50 mg/litre suspended solids and no floating oil.

(iv) A battery and door frame maintenance system approved by the licensing authority must be operated. No more than 4% of doors may show visible leaks; no more than 2.5% of gas off-take pipes may show visible leaks.

(v) Measurement/inspection procedures for visible leaks from doors, standpipes and from charging shall be carried out weekly for each battery using method EPA 303 from table 1 and records submitted to the licensing authority on a quarterly basis.

(b) The licensing authority may set alternative standards and/or control measures for the reduction of hydrogen sulphide emissions.

(3) **Subcategory 3.3: Tar Production**

| Description: | Processes in which tar, creosote or any other product of distillation of tar is distilled or is heated in any manufacturing process. |
| Application: | All installations. |
| Substance or mixture of substances | Plant status | mg/Nm3 under normal conditions of 273 Kelvin and 101.3kPa. |
| Common name | Chemical symbol | New | Existing |
| Total Volatile Organic Compounds | N/A | 130 | 250 |

(a) The following transitional and special arrangements shall apply:

(i) Leak detection and repair (LDAR) program approved by licensing authority to be instituted, within one year after publication date of this Notice.

(ii) Storage vessels for liquids shall be of the following type:

<table>
<thead>
<tr>
<th>True vapour pressure of contents at storage temperature</th>
<th>Type of tank or vessel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 14kPa</td>
<td>Fixed roof tank vented to atmosphere.</td>
</tr>
<tr>
<td>Above 14kPa up to 91kPa</td>
<td>External floating roof tank with primary and secondary rim seals for tank diameter larger than 20 m, or fixed roof tank with internal floating deck fitted with primary seal, or fixed roof tank with vapour recovery system.</td>
</tr>
<tr>
<td>Above 91kPa</td>
<td>Pressure vessel.</td>
</tr>
</tbody>
</table>

(iii) The roof legs, slotted pipes and/or dipping well on floating roof tanks (except domed floating roof tanks or internal floating roof tanks) shall have sleeves fitted to minimise emissions.
(iv) Relief valves on pressurised storage should undergo periodic checks for internal leaks. This can be carried out using portable acoustic monitors or if venting to atmosphere with an accessible open end, tested with a hydrocarbon analyser as part of an LDAR programme.

(v) Loading/unloading (except rail loading and unloading): All liquid products with a vapour pressure above 14kPa shall be loaded/unloaded using bottom loading, with the vent pipe connected to a gas balancing line. Vapours expelled during loading operations must be returned to the loading tank if it is of the fixed roof type where it can be stored prior to vapour recovery or destruction. Where vapour balancing is not possible, a recovery system utilising adsorption, absorption and condensation and/or incineration of the remaining VOC, with a collection efficiency of at least 95% shall be fitted.

(vi) The actual temperature in the tank must be used for vapour pressure calculations.

(vii) Alternative control measures that can achieve the same or better results may be used.

(4) **Subcategory 3.4 Char, charcoal and carbon black production**

| Description: Char, charcoal and carbon black production (excluding electrode paste production). |
| Application: All installations. |

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
<td>Chemical symbol</td>
<td>New</td>
</tr>
<tr>
<td>Particulate matter</td>
<td>N/A</td>
<td>50</td>
</tr>
<tr>
<td>Poly Aromatic Hydrocarbons</td>
<td>PAH</td>
<td>0.1</td>
</tr>
</tbody>
</table>

(5) **Subcategory 3.5 Electrode paste production**

| Description: Electrode paste production. |
| Application: All installations. |

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>Mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
<td>Chemical symbol</td>
<td>New</td>
</tr>
<tr>
<td>Particulate matter</td>
<td>N/A</td>
<td>50</td>
</tr>
</tbody>
</table>
13 Category 4: Metallurgical Industry

(1) Subcategory 4.1: Drying

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>New</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>1000</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>New</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>1200</td>
</tr>
</tbody>
</table>

(2) Subcategory 4.2: Combustion installations

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>New</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>500</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>New</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>2000</td>
</tr>
</tbody>
</table>

(a) The following special arrangement shall apply-

(i) Reference oxygen content appropriate to fuel type to be used.
(3) **Subcategory 4.3: Primary aluminium production**

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
<td>Chemical symbol</td>
<td></td>
</tr>
<tr>
<td>Particulate matter</td>
<td>N/A</td>
<td>New</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>SO₂</td>
<td>Soderberg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AP Tech</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
</tr>
<tr>
<td>Total volatile organic compounds</td>
<td>N/A</td>
<td>New</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
</tr>
</tbody>
</table>

(4) **Subcategory 4.4: Secondary aluminium production**

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
<td>Chemical symbol</td>
<td></td>
</tr>
<tr>
<td>Particulate matter</td>
<td>N/A</td>
<td>New</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
</tr>
</tbody>
</table>
### (5) Subcategory 4.5: Sinter plants

**Description:** Sinter plants for agglomeration of fine ores using a heating process, including sinter cooling where applicable.

**Application:** All installations.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
<td>Chemical symbol</td>
<td></td>
</tr>
<tr>
<td>Particulate matter</td>
<td>N/A</td>
<td>New 50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing 100</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>SO₂</td>
<td>New 500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing 1 000</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>NOx expressed as NO₂</td>
<td>New 700</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing 1 200</td>
</tr>
</tbody>
</table>

### (6) Subcategory 4.6: Basic oxygen furnace steel making

**Description:** Basic oxygen furnace in steel making industry.

**Application:** All installations.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
<td>Chemical symbol</td>
<td></td>
</tr>
<tr>
<td>Particulate matter</td>
<td>N/A</td>
<td>New 30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing 100</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>SO₂</td>
<td>New 500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing 500</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>NOx expressed as NO₂</td>
<td>New 500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing 500</td>
</tr>
</tbody>
</table>
The following special arrangement shall apply:

(i) Secondary fume capture installations shall be fitted to all new furnace installations.

(7) **Subcategory 4.7: Electric arc furnace and steel making (primary and secondary)**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Electric arc furnace in steel making industry.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application:</td>
<td>All installations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
<td>Chemical symbol</td>
<td>New</td>
</tr>
<tr>
<td>Particulate matter</td>
<td>N/A</td>
<td>New</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>SO_{2}</td>
<td>New</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>NOx expressed as NO_{2}</td>
<td>New</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
</tr>
</tbody>
</table>

(a) The following special arrangement shall apply:

(i) Secondary fume capture installations shall be fitted to all new furnace installations.

(8) **Subcategory 4.8: Blast furnace operations**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Blast furnace operations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application:</td>
<td>All installations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
<td>Chemical symbol</td>
<td>New</td>
</tr>
<tr>
<td>Particulate matter</td>
<td>N/A</td>
<td>New</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>SO_{2}</td>
<td>New</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>NOx expressed as NO_{2}</td>
<td>New</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
</tr>
</tbody>
</table>
(a) The following special arrangement shall apply:

(i) Secondary fume capture installations shall be fitted to all new furnace installations.

(9) Subcategory 4.9: Ferro-alloy production

| Description: | Production of alloys of iron with chromium, manganese, silicon or vanadium, the separation of titanium slag from iron-containing minerals using heat. |
| Application: | All installations. |
| Substance or mixture of substances | Plant status | mg/Nm3 under normal conditions of 273 Kelvin and 101.3 kPa. |
| Common name | Chemical symbol | New | Existing |
| Sulphur dioxide | SO\(_2\) | 500 | 500 |
| Oxides of nitrogen | NO\(_x\) expressed as NO\(_2\) | 400 | 750 |
| Particulate matter from primary fume capture system, open and semi-closed furnaces | | 30 | 100 |
| Particulate matter from primary fume capture system, closed furnaces | | 50 | 100 |
| Particulate matter from secondary fume capture system, all furnaces | | 50 | 100 |

(a) The following special arrangement shall apply:

(i) Secondary fume capture installations shall be fitted to all new furnace installations

(ii) Emission of Cr(VI), Mn and V from primary fume captures systems of ferrochrome, ferromanganese and ferrovanadium furnaces respectively to be measured and reported to licensing authority annually.

(10) Subcategory 4.10: Foundries

| Description: | Production and casting of iron and its alloys. |
Application: All installations.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>New</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>400</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>New</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>1 200</td>
</tr>
</tbody>
</table>

### (11) Subcategory 4.11: Agglomeration operations

Description: Production of pellets or briquettes using presses, inclined discs or rotating drums.

Application: All installations.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Ammonia</td>
<td>New</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>50</td>
</tr>
</tbody>
</table>

### (12) Subcategory 4.12: Pre-reduction and direct reduction

Description: Production of pre-reduced or metallised ore or pellets using gaseous or solid fuels.

Application: All installations.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>New</td>
<td>100</td>
</tr>
<tr>
<td>(from natural gas)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>500</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>New</td>
<td>500</td>
</tr>
<tr>
<td>(from all other fuels)</td>
<td>Existing</td>
<td>1 700</td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>Oxides of nitrogen NOx expressed as NO2</td>
<td>New (gas based)</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>New (all other fuels)</td>
<td>1 000</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>2 000</td>
</tr>
</tbody>
</table>

**(13) Subcategory 4.13: Lead smelting**

**Description:** The production or processing of lead by the application of heat; the production of electric batteries containing lead.

**Application:** All installations.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>30</td>
</tr>
<tr>
<td>Lead Pb (as fraction of Total Suspended Particles)</td>
<td>New</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>2</td>
</tr>
</tbody>
</table>

**(14) Subcategory 4.14: Production and processing of zinc, nickel and cadmium**

**Description:** The production and processing of zinc, nickel or cadmium by the application of heat excluding metal recovery.

**Application:** All installations.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/m³ under normal conditions of 6% O₂, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Sulphur dioxide SO₂</td>
<td>New</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>500</td>
</tr>
<tr>
<td>Oxides of nitrogen NOx expressed as NO₂</td>
<td>New</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>500</td>
</tr>
<tr>
<td>Mercury Hg</td>
<td>New</td>
<td>0,2</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>1,0</td>
</tr>
<tr>
<td>Dioxins PCDD/PCDF</td>
<td>New</td>
<td>0,1ngTEQ</td>
</tr>
</tbody>
</table>
(a) The following transitional and special arrangement shall apply:

(i) Facilities processing nickel or cadmium shall measure or estimate, using a method to the satisfaction of the licensing authority, and report the emission of Ni and Cd respectively to the licensing authority annually, commencing within 1 year of publication.

(15) Subcategory 4.15: Processing of arsenic, antimony, beryllium chromium and silicon

| Description: | The metallurgical production and processing of arsenic, antimony, beryllium chromium and silicon and their compounds by the application of heat. |
| Application: | All installations. |
| Substance or mixture of substances | Plant status | mg/m³ under normal conditions of 6% O₂, 273 Kelvin and 101.3kPa. |
| Common name | Chemical symbol | |
| Particulate matter | N/A | New | 20 |
| | | Existing | 30 |

(16) Subcategory 4.16: Smelting and converting of sulphide ores

| Description: | Process in which sulphide ores are smelted, roasted calcined or converted. |
| Application: | All installations. |
| Substance or mixture of substances | Plant status | mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa. |
| Common name | Chemical symbol | |
| Particulate matter | N/A | New | 50 |
| | | Existing | 100 |
| Oxides of nitrogen | NOx expressed as NO₂ | New | 350 |
| | | Existing | 2 000 |
| Sulphur dioxide (feed SO₂ <5% SO₂) | SO₂ | New | 1 200 |
| | | Existing | 3 500 |
| Sulphur dioxide (feed SO₂ >5% SO₂) | SO₂ | New | 1 200 |
| | | Existing | 2 500 |

(a) The following special arrangements shall apply:
(i) All facilities must install apparatus for the treatment of the sulphur content of the off-gases.

(17) Subcategory 4.17: Precious and base metal production and refining

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Chlorine</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>50</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>New</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>400</td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>New</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>30</td>
</tr>
<tr>
<td>Hydrogen fluoride</td>
<td>New</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>30</td>
</tr>
<tr>
<td>Ammonia</td>
<td>New</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>New</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>500</td>
</tr>
</tbody>
</table>

(a) The following transitional and special arrangement shall apply:

(i) Plants processing nickel and its compounds shall report the emissions thereof to the licensing authority annually, commencing within 1 year of publication.

(18) Subcategory 4.18: Vanadium ore processing

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>50</td>
</tr>
</tbody>
</table>
(a) The following transitional and special arrangements shall apply:

(i) Plants processing vanadium ore or slag for the production of vanadium oxides shall report the emissions of vanadium and its compounds and ammonia to the licensing authority annually, commencing within 1 year of publication.

(19) Subcategory 4.19: Production and casting of bronze and brass, and casting copper

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 273 Kelvin and 101.3kPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>New</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>500</td>
</tr>
<tr>
<td>Oxides of Nitrogen</td>
<td>New</td>
<td>1 000</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>1 200</td>
</tr>
</tbody>
</table>

(20) Subcategory 4.20: Slag processes

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 273 Kelvin and 101.3kPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>New</td>
<td>1 500</td>
</tr>
</tbody>
</table>
(a) The following transitional and special arrangements shall apply:

(i) Facilities processing slag by the application of heat for the recovery of chromium or manganese content shall report the emissions of Cr(III) and Cr(VI) or Mn and its compounds respectively to the licensing authority annually, commencing within one year of the publication of the notice.

(21) Subcategory 4.21: Metal recovery

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Common name</th>
<th>Chemical symbol</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxides of nitrogen</td>
<td>NOx expressed as NO₂</td>
<td>New</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>2 000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Particulate matter</td>
<td>N/A</td>
<td>New</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>CO</td>
<td>New</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>SO₂</td>
<td>New</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>NOx expressed as NO₂</td>
<td>New</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>HCl</td>
<td>New</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrogen fluoride</td>
<td>HF</td>
<td>New</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum of Lead, arsenic, antimony,</td>
<td>Pb⁺ As⁺ Sb⁺</td>
<td>New</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>chromium, cobalt, copper,</td>
<td>Cr⁺ Co⁺ Cu+</td>
<td>Existing</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>manganese, nickel, vanadium</td>
<td>+Mn⁺Ni⁺V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mercury</td>
<td>Hg</td>
<td>New</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cadmium Thallium</td>
<td>Cd+TI</td>
<td>New</td>
<td>0.05</td>
<td></td>
</tr>
</tbody>
</table>

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### (22) Subcategory 4.22: Hot dip galvanizing

**Description:**
The coating of steel articles with zinc using molten zinc, including the pickling and/or fluxing of articles before coating.

**Application:**
All installations.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>10</td>
</tr>
<tr>
<td>Particulate matter</td>
<td>Existing</td>
<td>15</td>
</tr>
<tr>
<td>Hydrogen Chloride</td>
<td>New</td>
<td>30</td>
</tr>
<tr>
<td>Hydrogen Chloride</td>
<td>Existing</td>
<td>30</td>
</tr>
</tbody>
</table>

(a) The following special arrangements shall apply:

(i) Acid baths shall both be fitted with air extraction systems to the satisfaction of the licensing authority.

(ii) Measurements of emissions to be carried out in the exhaust ducting of the extraction system.

### (23) Subcategory 4.23: Metal Spray

**Description:**
The coating of metals with zinc using molten zinc.
14 Category 5: Mineral Processing, Storage and Handling

(1) Subcategory 5.1: Storage and handling of ore and coal

Description: Storage and handling of ore and coal not situated on the premises of a mine or works as defined in the Mines Health and Safety Act 29/1996.

Application: Locations designed to hold more than 100 000 tons.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
<td>Chemical symbol</td>
<td>New</td>
</tr>
<tr>
<td>Dustfall</td>
<td>N/A</td>
<td>New</td>
</tr>
<tr>
<td>Existing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a: three month running average not to exceed limit value for adjacent land use according to dust fallout standards promulgated in terms of section 32 of the NEM: AQA, 2004 (Act 39 of 2004), in eight principal wind directions.

(2) Subcategory 5.2: Clamp kilns for brick production

Description: The production of bricks using clamp kilns.

Application: All installations.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
<td>Chemical symbol</td>
<td>New</td>
</tr>
<tr>
<td>Dust fall</td>
<td>N/A</td>
<td>New</td>
</tr>
<tr>
<td>Existing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>SO₂</td>
<td>New</td>
</tr>
<tr>
<td>Existing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a: three month running average not to exceed limit value for adjacent land use according to dust fallout standards promulgated in terms of section 32 of the NEM: AQA, 2004 (Act 39 of 2004), in eight principal wind directions.

b: Twelve month running average not to exceed limit value as per GN 1210 of 24 December 2009. Passive diffusive measurement approved by the licensing authority carried out monthly.

(3) Subcategory 5.3: Cement production (using conventional fuels and raw materials)
| Description: | The production and cooling of Portland cement clinker; grinding and blending of clinker to produce finished cement; and packaging of finished cement. |
| Application: | All installations. |

### Substance or mixture of substances

<table>
<thead>
<tr>
<th>Common name</th>
<th>Chemical symbol</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 10% O₂, 2,273 Kelvin and 101.3 kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter (Klin)</td>
<td>N/A</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Particulate matter (Cooler ESP)</td>
<td>N/A</td>
<td>New</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
<td>150</td>
</tr>
<tr>
<td>Particulate matter (Cooler BF)</td>
<td>N/A</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
<td>50</td>
</tr>
<tr>
<td>Particulate matter (Clinker grinding)</td>
<td>N/A</td>
<td>New</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
<td>50</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>SO₂</td>
<td>New</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
<td>250</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>NOₓ expressed as NO₂</td>
<td>New</td>
<td>1 200</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
<td>2 000</td>
</tr>
</tbody>
</table>

(a) The following special arrangements shall apply:

(i) Emissions from cooling, grinding and fugitive dust capture processes are not subject to the oxygen content reference condition.

(4) **Subcategory 5.4: Cement production (using alternative fuels and/or resources)**

| Description: | The production and cooling of Portland cement clinker; grinding and blending of clinker to produce finished cement where alternative fuels and/or resources are used. |
| Application: | All installations. |

### Substance or mixture of substances

<table>
<thead>
<tr>
<th>Common name</th>
<th>Chemical symbol</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 10% O₂, 2,273 Kelvin and 101.3 kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>N/A</td>
<td>New</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
<td>80</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>SO₂</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
<td>250</td>
</tr>
<tr>
<td>Substance or mixture of substances</td>
<td>Plant status</td>
<td>New</td>
<td>Existing</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------</td>
<td>-----</td>
<td>----------</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>NOx expressed as NO2</td>
<td>800</td>
<td>1 200</td>
</tr>
<tr>
<td>Total organic compounds</td>
<td>N/A</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>HCl</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Hydrogen fluoride</td>
<td>HF</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
The production and cooling of Portland cement clinker; grinding and blending of clinker to produce finished cement where alternative fuels and/or resources are used.

**Application:**
All installations.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of [273 Kelvin and 101.3kPa.]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium + Thallium</td>
<td>Cd+TI</td>
<td>0.05</td>
</tr>
<tr>
<td>Mercury</td>
<td>Hg</td>
<td>New</td>
</tr>
<tr>
<td>Sum of arsenic, antimony, lead, chromium, cobalt, copper, manganese, vanadium and nickel</td>
<td>As; Sb; Pb; Cr; Co; Cu; Mn; V &amp; Ni</td>
<td>New</td>
</tr>
<tr>
<td>Dioxins and furans</td>
<td>PCDD/PCDF</td>
<td>New</td>
</tr>
</tbody>
</table>

(a) The following special arrangements shall apply:

(i) Compliance time frames for PM and NOₓ shall be in accordance with the National Policy on Thermal Treatment of General and Hazardous Waste (GG 32439, Notice 777 of 24 July 2009).

(ii) Compliance with the requirements specified under Schedule 4; section 11.4 of the National Policy on Thermal Treatment of General and Hazardous Waste (GG 32439, Notice 777 of 24 July 2009).

(5) **Subcategory 5.5: Lime production**
### Subcategory 5.6: Glass and mineral wool production

<table>
<thead>
<tr>
<th>Description:</th>
<th>The production of glass containers, flat glass, glass fibre and mineral wool.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application:</td>
<td>All installations producing 100 ton per annum or more.</td>
</tr>
<tr>
<td><strong>Substance or mixture of substances</strong></td>
<td><strong>Plant status</strong></td>
</tr>
<tr>
<td><strong>Common name</strong></td>
<td><strong>Chemical symbol</strong></td>
</tr>
<tr>
<td>Particulate matter</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>SO₂</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>NOₓ expressed as NO₂</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Subcategory 5.7: Ceramic production

<table>
<thead>
<tr>
<th>Description:</th>
<th>The production of tiles, bricks, refractory bricks, stoneware or porcelain ware by firing, excluding clamp kilns.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application:</td>
<td>All installations producing 100 ton per annum or more.</td>
</tr>
<tr>
<td><strong>Substance or mixture of substances</strong></td>
<td><strong>Plant status</strong></td>
</tr>
<tr>
<td><strong>Common name</strong></td>
<td><strong>Chemical symbol</strong></td>
</tr>
<tr>
<td>Particulate matter</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>SO₂</td>
</tr>
</tbody>
</table>
(8) **Subcategory 5.8: Macadam preparation**

**Description:** The production mixtures of aggregate and tar or bitumen to produce road surfacing in permanent facilities and mobile plants.

**Application:** All plants.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>120</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>New</td>
<td>1 000</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>1 000</td>
</tr>
<tr>
<td>Total volatile organic compounds</td>
<td>New</td>
<td>150</td>
</tr>
<tr>
<td>(Thermal treatment).</td>
<td>Existing</td>
<td>150</td>
</tr>
</tbody>
</table>

(9) **Subcategory 5.9: Alkali processes**

**Description:** Primary manufacturing of potassium or sodium sulphate or the treatment of ores by chloride salts whereby hydrogen chloride gas is evolved.

**Application:** All installations producing 100 ton per annum or more.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 6% O₂, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>New</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>30</td>
</tr>
</tbody>
</table>
Description: The manufacture or use in manufacture of hydrocarbons not specified elsewhere including acetylene, acetic, maleic or phthalic anhydride or their acids, carbon disulphide, pyridine, formaldehyde, acetaldehyde, acrolein and its derivatives, acrylonitrile, amines and synthetic rubber. The manufacture of organometallic compounds, organic dyes and pigments, surface-active agents, the polymerisation or co-polymerisation of any unsaturated hydrocarbons, substituted hydrocarbon (including vinyl chloride), the manufacture, recovery or purification of acrylic acid or any ester of acrylic acid, the use of toluene di-isocyanate or other di-isocyanate of comparable volatility; or recovery of pyridine.

Application: All installations producing or using more than 100 tons per annum, and storage tanks with cumulative tankage capacity larger than 500 cubic meters, of any or a combination of the compounds listed above.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Chemical symbol</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 6% O2, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total volatile organic compounds (thermal)</td>
<td>N/A</td>
<td>New</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
<td>150</td>
</tr>
<tr>
<td>Total volatile organic compounds (non thermal)</td>
<td>N/A</td>
<td>New</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
<td>40</td>
</tr>
<tr>
<td>Sulphur trioxide (from sulphonation processes)</td>
<td>SO3</td>
<td>New</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Acrylonitrile (from processes producing and/or using acrylonitrile)</td>
<td>CH2CHCN</td>
<td>New</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
<td>5</td>
</tr>
<tr>
<td>Methylamines</td>
<td>CH5N</td>
<td>New</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
<td>10</td>
</tr>
</tbody>
</table>

(a) The following transitional and special arrangements shall apply:

(i) Leak detection and repair (LDAR) program approved by licensing authority to be instituted, within one year after publication date of this Notice.

(ii) Storage vessels for liquids shall be of the following type:

<table>
<thead>
<tr>
<th>True vapour pressure of contents at storage temperature</th>
<th>Type of tank or vessel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 14kPa</td>
<td>Fixed roof tank vented to atmosphere.</td>
</tr>
<tr>
<td>Above 14kPa up to 91kPa</td>
<td>External floating roof tank with primary and secondary rim seals for tank diameter larger than 20 m, or fixed roof tank with internal floating deck fitted with primary seal, or fixed roof tank with vapour recovery system.</td>
</tr>
<tr>
<td>Above 91kPa</td>
<td>Pressure vessel.</td>
</tr>
</tbody>
</table>
(iii) The roof legs, slotted pipes and/or dipping well on floating roof tanks (except domed floating roof tanks or internal floating roof tanks) shall have sleeves fitted to minimise emissions.

(iv) Relief valves on pressurised storage should undergo periodic checks for internal leaks. This can be carried out using portable acoustic monitors or if venting to atmosphere with an accessible open end, tested with a hydrocarbon analyser as part of an LDAR programme.

(v) Loading/unloading (except rail loading and unloading): All liquid products with a vapour pressure above 14kPa shall be loaded/unloaded using bottom loading, with the vent pipe connected to a gas balancing line. Vapours expelled during loading operations must be returned to the loading tank if it is of the fixed roof type where it can be stored prior to vapour recovery or destruction. Where vapour balancing is not possible, a recovery system utilising adsorption, absorption and condensation and/or incineration of the remaining VOC, with a collection efficiency of at least 95% shall be fitted.

(vi) The actual temperature in the tank must be used for vapour pressure calculations.

(vii) Alternative control measures that can achieve the same or better results may be used.

16 Category 7: Inorganic Chemicals Industry

(1) Subcategory 7.1: Primary production and use in manufacturing of ammonia, fluorine, chlorine, and Hydrogen Cyanide

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 6% O₂, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common name</td>
<td>Chemical symbol</td>
<td>New</td>
</tr>
<tr>
<td>Hydrogen fluoride</td>
<td>HF</td>
<td>5</td>
</tr>
<tr>
<td>Chlorine</td>
<td>C2</td>
<td>50</td>
</tr>
<tr>
<td>Ammonia</td>
<td>NH₃</td>
<td>30</td>
</tr>
<tr>
<td>Hydrogen Cyanide</td>
<td>HCN</td>
<td>0.5</td>
</tr>
</tbody>
</table>

(2) Subcategory 7.2: Primary production of acids
Description: The primary production of hydrofluoric, hydrochloric, nitric and sulphuric acid (including oleum) in concentration exceeding 10%; also processes in which oxides of sulphur are emitted through the manufacture of acid sulphites of alkalies or alkaline earths or through the production of liquid sulphur dioxide or sulphurous acid and secondary production of hydrochloric acid through regeneration.

Application: All installations with the exception of those producing sulphuric acid as part of the recovery of metals from ore.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 6% O₂, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary production</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total fluoride measured as Hydrogen Fluoride</td>
<td>New</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>30</td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>New</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>25</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>New</td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>2 800</td>
</tr>
<tr>
<td>Sulphuric acid mist and sulphur trioxide expressed as SO₃</td>
<td>New</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Oxides of nitrogen expressed as NO₂</td>
<td>New</td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>2 000</td>
</tr>
<tr>
<td><strong>Secondary production of hydrochloric acid</strong></td>
<td>New</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
</tbody>
</table>

(3) Subcategory 7.3: Primary production of chemical fertilizer

Description: The production of superphosphates, ammonium nitrate, ammonium phosphates and ammonium sulphate and their processing into solid fertiliser mixtures (NPK mixtures).

Application: All installations.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 6% O₂, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Particulate matter</strong></td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total fluoride</strong></td>
<td>New</td>
<td>5</td>
</tr>
</tbody>
</table>

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### (4) Subcategory 7.4: Manufacturing activity involving the production, use in manufacturing or recovery of antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, mercury, selenium, by the application of heat.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 6% O₂, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>25</td>
</tr>
</tbody>
</table>

**Description:**
Manufacturing activity involving the production, use or recovery of antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, mercury, selenium, thallium and their salts not covered elsewhere by the application of heat, excluding their use as catalyst.

**Application:**
All installations producing more than 1 ton per month.

(a) The following special arrangement shall apply:

(i) Operators shall estimate the emissions of the metals using a method set out in section 2. Where the estimated emissions exceed 10 tons per annum for any one of the metals, or 25 tons per annum for a combination of the metals, an air quality impact assessment for the emissions shall be submitted to the licensing authority annually, commencing within one year of the publication of the notice.

### (5) Subcategory 7.5: Production of calcium carbide

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 6% O₂, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
</tbody>
</table>

**Description:**
Production of calcium carbide.

**Application:**
All installations producing more than 10 tons per month.

### (6) Subcategory 7.6: Production of phosphorus and phosphate salts not mentioned elsewhere

**Description:**
Production of phosphorus and phosphate salts.
### Application:
All installations producing more than 10 ton per month.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 6% O₂, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>50</td>
</tr>
</tbody>
</table>

### 17 Category 8: Disposal of hazardous and general waste

**Description:** Facilities where general and hazardous waste including health care waste, crematoria, veterinary waste, used oil or sludge from the treatment of used oil are incinerated.

**Application:** Facilities with an incinerator capacity of 10 kg of waste processed per hour or larger capacity.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm3 under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>25</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>75</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>50</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>New</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>200</td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>New</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>10</td>
</tr>
<tr>
<td>Hydrogen fluoride</td>
<td>New</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>1</td>
</tr>
<tr>
<td>Sum of Lead, arsenic, antimony, chromium, cobalt, copper, manganese, nickel, vanadium</td>
<td>New</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>0.5</td>
</tr>
<tr>
<td>Mercury</td>
<td>New</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>0.05</td>
</tr>
<tr>
<td>Cadmium Thallium</td>
<td>New</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>0.05</td>
</tr>
<tr>
<td>Substance or mixture of substances</td>
<td>Plant status</td>
<td>mg/Nm³ under normal conditions of 6% O₂, 273 Kelvin and 101.3kPa.</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td>Total organic compounds</td>
<td>New</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>10</td>
</tr>
<tr>
<td>Ammonia</td>
<td>New</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>10</td>
</tr>
<tr>
<td>Dioxins and furans</td>
<td>New</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>0.1</td>
</tr>
</tbody>
</table>

(a) The following special arrangements shall apply:

(i) Compliance with the requirements specified under Schedule 4, section 11.4 of the National Policy on Thermal Treatment of General and Hazardous Waste (GG 32439, Notice 777 of 24 July 2009).

(ii) Compliance time frames for health care risk waste incineration will be as specified in section 5 unless specific compliance time frames for health care risk waste incineration have been set under health care risk waste regulations, in which case, the specific compliance time frames for health care risk waste incineration set under health care risk waste regulations shall apply.

18 Category 9: Pulp and Paper Manufacturing Activities, including By-Products Recovery

(1) Subcategory 9.1: Lime recovery kiln

<table>
<thead>
<tr>
<th>Description:</th>
<th>The recovery of lime from the thermal treatment of paper-making waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application:</td>
<td>All installations producing more than 1 ton per month.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Chemical symbol</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 6% O₂, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>N/A</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing</td>
<td>100</td>
</tr>
<tr>
<td>Total reduced sulphur</td>
<td>H2S</td>
<td>New</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description:</th>
<th>The recovery of lime from the thermal treatment of paper-making waste.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application:</td>
<td>All installations producing more than 1 ton per month.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant</th>
<th>mg/Nm³ under normal conditions of 6% O₂, 273</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compounds measured as H2S</td>
<td>Existing</td>
<td>10</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>NOx expressed as NO2</td>
<td>New</td>
</tr>
</tbody>
</table>
(2) **Subcategory 9.2: Alkali waste chemical recovery furnaces**

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>50</td>
</tr>
<tr>
<td>Hydrogen sulphide</td>
<td>New</td>
<td>15</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>New</td>
<td>30</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>New</td>
<td>300</td>
</tr>
</tbody>
</table>

(3) **Subcategory 9.3: Copeland alkali waste chemical recovery process**

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>No plant of this type will be authorised in the future</td>
</tr>
<tr>
<td>Hydrogen sulphide</td>
<td>New</td>
<td>No plant of this type will be authorised in the future</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>Existing</td>
<td>800</td>
</tr>
</tbody>
</table>

(4) **Subcategory 9.4: Chlorine dioxide plant**

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen chloride</td>
<td>New</td>
<td>15</td>
</tr>
</tbody>
</table>
(5) Subcategory 9.6: Wood drying and the production of manufactured wood products

**Description:** The drying of wood by an external source of heat; the manufacture of laminated and compressed wood products.

**Application:** All installations producing more than 10 tons per month.

<table>
<thead>
<tr>
<th>Substance or mixture of substances</th>
<th>Plant status</th>
<th>mg/Nm³ under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>New</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>200</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>New</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>700</td>
</tr>
</tbody>
</table>

19 Category 10: Animal matter processing

**Description:** Processes for the rendering cooking, drying, dehydrating, digesting, evaporating or protein concentrating of any animal matter not intended for human consumption.

**Application:** All installations handling more than 1 ton of raw materials per day.

(a) The following special arrangement shall apply:

(i) Best practice measures intended to minimise[d] or avoid offensive odours must be implemented by all installations. These measures must be documented to the satisfaction of the licensing Authority.

**SCHEDULE A - METHODS FOR SAMPLING AND ANALYSIS**

The following referenced documents are indispensable for the application of the Notice. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. Information on currently valid national and international standards can be obtained from Standards South Africa.

(1) ISO Standards

(a) ISO 7934:1989 Stationary source emissions - Determination of the mass concentration of sulfur dioxide - Hydrogen peroxide/barium perchlorate/Thorin method.

(b) ISO 7934:1989/Amd 1:1998

(c) ISO 7935: Stationary source emissions - Determination of the mass concentration of sulfur dioxide - Performance characteristics of automated measuring method.
(d) ISO 9096: Stationary source emissions - Manual Determination of mass concentration of particulate matter.

(e) ISO 10155: Stationary source emissions - Automated monitoring of mass concentrations of particles - Performance characteristics, test methods and specifications.

(f) ISO 10396: Stationary source emissions - Sampling for the automated determination of gas emissions concentrations for permanently-installed monitoring systems.

(g) ISO 10397: Stationary source emissions - Determination of asbestos plant emissions method by fibre counting measurement.

(h) ISO 10780: Stationary source emissions - Measurement of velocity volume flow rate of gas streams in ducts.

(i) ISO 10849: Stationary source emissions - Determination of the mass concentration of nitrogen oxides - Performance characteristics of automated measuring systems.


(l) ISO 11564: Stationary source emissions - Determination of the mass concentration of nitrogen oxides - Naphthylethylenediamine photometric method.

(m) ISO 11632: Stationary source emissions - Determination of mass concentration of sulphur dioxide - Iron chromatography method.

(n) ISO 12039: Stationary source emissions - Determination of carbon monoxide, carbon dioxide and oxygen - Performance characteristics and calibration of automated measuring systems.

(o) ISO 12141: Stationary source emissions - Determination of mass concentration of particulate matter (dust) at low concentrations - Manual gravimetric method.

(p) ISO 14164: Stationary source emissions - Determination of the volume flow-rate of gas streams in ducts - Automated method.

(q) ISO 15713: Stationary source emissions - Sampling and determination of gaseous fluoride content.

(2) EPA methods
   (a) Method 1 - Traverse Points
   (b) Method 1A - Small Ducts
   (c) Method 2 - Velocity - S-type Pitot
   (d) Method 2A - Volume Meters
Method 2B - Exhaust Volume Flow Rate
Method 2C - Standard Pitot
Method 2D - Rate Meters
Method 2F - Flow Rate Measurement with 3-D Probe
Method 2G - How Rate Measurement with 2-D Probe
Method 2H - Flow Rate Measurement with Velocity Decay Near Stack Walls
Memo - New Test Procedures of Stack Gas Flow Rate in Place of Method 2
Method 3 - Molecular Weight
Method 3A - CO₂, O₂ by instrumental methods
Method 3B - CO₂, O₂ by Orsat apparatus
Method 3C - CO₂, CH₄, N₂, O₂ [by] determined by thermal conductivity
Method 4 - Moisture Content
Method 5 - Particulate Matter (PM)
Method 5D - PM Baghouses (Particulate Matter)
Method 5E - PM Fibreglass Plants (Particulate Matter)
Method 5F - PM Fluid Catalytic Cracking Unit
Method 5G - Determination of Low Level Particulate Matter Emissions
Method 6 - Sulphur Dioxide (SO₂)
Method 6A - SO₂, CO₂
Method 6B - SO₂, CO₂ - Long Term Integrated
Method 6C - SO₂ - Instrumental
Method 6E - Figures SO₂
Method 7 - Nitrogen Oxide (NOₓ)
Method 7A - NOₓ - Ion Chromatographic Method
Method 7B - NOₓ - Ultraviolet Spectrophotometry
Method 7C - NOₓ - Colorimetric Method
Method 7D - NO\textsubscript{x} - Ion Chromatographic

Method 7E - NO\textsubscript{x} - Instrumental

Method 8 - Sulfuric Acid Mist

Method 9 - Visual Opacity

Method 10 - Carbon Monoxide-NDIR

Method 10A - CO for Certifying CEMS

Method 10B - CO from Stationary Sources

Method 11 - H\textsubscript{2}S Content of Fuel

Method 12 - Inorganic Lead

Method 13A - Total Fluoride (SPADNS Zirconium Lake)

Method 13B - Total Fluoride (Specific Ion Electrode)

Method 14 - Fluoride for Primary Aluminium Plants

Method 14A - Total Fluoride Emissions from Selected Sources at Primary Aluminium Plants

Method 15 - Hydrogen Sulfide, Carbonyl Sulfide, and Carbon Disulfide

Method 15A - Total Reduced Sulfur (TRS Alt.)

Method 16 - Sulfur (Semicontinuous Determination)

Method 16A - Total Reduced Sulfur (Impinger)

Method 16B - Total Reduced Sulfur (GC Analysis)

Method 17 - In-Stack Particulate (PM)

Method 18 - VOC by GC

Method 19 - SO\textsubscript{2} Removal & PM, SO\textsubscript{2}, NO\textsubscript{x} Rates from Electric Utility Steam Generators

Method 20 - NO\textsubscript{x} from Stationary Gas Turbines

Method 21 - VOC Leaks

Method 22 - Fugitive Opacity

Method 23 - Dioxin and Furan (02/91 FR Copy)

Method 25 - Gaseous Non-methane Organic Emissions

Method 25A - Gaseous Organic Concentration (Flame Ionization)
Method 25B - Gaseous Organic Concentration (Infrared Analyzer)
Method 26 - Hydrogen Chloride, Halides, Halogens
Method 26A - Hydrogen Halide & Halogen-Isokinetic
Method 28A - Air to Fuel Ratio, Burn Rate - Wood-fired Appliances
Method 29 - Metals Emissions from Stationary Sources
Method 101 - Mercury from Chlor-Alkali Plants (Air)
Method 101A - Mercury from Sewage Sludge Incinerators
Method 102 - Mercury from Chlor-Alkali Plants (Hydrogen Streams)
Method 103 - Beryllium Screening Method
Method 104 - Beryllium Emissions Determination
Method 106 - Determination of Vinyl Chloride
Method 107A - Vinyl Chloride content of Solvents
Method 108 - Particulate & Gaseous Arsenic emissions
Method 108B - Arsenic
Method 108C - Arsenic
Methods 203A, B, and C - Opacity Determination for Time-Averaged Regulations
Method 303 - By-product Coke Oven Batteries

(3) British standards

(a) BS 3405:1983 Method for measurement of particulate emission including grit and dust (simplified method).

(b) BS EN 14181:2004 Stationary source emissions. Quality assurance of automated measuring systems.

(c) BS EN 15259: Air quality. Measurement of stationary source emissions. Measurement strategy, measurement planning, reporting and design of measurement sites.

(d) BS EN 15267-1: Air quality. Certification of automated measuring systems. General principles.

(e) BS EN 15267-2: Air quality. Certification of automated measuring systems. Initial assessment of the AMS manufacturer’s quality management system and post certification surveillance for the manufacturing process.

(f) BS EN 15267-3: Air quality. Certification of automated measuring systems. Performance criteria and test procedures for automated measuring systems for monitoring emissions from stationary sources.