

**STATUTORY INSTRUMENTS**

**2013 No. ----**

**THE NATIONAL ENVIRONMENT (AIR QUALITY) REGULATIONS, 2013**

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## STATUTORY INSTRUMENTS

2013 No. -----

### **The National Environment (Air Quality) Regulations, 2013**

*(Under Section 107 of the National Environment Act, 1995)*

IN EXERCISE of the powers conferred upon the Minister by the National Environment Act, 1995 these Regulations are made this \_\_\_\_\_ day of \_\_\_\_\_, 2013.

#### **PART I—PRELIMINARY**

##### **1 Citation**

These Regulations may be cited as the *National Environment (Air Quality) Regulation*.

##### **2 Commencement**

These Regulations shall come into force on a date specified by the Minister by notice published in the *Gazette*.

##### **3 Purpose of the Regulations**

The purpose of these Regulations is to-

- (1) Enforce the air quality standards,
- (2) Prevent air pollution and ecological degradation
- (3) Set baseline parameters on air quality and emissions based on a number of practices considerations and acceptable limits
- (4) Prescribe general measures for the control of air pollution in all areas including residential and commercial areas.
- (5) Ensure protection of human health and the environment from various sources of pollution

##### **4. Application**

- (1) These Regulations apply to any activity requiring a pollution licence under Section 58(4) of the Act.
- (2) Notwithstanding the generality of subsection (1) the regulations shall apply to:-
  - (a) any premises used for any industrial or trade purposes, or on which matter is burnt in connection with any industrial or trade purpose including burning of waste, or any other premises prescribed by the Authority
  - (b) any facility or process that discharges or is capable of discharging air pollutants into open air

- (c) any activity which results in atmospheric emissions and which the Authority believes has or may have significant detrimental effect on the environment including health, social conditions, economic conditions, ecological conditions or cultural heritage
- (d) industrial plants and
- (e) fuel burning equipment.

(3) The limits shown under these regulations shall be of general application except for those areas where the Minister prescribes special or specific limits for some categories of pollution sources as separate standards for the peculiar pollutants characteristics and loads.

(4) The Minister may on recommendation of the Authority make any variation, addition or amend any of the schedules to these regulations.

## 5. Interpretation

In these Regulations, unless the context otherwise requires:

‘**Act**’ means the National Environment Act, 1995, Cap 153

‘**air pollution**’ means any change in the composition of the air caused by smoke, soot, dust( including fly ash), cinders, solid particles of any kind, gases, fumes, aerosols and odorous substances;

‘**ambient air**’ means an outdoor air to which people, plants animals or material are in normal circumstances exposed;

‘**Authority**’ means National Environment Management Authority;

‘**district environment officer**’ shall be an officer appointed under Section 15 of the National Environment Act

‘**emission limit**’ means the highest permissible quantity of pollutants released into the air from a pollution source, expressed as the concentration of pollutants in relation to one unit of production or to the degree of air pollution caused by such sources;

‘**emission**’ means any emission or entrainment process emanating from a point, non point, or mobile source that result in air pollution;

‘**environment**’ has the meaning assigned to it under Section 1 of the National Environment Act;

‘**green house gas**’ means gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation and includes carbondioxide, methane and nitrous oxide;

‘**licensing authority**’ means the Authority referred to in Section 6 or 10(2), responsible for implementing the licensing system under Part VI of the National Environment Act

‘**Minister**’ means has the meaning assigned to it under Section 1 of the National Environment Act;

‘**mobile source**’ means a single identifiable source of atmospheric emission which does

not emanate from a fixed location;

**‘non-point source’** means a source of atmospheric emissions which cannot be identified as having emanated from a single identifiable source or fixed location, and includes veld, forest and open fires, mining activities, agricultural activities and stockpiles;

**‘objectionable matter’** means smoke, ash (including flashy), cinders, solid particles of any kind of particulates, gases including noxious or offensive gases, vapours, fumes, mist, grit, dust, radioactive substance which are generated as a result of combustion of fuel and the like, or a result of the use of electricity as a heat source or other matter capable of being dispersed or suspended in the atmosphere which is produced or is likely to be produced by any industrial process.

**‘ozone depleting substance’** means a substance having chemical or physical properties which, by its release into the atmosphere can cause a depletion of the stratospheric ozone layer;

**‘point source’** means a single identifiable source and fixed location of atmospheric emission and includes smoke stacks and residential chimneys;

**‘polluting activity’** means any activity that does not comply with the standards prescribed under these regulations for which prior grant of a pollution licence by the Authority is mandatory;

**‘pollution licence’** has the meaning assigned to it under Section 58 of the National Environment Act;

**‘pollution’** has the meaning assigned to it under Section 1 of the National Environment Act;

**‘premises’** has the meaning assigned to it under Section 1 of the National Environment Act;

**‘prescribed standard’** means any standard specified in any of the Schedules to these Regulations.

**‘standard’** has the meaning assigned to it under Section 1 of the National Environment Act.

**‘smoke’** includes soot, ash, grit, and gritty particles emitted in smoke.

## **PART II—INDUSTRIAL FACILITIES ADJACENT TO RESIDENTIAL AREAS**

### **6. Industrial lay outs**

- (1) Each district shall –
  - (a) designate industrial layouts which shall be separate from residential areas; and
  - (b) provide buffer zones between industrial layouts and residential areas.
- (2) A buffer zone shall-
  - (a) be rigidly kept away from developers;
  - (b) be monitored to prevent developing encroachment by developers.

### **7. Industrial use**

Except with the prior written approval of the Authority any new plant, equipment or

industrial facility that is capable of causing or involving the emission into the atmosphere of objectionable matter shall not be installed within premises of the following class:-

- (a) the premises situated within an area designated as a residential zone having clearly demarcated boundaries as defined and which appear in the local physical development plans prepared by the appropriate planning Authority under Part IV of the Physical Planning Act, 2010;
- (b) in the absence of such local plan described in (a) above, the premises shall mean such premises situated within a housing estate or situated within 1000metres of the nearest dwelling house of the housing estate.

### **8. Interpretation of local physical development plan**

For the purpose of regulation 7, 'local physical development plan' has the same meaning assigned to it in the Physical Planning Act, 2010.

### **9. Refusal of approval**

- (1) The Authority may refuse approval for such new installation in the premises described in regulation 7 if in its opinion such plant, equipment or facility will cause pollution.
- (2) Where the Authority grants permission for the plant, equipment or facility under paragraph (1) it may impose conditions on such approval.

## **PART III—COMPLIANCE WITH AIR QUALITY STANDARDS**

### **10 Compliance with standards**

- (1) Every person shall be required to comply with the minimum air quality standards prescribed in these regulations.
- (2) Unless otherwise prescribed elsewhere in these regulations for a particular trade, industry or process, the permissible limits of concentration or air impurities in the conduct of any trade, industry or process or the operation of any burning equipment or industrial plant shall be as set out in the First Schedule to these regulations.
- (3) Where it is necessary for the effective implementation of laws the Minister shall identify and allow the continued operation of existing air quality standards made under other written laws.

## **11. Prohibition**

- (1) No person shall emit or release any objectionable matter into the air unless such emission or release is permitted by these regulations.
- (2) A person who releases any objectionable matter into the air contrary to these regulations commits an offence.
- (3) The Authority shall prevent any industry or facility from commencing operation where the Authority believes such industry or facility may constitute a new source of air pollution.



## **12. Permissible emission limits**

Any person who undertakes an activity likely to pollute the air shall be required to comply with the highest permissible quantity of emission of sulphur oxides, carbon monoxide, hydrocarbon as total organic carbon, dust, nitrogen oxides or lead released into the atmosphere from a pollution source and respective test methods prescribed under the Second Schedule to these Regulations

## **PART IV- RESTRICTION ON EMISSION FROM CERTAIN ACTIVITIES**

### **13. Burning of waste**

(1) No owner or occupier of industrial or trade premises, shall burn or cause to be burnt waste except in an incinerator of such type and design approved by the Authority.

### **14. Erection of incinerators**

No person shall erect, construct, install, resite or alter any incinerator without prior written approval from the Authority.

### **15. Accompanying documents**

An application for approval to erect, construct, install, resite or alter any incinerator shall be accompanied by

- (a) site plans of the approved scale indicating clearly the location of the proposed incinerator and buildings within 1000metres of the proposed incinerator;
- (b) proposed construction drawings of the incinerator, method of charging and control equipment and calculations and design parameters prepared by a qualified engineer; and
- (c) type and quantity of waste to be disposed of in the incinerator and if so directed by the Authority, a combustion report on the waste sample certified by a qualified chemist.

### **16. Conditions for approval**

Where in the opinion of the Authority an incinerator is inadequate in design or construction, or is inefficient in operation or inadequately maintained, it may by notice in writing served upon the owner or occupier require him to:-

- (a) repair, alter or replace the incinerator;
- (b) terminate or suspend the use of the incinerator for any period prescribed;
- (c) dispose of the waste in such manner as prescribed.

## **17. Open burning**

- (1) No person shall carry out open burning without a licence issued under Section 58 of the Act.
- (2) Notwithstanding the provisions of clause (1) a person may cause, allow or permit open burning of any combustible material or refuse in compliance with the following paragraphs:-
  - (a) open burning of leaves, tree branches or yard trimmings originating on the premises of private residences and is done between 8.00a.m to 6.00pm;
  - (b) fires purposely set to agricultural lands for disease and pest control or fires set to carcasses of diseased animals and poultry or for agricultural practices;
  - (c) fires set purposely for carrying out research into causes and control of fires, or for the instruction and training of public and industrial fire fighting personnel.

## **18. Conditions for a licence**

- (1) A licence for open burning may be granted if the Authority is satisfied that:-
  - (a) open burning is the only economically practicable method of disposal; and
  - (b) such open burning is not likely to cause pollution
- (3) Every application for a licence to carry out open burning shall be in a form prescribed by the Authority and be accompanied by a sample of the material proposed to be burnt and a combustion report certified by a qualified chemist.

## **19. Burning of Tyres**

No person shall burn tyres without the prior written approval of the Authority.

## **20. Burning of Oil**

- (1) No person shall burn oil in open air.
- (2) Notwithstanding the provisions of clause (1) above, a person may burn oil if:-
  - (a) the burning is for purposes of training firefighters
  - (b) the burning is done by means of –
    - i. flare; and
    - ii. for the purpose of undertaking health and safety procedures in the petroleum exploration and production industry or the petrochemical industry; and
    - iii. expressly allowed by a resource agent.

- (3) For the avoidance of doubt clause (1) does not apply if a discharge from the burning of oil is directed to the open air by a stack, chimney or exhaust pipe (for example emissions from a motor vehicle).

## **21. Cement factories**

In any trade, industry or process where cement is manufactured or which cement clinker is ground or cement packed, the emissions into the air shall be as prescribed in the Third Schedule to these Regulations.

## **22. Motor Vehicles and Motor cycles**

(1) Every motor vehicle (other than a motor cycle or scooter) to be imported or registered on or after the coming into force of these regulations shall conform to the standard of exhaust emission specified in the Fourth Schedule to these Regulations.

(2) Every motor cycle to be imported or registered on or after the coming into force of these regulations shall conform to the standard of exhaust emission specified in the Fifth Schedule to these Regulations.

## **23. Permissible dark smoke limits for new facilities**

(1) The occupier of any industrial or trade premises shall not cause, suffer, allow or permit smoke emissions of any colour from any new facility except fuel burning equipment utilising solid fuel and including but not limited to any chimney which appears to the Authority or any authorised officer

- (a) to be darker than that prescribed in the Sixth Schedule to these regulations or
- (b) when observed or recorded with such instrument or device as the Authority may approve to be darker than that prescribed in the Sixth Schedule to these regulations
- (c) to be of such capacity as to cause obstruction to a degree equivalent to smoke darker than that prescribed in Sixth Schedule to these regulations.

(2) For fuel burning equipment utilising solid fuel, the permissible limit shall be as prescribed in these regulations.

## **24. Permissible dark smoke limits for existing facilities**

(1) For existing facilities, the permissible limit shall be that prescribed in the Seventh Schedule to these regulations.

(2) Every occupier of existing facility emitting smoke shall comply with the requirement of paragraph (1) within 24 months from the coming into force of these Regulations.

## **25. Exceptions**

Regulations 23 and 24 shall not apply to the emission of smoke from an installation for an aggregate of less than 15 minutes in any period of one hour provided that the total period of such emissions shall not exceed an aggregate of 25 minutes in any period of twenty four hours.

#### **26. Water vapour**

Where the presence of water vapour is the only reason for failure of an emission to meet the prescribed standard specified in these regulations, these requirements shall not apply provided that the occupier of the premises has obtained prior written approval from the Authority for permission to discharge the same.

#### **27. Occupier to test and keep records**

The occupier of such premises shall, if so required by the Authority, install, operate, maintain and calibrate one or more approved smoke density equipment and recorders as may be determined by the Authority, and to keep records of volume and density of smoke generated for inspection by the Authority.

#### **28. Indoor air pollution.**

(1) Any activity that causes indoor air pollution is prohibited.

(2) Notwithstanding the provisions of sub section (1) above, indoor air pollution may be accepted if it meets the standards set forth in the Eighth schedule to these regulations.

## **PART V- AIR QUALITY MANAGEMENT AND MONITORING**

### **28: Air quality management plan**

(1) Each lead agency or district body or committee responsible for environmental management in terms of Part VII of the National Environment Act shall develop an air quality management plan.

(2) Each district shall include in its district physical development plan contemplated in Part IV of the Physical Planning Act, an air quality management plan.

### **29. Contents of air quality management plans**

An air quality management plan shall-

(a) within the domain of the relevant lead agency, district or municipality seek-

- i. to improve air quality;
- ii. to identify and reduce the negative impact on health and the environment of poor air quality;
- iii. to address the effects of emissions from the use of fossil fuels in residential areas;
- iv. to address the effects of emissions from industrial sources;
- v. to address the effects of emissions from industrial sources;
- vi. to address the effects of emissions from any point or non point source of air pollution other than those contemplated in paragraphs (ii) and (iii);
- vii. to implement the country's obligations in respect of international and regional agreements; and
- viii. to give effect to the best practice of air quality management.

(b) describe how the relevant lead agency, district or municipality will give effect to its air quality management plan; and

(c) comply with other requirements as may be prescribed by the Minister.

### **30. Reporting on implementation of air quality management plan**

Each lead agency or district shall submit an annual air quality management report including information on-

- (a) air quality management initiatives undertaken by it during the reporting period;
- (b) the level of its compliance with the air quality standards
- (c) measures taken by it to secure compliance with those standards and
- (d) its air quality monitoring activities

### **31. Air quality monitoring**

(1) The Authority or a district environment officer may require any person to undertake an air quality monitoring programme as contemplated in regulation 30(2) if-

- (a) the Authority or district environment officer reasonably suspects that the person has on one or more occasions contravened any of the provisions in these regulations
- (b) the activity being conducted by the person requires an air quality management plan.

(2) An air quality monitoring programme includes the implementation of all reasonable measures required to effectively measure, report and verify compliance or non compliance with these regulations to the satisfaction of the Authority or district environment officer as the case may be.

## **PART VI- OFFENCES AND PENALTIES**

### **32. Offences and penalties**

(1) Any person who emits or discharges objectionable matter without a licence issued under section 58(4) of the Act shall be guilty of an offence and shall be liable to a fine not exceeding one thousand currency points or to a term of imprisonment not exceeding five years or to both and to a further fine of two thousand currency points for every day that the offence is continued after a notice by the Authority requiring him to cease the act specified therein has been served upon him.

(2) Any omission or neglect to comply with, or an act done contrary to any of the provisions of these Regulations other than in paragraph (1) shall be an offence and the offender shall on conviction be liable to a fine not exceeding eight hundred currency points or a term of imprisonment not exceeding one year or to both.

**SCHEDULE 1**

**Regulation 10**

**A. PERMISSIBLE EMISSION LIMITS FOR CRITERIA AIR POLLUTANTS**

<b>Pollutant</b>	<b>Standard For Ambient Air</b>	<b>Standard For Emissions (Point Sources)</b>	<b>Averaging Time For Ambient Air</b>	<b>Analytical method</b>
Acid mist	100 µgNm <sup>-3</sup>	10.0 mg/m <sup>3</sup> HBr; 5.0 mg/m <sup>3</sup> HNO <sub>3</sub> ; 1.0 mg/m <sup>3</sup> H <sub>3</sub> PO <sub>4</sub> ; 1.0 mg/m <sup>3</sup> H <sub>2</sub> SO <sub>4</sub>	10 hr	Ion Chromatography
Ammonia	200 µgNm <sup>-3</sup>	50 mg/Nm <sup>3</sup>	24 hr	Chemiluminescence
Asbestos	0.01 fibres ml <sup>-1</sup>	0.01 fibres ml <sup>-1</sup>	24 hr	Atomic absorption spectrometry (AAS), X-ray fluorescence or Inductively coupled plasma (ICP)
Baggase	200µNgm <sup>-3</sup>		24 hr	
Ceramics	200 µgNm <sup>-3</sup>		24 hr	
Chlorine	1.45 mg/m <sup>3</sup>	3.0 mg/m <sup>3</sup> ( )	24 hr	Residual chlorine electrode
Cobalt	3 µg/m <sup>3</sup>	6.0 µg/m <sup>3</sup>	1 month	Atomic absorption spectrometry (AAS), X-ray fluorescence or Inductively coupled plasma (ICP)
Coffee dust	200 µg Nm <sup>-3</sup>	15 mg/m <sup>3</sup>	24 hr	Respirable particulate matter sampler-X-ray techniques
Cotton fibres	200 µgNm <sup>-3</sup>	15 mg/m <sup>3</sup>	24 hr	Respirable particulate matter sampler-X-ray techniques
Copper dust	1.0 µgNm <sup>-3</sup>	0.5 mg/Nm <sup>3</sup>	1 month	Atomic absorption spectrometry (AAS), or Inductively coupled plasma (ICP)
Electrode manufacture emissions	150 µgNm <sup>-3</sup>	20 mg/Nm <sup>3</sup>	24 hr	Potentiometer, Coulometer or polarography
Hydrogen Sulphide	(15 mg/m <sup>3</sup> )	15 mg/Nm <sup>3</sup>	24hr	Chromatographic Analysis
Lime	200 µgNm <sup>-3</sup>	15 mg/m <sup>3</sup>	24 hr	Gravimetric analysis or

				X-ray techniques
Ozone	120 $\mu\text{g}/\text{m}^3$ 180 $\mu\text{g}/\text{m}^3$	120 $\mu\text{g}/\text{m}^3$ 120 $\mu\text{g}/\text{m}^3$	8 hr 8 hr	Ion chromatography using UV-VIS detector or conductivity detector
Phosphates	200 $\mu\text{g}/\text{Nm}^{-3}$	50 $\text{mg}/\text{Nm}^3$	24 hr	ion chromatography or UV spectroscopy
Silica	200 $\mu\text{g}/\text{Nm}^{-3}$	0.05 $\text{mg}/\text{m}^3$	24 hr	X-ray diffraction (XRD)
Environmental tobacco smoke (ETS)	0.1 $\mu\text{g}/\text{m}^3$	0.0 $\mu\text{g}/\text{m}^3$	Not to exceed 5 min. in any one hour	HPLC methods nicotine in air, surface, and dust samples as a marker for ETS exposure
Soot	500 $\mu\text{g}/\text{Nm}^{-3}$		24 hr	-Visual Estimation Technique (VAE) -Gravimetric method -Counting technique
Synthetic fibres	0.01 fibres $\text{ml}^{-1}$		24 hr	Phase Contrast Microscopy (PCM)
Tea dust	200 $\mu\text{g}/\text{Nm}^{-3}$		24 hr	Respirable particulate matter sampler-X-ray techniques
Tobacco dust	200 $\mu\text{g}/\text{Nm}^{-3}$		24 hr	Respirable particulate matter sampler-X-ray techniques
Particulate matter $\text{PM}_{10}$	100 $\mu\text{g}/\text{m}^{-3}$ 60 $\mu\text{g}/\text{m}^{-3}$	100 $\mu\text{g}/\text{m}^{-3}$ 60 $\mu\text{g}/\text{m}^{-3}$	24 hr 1 year	-x-ray analysis -Tapered Element Oscillating Microbalance (TEOM) - Gravimetric
Particulate matter $\text{PM}_{2.5}$	60 $\mu\text{g}/\text{m}^{-3}$ 40 $\mu\text{g}/\text{m}^{-3}$	60 $\mu\text{g}/\text{m}^{-3}$ 40 $\mu\text{g}/\text{m}^{-3}$	24 hr 1 year	=Gravimetric -x-ray analysis -Tapered Element Oscillating Microbalance (TEOM)
Wood dust	1 $\text{mg}/\text{Nm}^{-3}$	20 $\text{mg}/\text{Nm}^3$	24 hr	Respirable particulate matter sampler-X-ray techniques
VOCs	6 $\text{mg}/\text{Nm}^{-3}$	20 $\text{mg}/\text{Nm}^3$	24 hr	Chromatography (GC/HPLC)



## B. PERMISSIBLE EMISSION LIMITS FOR HYDROCARBONS

Analytical Method: HPLC, GC-(FID, NPD, MS)

CHEMICAL NAME	CAS	TWA		STEL	Remarks	
		ppm	mg m <sup>-3</sup>	mg m <sup>-3</sup>		
1,1-Dichloroethane	75-34-3	200	810	250	1010	
1,1-Dichloro-1-nitroethane	594-72-9	2	12	10	60	
1,1-Difluoromethane (F152a)		1000	4950			
1,1-Dimethylhydrazine	57-14-7	0.01	0.015			carcinogen
1,2-Dichloroethylene	540-59-0	200	790	250	1000	
1,1,1-Trichloroethane	71-55-6	350	1900	450	2450	
1,1,2-Trichloroethane	79-00-5	10	45	20	90	carcinogen
1,1,1,2-Tetrachloroethane	630-20-6	1	7			Handle
1,1,2,2-Tetrachloroethane	79-34-5	1	7			carcinogen
1,1,1,2-Tetrachlorodifluoroethane		500	4170			
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.001				carcinogen
1,2-Dibromoethane	106-93-4					PIC
1,2,3-Trichloronaphthalene	1321-65-9		5		10	
1,2,3-Trichloropropane	96-18-4	10	60			
1,2,3-Trimethylbenzene	526-73-8	25	125	35	170	
1,2,4-Trimethylbenzene	95-63-6	25	125	35	170	
1,3,5-Trimethylbenzene	108-67-8	25	125	35	170	
1,3-Dichloro-5,5-dimethylhydantoin	118-52-5	0.2	0.4			
1,3-Dichloropropene	542-75-6	1	5	10	50	carcinogen
1,4-Benzoquinone	106-51-4	0.1		0.3		
1,4-Diamino-2-nitrobenzene	5307-14-2					
1,4-Diaminobenzene			0.1			
1,4-Dichloro-2-butene	110-57-6	0.005				
1,4-Dioxane	123-9-1	25		100		
1-Chloro-1-nitropropane	600-25-9	2	10			
2-isopropoxyethanol	109-59-1	25	105	75	320	
2,5-Diaminotoluene	615-50-					

sulphate	9					
2,6-Di-tert-butyl-p-cresol			10		20	
2-Aminopyridine	504-29-0	0.5	2	2	8	
2-Butoxyethyl acetate	112-07-2	5	33			
2-Chloro-6-trichloromethylpyridine			10 (total) 5 (resp.)			
2-N-Dibutylaminoethanol	102-81-8	2	14			
2-Diethylaminoethanol	100-37-8	10	50			
2-Hydroxypropylacrylate	999-61-1	0.5	3			
4-tert-Butylcatechol	98-29-3		5			
4-Methoxyphenol	150-76-5		5			
4,4'-Methylene bis(2-chloroaniline)	101-14-4	0.02	0.22			carcinogen
4,4'-Methylene dianiline	101-77-9	0.1	0.8	0.5	4	carcinogen
4,4'-Thiobis(6-tertbutyl-m-cresol)	96-69-5		10 (total)			
5-Methyl-3-heptanone	541-85-5	25	130			
Acetaldehyde	75-07-0	150	180		270	
Acetic acid	64-19-7	10		15		
Acetic anhydride	108-24-7	5				
Acetone	67-64-1	500				
Acetone cyanohydrin	75-86-5	2				
Acetonitrile	75-05-8	40	70	60	105	
Acetophenone	98-86-2	10				
Acetyl chloride	75-36-5		3			
Acetylene	74-86-2	2500	2662			
Acetylene tetrabromide	79-27-6	1	15	1.5	20	
Acetyl salicylic acid (ASA)	50-78-2		5			
Acrolein	107-02-8	0.1		0.3		
Acrylamide	79-06-1	0.03	0.06			carcinogen
Acrylic acid	79-10-7	2	6			
Acrylonitrile	107-13-1	2	4.5			
Adipic acid	124-04-9		5			
Adiponitrile	111-69-3	2				
Allyl alcohol	107-18-6	2		4		

Allyl bromide	106-95-6					
Allyl chloride	107-05-1	1	3	2	6	
Allyl glycidyl ether (AGE)	106-92-3	5	22	10	44	
Allyl isothiocyanate	57-06-7	1				
Allyl propyl disulphide	2179-59-1	3	12	3	18	
Amitrole	61-82-5		0.2			
Ammonia	7664-41-7	25	18	35	27	
Ammonium chloride fumes	12125-02-9		10		20	
Ammonium sulphamate	7773-06-0		10 (total) 5 (resp.)			
n-Amyl acetate	628-63-7	100	525			
sec-Amyl acetate	626-38-0	125	670	150	800	
Aniline and homologues	62-53-3	2		5		
o-Anisidine	90-04-0	0.1	0.5			carcinogen
p-Anisidine	104-94-9	0.1	0.5			carcinogen
Azinphos-methyl	86-50-0		0.2		0.6	
Benomyl	17804-35-2	0.8 (total) 1.3 (resp)	10 (total) 5 (resp)			
Benzaldehyde	100-52-7	2				
Benzene	71-43-2	5	16			
Benzenethiol	108-98-5			0.1	0.5	carcinogen
Benzidine	92-87-5		0.01			
Benzoyl chloride	98-88-4	1	5			
Benzoyl peroxide	94-36-0		5			
Benzonitrile	100-47-0					
Benzophenone	119-61-9		5			
Benzyl acetate	140-11-4	10				
Benzyl alcohol	100-51-6	10				
Benzyl chloride	100-44-7			1	5	
Benzylamine	100-46-9					
Bromoethane	74-96-4	5	22			

Bromoform	75-25-2	0.5	5			
Bromomethane	74-83-9	5	20			
Buta-1,3-diene	106-99-0	1000	2200			
n-butylalcohol	71-36-3	50	150			
Butan-2-ol (sec)	78-92-2	100	300	150	450	
butyl alcohol	75-65-0	100	300	150	450	
Butane	106-97-8	800	1900			
Butan-2-one (MEK)	78-93-3	200	590	300	885	
Butoxyethanol	111-76-2	25	120			
n-Butyl acetate	123-86-4	150	710	200	950	
Butyl acetate (sec)	105-46-4	200	950			
Butyl acetate (tert)	540-88-5	200	950			
Butyl acrylate	141-32-2	10	55			
Butyl amine	109-73-9	5	15			
sec-Butylamine	13592-84-6					
Butyl chromate (tert) - as CrO6	1189-85-1		0.001			carcinogen
n-Butyl glycidyl ether (BGE)	2426-08-6	25	135			
n-Butyl lactate	138-22-7	5	25			
n-Butyl mercaptan (Butane thiol)	109-79-5	0.5	1.5			
tert-Butyl peroxide	110-05-4	0.5	5			
o-sec-Butylphenol	89-72-5	5	30			
p-tert-Butyltoluene	98-51-1	10	60	20	120	
Butyric acid	107-92-6		15			
Butyric anhydride	106-31-0		5			
n-Butryonitrile	109-74-0	8	22			
Camphene	5794-03-6		2			
Camphor (synthetic)	76-22-2		2			
Caprolactam (dust & aerosol)	105-60-2		1		3	
Caprolactam (vapour)		4		8		
Captan	133-06-2		5			
Caravey						
Carbon blacks as (PAHs)			0.1			

Chloral and chloral hydrate			5			
Chlorine	7782-50-5	1	3	3	9	
Chlorine dioxide	10049-04-4	0.1	0.3	0.3	0.9	
Chlorine trifluoride	7790-91-2	0.1	0.4			
Chloroacetaldehyde	107-20-0	1	3			
Chloroacetic acid	79-11-8		1			
Chloroacetophenone (tear gas)	532-27-4	0.05	0.3			
Chloroacetyl chloride	79-04-9	0.05	0.2	0.15	0.7	
Chlorobenzene	108-90-7	10	50			
o-Chlorobenzylidene	2698-41-1	0.05	0.4			
Chlorobromomethane	74-97-5	200	1050			
Chlorodifluoromethane (F-22)	75-45-6	1000	3500	1250	4375	
Chlorodiphenyl (42% chlorine)	53449-21-9		1			carcinogen
Chlorodiphenyl (54% chlorine)	11097-69-1		0.5			
Chloroethane	75-00-3	100	260			carcinogen
Chloroform	67-66-3	10	50	50	225	carcinogen
bis-Chloromethyl ether	542-88-1	0.001	0.005			carcinogen
Chloromethyl ethyl ether	107-30-2					carcinogen
Chloropentafluoroethane (F115)	76-15-3	1000	6320			
Chloropicrin	76-06-2	0.1	0.7	0.3	2	
o-Chloroprene	126-99-8	10	45	1	3.6	carcinogen
o-Chlorostyrene	2039-87-4	50	285	75	435	
o-Chlorotoluene	95-49-8	50	250	75	375	
Chlorotrifluoroethylene (CTFE)	79-38-9					
Coumarin	91-64-5		10 (total) 5 (resp)			
o-Cresol	95-48-7	2.3	10			
m-Cresol	108-39-4	2.3	10			
p-Cresol	106-44-5	2.3	10			
Crocidolite	1 2001-28-4					PIC
Crotonaldehyde	4170-30-3	2	6	6	18	

Crufomate	299-86-5		5		20	
Cumene	98-82-8	50	245	75	365	
Cyanamide	420-04-2		2			
Cyanide as (CN)			5			
Cyanogen	460-19-5	10	20			
Cyanogen chloride	506-77-4	0.3	0.6			
Cyclohexane	110-82-7	300	1050	375	1300	
Cyclohexanethiol	1569-69-3			0.5	2.4	
Cyclohexanol	108-93-0	50	200			
Cyclohexene	110-83-8	300	1015			
Cyclohexanone	108-94-1	25	100			
Cyclohexylamine	108-91-8	10	40			
Cyclonite	121-82-4		1.5		3	
Cyclopentadiene	542-92-7	75	200	150	400	
Cyclopentane	287-92-3	600	1720	900	2580	
Cyclopropane	75-19-4		400			
Cyhexatin (as SN)	13121-70-5		5		10	
Cyluthrin			0.1			
Cysteine	3374-22-9					
Dalapon		1	6			
Decaborane	17702-41-9	0.05	0.3	0.15	0.9	
Decalin	493-01-6		100			
Decane-1-thiol	143-10-2			0.5	3.6	
Demeton	8065-48-3	0.01	0.11			
Demeton-S-methyl			0.5		1.5	
Diacetone alcohol	123-42-2	50	240	75	960	
Di-allate						
Diallylamine	124-02-7	1				
o-Dianisidine	119-90-4					carcinogen
Diazomethane	334-88-	0.2	0.4			

	3					
Diborane	19287-45-7	0.1	0.1			
Dibutylamine	111-92-2	5				
Dibutylamine phosphate	107-66-4	1	5	2	10	
Dibutyl phosphite	1809-19-4	1	8.6	2	17	
Dibutyl phenyl phosphate	2528-36-1	0.3	3.5			
Dibutyl phthalate (dsp)	84-74-2		5		10	
Dichloroacetic acid	79-43-6				4	
Dichloroacetylene	7572-29-4	0.1	0.4			carcinogen
o-Dichlorobenzene	95-50-1	50	300			
p-Dichlorobenzene	106-46-7	75	450	110	675	carcinogen
Dichloroethyl ether	111-44-4	5	30	10	60	carcinogen
Dichlorofluoromethane (F12)	75-71-8	1000	4950	1250	6200	
Dichloromethane	75-09-2	50	174			carcinogen
Dichlorofluoromethane (F21)	75-43-4	10	40			
Dichloropropane	78-87-5		10			
Dichloropropene	542-75-6	1	5	10	50	
Dichlorotetrafluoroethane (F-114)	76-14-2	1000	7000			
Dicrotophos	141-66-2		0.25			
Dicyclopentadiene	77-73-6	5	30			
Dicyclopentadienyl iron (Ferrocene)	102-54-5		10 (total) 5 (resp)			
Diethanolamine	111-42-2	3	15			
Diethylamine	109-89-7	10	30	25	75	
Diethylenetriamine	111-40-0	1	4			
Diethylene glycol (vapour and aerosol)	111-46-6	50				
Diethylene glycol		10				
Diethylketone (DEK)	96-22-0	200	705			
Diethylphthalate (DEP)	84-66-2		5		10	
Difluorodibromomethane (F12B2)	75-61-6	100	860	150	1290	
Diglycyl ether (DGE)	2238-07-5	0.1	0.5			
Diisobutylene	107-39-	600				

	1					
Diisobutyl ketone (DIBK)	108-83-8	25	150			
Diisopropylamine (DIPA)	108-18-9	5	20			
Dimethyl acetamide (DMAC)	127-19-5	10	35	15	50	
Dimethylamine	124-40-3	10	18			
Dimethylaminopropionitrile	1738-25-6					min. exposure
N,N-Dimethylaniline	121-69-7	5	25	10	50	
Dimethyl carbomoyl chloride	79-44-7					carcinogen
Diethyl phosphate	300-76-5		3		6	
Dimethyl ether	115-10-6	500				
Dimethyl formamide	68-12-2	10	30	20	60	
Dimethylphthalate	131-11-3		5		10	
Dimethylsulphate	77-78-1	0.1	0.5			carcinogen
Diminozide						
Dinitolmide	148-01-6		5		10	
Dinitrobenzene (o-, m-, p-isomers)	o-528-29-0	0.15	1	0.5	3	
Dinitrobenzene	m-99-65-0					
Dinitrobenzene (o-, m-, p-isomers)	p-100-25-4					
Dinitro-o-cresol	534-52-1		0.2		0.6	
Dinitrophenols			1			
Dinitrotoluene	121-14-2		1.5			carcinogen
Di-sec octyl phthalate	117-81-7		5		10	
Diphenyl	92-52-4	0.2	1			
Diphenylamine	122-39-4		5		10	
Dipropylene glycol methyl ether	34590-94-8	100	600	150	900	
Dipropyl ketone	123-19-3	50	235			
Disulfiram	97-77-8		2		5	
Disulfoton	298-04-4		0.1		0.3	
Dodecane-1-thiol	112-55-0			0.5	4	
Enflurane	13838-					



	16-9					
Epichlorohydrin	106-89-8	2	7.6			carcinogen
Ethane	74-84-0					
Ethanol	46-17-5	100	1900			
Ethanolamine	141-43-5	3	9	6	15	
Ethion	563-12-2		0.4			
Ethoxyethan-2-ol	110-80-5	5	18			
Ethoxyethylacetate	111-15-9	5	27			
Ethyl acetate	141-78-6	400	1400			
Ethyl acrylate	140-88-5	5	20	25	100	
Ethyl amine	75-04-7	10	18			
Ethyl bromoethane		5	22			
Ethyl butyl ketone	106-35-4	50	230	75	345	
Ethyl chloride	75-00-3	1000	2600	1250	3250	use cautiously
Ethyl ether	60-29-7	400	1200	500	1500	
Ethylbenzene	100-41-4	100	435	125	545	
Ethyl-p-nitrophenylbenzene thiono- phosphonate (EPN)	2104-64-5		0.5		2	
Ethylene chlorohydrin	107-07-3	1	3			
Ethylene diamine	107-15-3	10	25			
Ethylene dibromide	106-93-4	20				carcinogen
Ethylene dichloride	107-06-2	10	40			carcinogen
Ethylene glycol	107-21-1		60		120	
Ethylene glycol dinitrate	628-96-6	0.02	0.1	0.05	1	
Ethylene imine	151-56-4	0.5	1			carcinogen
Ethylene oxide	75-21-8	1	2	5	10	
Ethylene thiourea	96-45-7					carcinogen
Ethyl formate	109-94-4	100	300	150	450	
Ethyledene benzene		5	25			
Ethyl mercaptan	75-08-1	0.5	1.3	2	3	
N-Ethylmorpholine	100-74-3	5	24	20	95	
Ethyl silicate	78-10-4	10	85	30	255	
Fenitrothion	122-14-5		1			

Fensulfotion	115-90-2		0.1			
Ferbam	14484-64-1		10		15	
Ferrovandium dust	12604-58-9		1		3	
Fibrous glass dust			15 (tot) 5 (resp)			
Flufenoxuron						
Flumethrine						
Fluoroxene	406-90-6	2	10.3			
Formaldehyde	50-00-0	1	1.2	2	2.5	
Paraformaldehyde	30525-89-4	1		2		
Formalin (aqueous formaldehyde)		1		2		
Formamide	75-12-7	10	15			
Formic acid	64-18-6	5	9	10	19	
Fosetyl-Al						
Freon-11 (Fluorotrichloromethane)	75-69-4	1000	5600			
Fufural	98-01-1	5	20	15	60	
Fufuryl alcohol	98-00-0	10	40	15	60	
Gasoline	8006-61-9	300	900	500	1500	
Geraniol	106-24-1					
Germanium tetrahydride	7782-65-2	0.2	0.6	0.6	1.8	
Gluturaldehyde	111-30-8	0.2	0.8			
Glycerine mist, glycerol	56-81-5		10 (tot) 5 (resp)			
Glycidol	556-52-5	25	75	100	300	
Glyconitrile	107-16-4			2	5	
Hafnium	7440-58-6		0.5		0.15	
Halothane	151-67-7	0.5	4	2	16	
n-Heptane	142-82-5	400	1600	500	2000	
Heptane-1-thiol	1639-09-4			0.5	2.7	
n-Hexane	110-54-3	50	180	62.5	225	
Hexane isomers (excl. n-hexane)		500	1800	1000	3600	
Hexachlorobutadiene	76-68-3	0.02	0.24			warning unknown

Hexachlorocyclopentadiene	77-47-4	0.01	0.1	0.03	0.3	Poor warning
Hexachloroethane	67-72-1	1	10			carcinogen
Hexachloronaphthalene	1335-87-1		0.2		0.6	
Hexadecane-1-thiol	2917-26-2			0.5	5.3	
Hexafluoroacetone	684-16-2	0.1	0.7	0.3	2	
Hexamethylene diisocyanate	822-06-0	0.005	0.035			
Hexamethylphosphoramide	680-31-9					carcinogen
n-Hexanethiol	111-31-9			0.5	2.7	
Hexan-2-one (MBK)	591-78-6	5	20			
Hexone	108-10-1	50	205	75	300	
sec-Hexylacetate	142-92-7	500	300			
Hexylene glycol	107-41-5	25	125			
Hydrazine	302-01-2	0.01	0.013			carcinogen
Hydrogenated terphenyls	92-94-4	0.5	5			
Hydrogen bromide	10035-10-6	3	10			
Hydroquinone	123-31-9		2		4	
Indene	95-13-6	10	45	15	70	
Indium and compounds	7440-74-6		0.1		0.3	
Iodine	7553-56-2	0.1	1			
Iodoform	75-47-8	0.6	10	1	20	
Isoamyl acetate	123-92-2	100	525	125	655	
Isoamyl alcohol (primary)	123-51-3	100	360	125	450	
Isoamyl alcohol (secondary)	528-75-4	100	360	125	450	
Isobutane	75-28-5	800	1800			
Isobutyl acetate	110-19-0	150	700	187	875	
Isobutyl alcohol	78-83-1	50	150	75	225	
Isobutyronitrile	78-82-0	8	22			
Isocyanates (as NCO)			0.02		0.07	
Isooctyl alcohol	26952-23-6	50	270			
Isophorone	78-59-1	5	25			
Isophorone diisocyanate	4098-71-6	0.005	0.045	0.02	0.18	

Isopropyl acetate	108-21-4	250	1040	310	1290	
Isopropyl alcohol	67-63-0	400	980	500	1225	
Isopropylamine	75-31-0	5	12	10	24	
N-isopropylaniline	768-52-5	2	10	10	25	
Isopropyl ether	108-20-3	250	1050	310	1320	
Isopropyl glycidyl ether (IGE)	4016-14-2	50	240	75	360	
Isovaleric acid	503-74-2					
Kerosene	8008-20-6		200			
Kepone	143-50-0		0.001			carcinogen
Ketene	463-51-4	0.5	0.9	1.5	3	
Linalool	78-70-6					
Linalyl acetate	115-95-7					
Lindane (see BHC gamma)	58-89-9					PIC
Lithium fluoride	7789-24-4		2.5			
Lithium hydride	7580-67-8		0.025			
Lithium hydroxide	1310-66-3		1			
Lithium oxide	12057-24-8		1			
Loxynil						
LPG		1000	1800	1250	2250	
Malonitrile	109-77-3	3	8			
Mercury (organo-alkyl compounds)			0.01	0.04		PIC
Mercury (aryl compounds)			0.1			
Mesityl oxide	141-79-7	15	60	25	100	
Methacrylic acid	79-41-4	20	70			
Methanol	67-56-1	200	260	250	325	
Methomyl	16752-77-5		2.5			PIC
Methoxyflurane		2	13.5			
Methyl acetate	79-20-9	200	610	250	760	
Methyl acrylate	96-33-3	10	35			
Methyl acrylonitrile	126-98-7	1	3	2	6	
Methyl anthranilate	134-20-3					
Methyl bromide	74-83-9	5	20	15	60	carcinogen/PIC

Methyl acetylene-propanediene mixture		1000	1800	1250	2250	
Methyl cellosolve	109-86-4	5	16	7	24	
Methyl cellosolve acetate	110-49-6	5	16	7	24	
Methyl chloroform	71-55-6	350	1900	450	2450	
Methyl chloride	74-87-3	50	105	100	205	carcinogen
Methyl-2-cyanoacrylate		2	9	4	18	
Methylcyclohexane	108-87-2	400	1600	500	2000	
Methylcyclohexanol	590-67-0	50	235	75	350	
o-Methylcyclohexanone	583-60-8	50	230	75	345	
tricarbonyl	12108-13-3		0.2		0.6	
Methyl demeton	8022-00-2		0.5		1.5	
Methylene bis(4-cyclohexylisocyanate)		0.005	0.05			
Methylene bisphenylisocyanate	101-68-8	0.005	0.05	0.02	0.2	
Methyl ethylketone peroxide	1338-23-4	0.2	1.5			
Methyl formate	107-31-3	100	250	150	273	
Methyl hydrazine	60-34-4	0.2	0.35			carcinogen
Methyl iodide	74-88-4	2	12	5	30	carcinogen
Methyl isoamyl ketone	110-12-3	50	240			
Methyl isobutyl carbinol	105-30-6	25	100	40	165	
Methyl isopropyl ketone	563-80-4	200	705			
o-Methyl styrene	98-83-9	50	240	100	485	
Methyl mercaptan	74-93-1	0.5	1			
Methyl methacrylate	80-62-6	100	410	125	510	
Methyl silicate	681-84-5	1	6	5	30	
Methylal	109-87-5	1000	3100	1250	3875	
Methylamine	74-89-5	10	13			
Methyl n-amyl ketone	110-43-0	50	235	100	465	
Metolachlor			5 (resp)			
Metsulfuron-methyl						
Mica (containing less than 1% quartz)	12001-26-2		3 (resp.)			
Monoethanolamine	141-43-5	3	6	6	15	

Monolinuron						
Monomethyl aniline	100-61-8		0.5		2	
Morpholine	110-91-8	20	70	30	105	
N,N-dimethyl-para-phenylenediamine	99-98-9					
N-Nitrosodiethanolamine	1116-54-7					
N-Phenyl-para-phenylenediamine	01-54-2					
Naled	300-76-5		3		6	
Napropamide						
Naptha (coal tar)	8030-30-6	100	400			
Naphthalene	91-20-3	10	50	15	75	
Naphthalene diisocyanate	3173-72-6	0.05	0.04	0.02	0.17	
o-Naphthylamine	134-32-7		0.01			carcinogen
o-Naphthylamine	91-59-8		0.01			carcinogen
Nicotine	54-11-5		0.5		1.5	
Nimrod						
Nitrapyrin	1929-82-4		10		20	
p-Nitroaniline	100-01-6		3			
Nitrobenzene	98-95-3	1	5	2	10	
p-Nitrochlorobenzene	100-00-5		1		2	carcinogen
Nitroethane	79-24-3	100	310	150	465	
Nitroglycerine	55-63-0	0.05	0.5			
Nitromethane	75-52-5	100	250	150	375	
1-Nitropropane	108-03-2	25	90			
2-Nitropropane	79-46-9	25	90	35	135	
N-Nitrosodimethylamine	62-75-9					carcinogen
o-Nitrotoluene	88-72-2	2	11			
m-Nitrotoluene	99-08-1	2	11			
p-Nitrotoluene	99-99-0	2	11			
Nitrotrichloromethane	76-06-2	0.1	0.7	0.3	2	
Nonane	111-84-2	200	1050	250	1300	
Nonan-2-one	821-55-6					
Octachloronaphthalene	2234-13-1		0.1		0.3	
n-Octane	111-65-9	300	1450	375	1800	
Octane-1-thiol	111-88-6			0.5	6	

Octan-1-ol	111-87-5	50				
Octaldehyde (Octanol)	124-13-0					
Oil mist	8012-95-1		5		10	
Oleyl alcohol	143-28-2					
o-phenyl phenol	90-43-7					
m-phenyl phenol	500-51-8					
p-phenyl phenol	92-69-3					
Osmium tetroxide	20816-12-0	0.0002	0.002	6E-04	0.06	
Oxadiazon						
Oxalic acid	144-62-7		1		2	
p-phenylenediamine	106-50-3		0.1			o-isomer
o-phenylenediamine	95-54-5					carcinogen
m-phenylenediamine	108-45-2					
Paraffin wax fume	8002-74-2		2		6	
PAHs (cyclohexane soluble)			0.1			carcinogen
PAHs (benzene soluble)			0.2			carcinogen
PCBs			0.5		1	PIC
Pendimethalin						
Pentaborane	19624-22-7	0.05	0.01	0.15	0.03	
Pentachloroacetone	1768-31-6		0.5			
Pentachloroethane	76-01-7		30			
Pentachloroethylene		25				
Pentachloronaphthalene	1321-64-8		0.5		2	
Pentachloronitrobenzene	82-68-8		0.5			
Pentaerythritol	115-77-5		10 (tot) 5 (resp)			
n-Pentane	109-66-0	600	1800	750	2250	
Pentane-2,4-dione	600-14-6					
Pentan-2-one	107-87-9	200	700	250	880	
Pentanethiol (pentan-1-thiol)	110-66-7			0.5	2.1	
Perchloroethane	64475-85-0					
Perchloroethylene	127-18-4	50	340	150	1020	carcinogen

Perchloromethyl mercaptan	594-42-3	0.1	0.8			
Perchloryl fluoride	7616-94-6	3	14	6	28	
Perlite			10 (tot) 5 (resp)			
Peroxyacetic acid (peracetic acid)	79-21-0					
Petrol (gasoline)		300				
Petroleum ether	8032-32-4		350		1800	
Petroleum distillates		400				
Petroleum spirits	64475-85-0	300			350	
Phenacetin	62-44-2					
Phenol	108-95-2	5	19	10	38	
Phenothiazine	92-84-2		5		10	
p-Phenyline diamine	106-50-3		0.1			
Phenyl ether (vapour)	101-84-8	1	9	2	14	
Phenyl ether-biphenyl mixture	8004-13-5	1	7			
Phenyl glycidyl ether (PGE)	122-60-1	1	6			
Phenyl hydrazine	100-63-0	0.1	0.4	10		carcinogen
Phenyl mercaptan	108-98-5	0.5	2.5			
Phenyl phosphine	638-21-1	0.05	0.23			
Phorate	298-02-2		0.05		0.2	
Phosalone	504-20-1					
Phosgene	75-44-5	0.1	0.4	0.2	0.8	
Phosphine	7803-51-2	0.3	0.4	1	1.4	
Phosphoric anhydride (acid)	7664-38-2		1		3	
Phthalic anhydride	85-44-9	1	6	4	24	
m-Phthalodinitrile	626-17-5		5			
Picloram	1918-02-1		10 (tot)			
Picric acid	88-89-1		0.1		0.3	
Pindone	83-26-1		0.1		0.3	
Piperazine dihydrochloride	142-64-3		5			
Pinene	7785-70-8					



Polyvinylchloride	9002-86-2		10 (tot) 5 (resp)			
Primiphos-ethyl		1000	1650	1250	2040	
Propane	74-98-6	1000	1800			
Propane-1-1- thiol	107-03-9			0.5	16	
Propene (Propylene)	115-07-1					Asyphxiant
Propargyl alcohol	107-19-7	1	2	3	6	
Propanol-1-01	71-23-8	200	500	250	625	
Propanol-2-ol	67-63-0	400		500		
o-Propiolactone	57-57-8	0.5	1.5	1	3	carcinogen
Propionic acid (propanoic acid)	79-09-4	10	30	15	45	
Propionitrile	107-12-0	6	14			
Propoxur	114-26-1		0.5			
n-Propyl acetate	109-60-4	200	840	250	1050	
Propylene dichloride	78-87-5	75	350	110	510	carcinogen
Propylene glycol dinitrate (PGDN)	6423-43-4	0.02	0.1	0.05	0.3	
Propylene glycol (vapour & aerosol)	57-55-6	50	10			
Propylene glycol monomethyl ether	107-98-2	100	360	150	540	
Propylene imine	75-55-8	2	5			carcinogen
Propylene oxide	75-56-9	20	50			carcinogen
n-Propyl nitrate	627-13-4	25	105	40	170	
Propyne	74-99-7	1000	1650	1250	2040	
Pyridine	110-86-1	5	15	10	30	
Quinone	106-51-4	0.1	0.4	0.3	1	
Rubber solvent		400	1600			
Sesone	136-78-7		10		20	
Silica	7631-86-9					
Silica (Crystalline quartz)	14808-60-7		0.3 (tot) 0.1 (resp)			
Silica (Cristobalite)	14464-46-1		0.15 (tot) 0.05 (resp)			
Silica(Tridymite)	15468-		0.15			

	32-3		(tot) 0.05 (resp)			
Silica (Tripoli)	1317-95-9		0.3 (tot) 0.1 (resp)			
Silica(Fused silica)	60676-86-0		0.3 (tot) 0.1 (resp)			
Silica (Amorphous silca)	7631-86-9		6 (tot)			
Silica (Silica gel)	7631-86-9		10 (tot)			
Silica (Fumed silca)	7631-86-9		2 (resp)			
Silica (Diatomaceous earth)	60676-86-0		10 (tot) 3 (resp)			
Silica (Precipitated silica)	7699-41-4		10 (tot)			
Sodium azide	26628-22-8	0.1	0.3			
Spent oil						
Spores (see biological agents)						
Sprol						
Starch dust	9005-25-9		10 (tot) 5 (resp)			
Stearates			10			
Stibine	7803-52-3	0.1	0.5	0.3	1.5	
Stimufol						
Stoddard solvent	8052-41-3	100	525	200	1050	
Strychnine	57-24-9		0.15		0.45	
Styrene (monomer)	100-42-5	50	215	100	425	
Subtilisins (proteolytic enzymes)	1395-21-7					
Succinonitrile	110-61-2	6	20			
Sucrose	57-50-1		10 (tot) 5 (resp)			
Sulfanilamide	63-74-1					
Tetrachloroethylene	127-18-4	1	7			
Tephenyls	26140-60-3					
o-Tephenyl	84-15-1	0.5				
m-Tephenyl	92-06-8					
p-Tephenyl	92-94-4	0.5				

Terphenyls	92-94-4	0.5	5			
Tetrachloronaphthalene	1335-88-2		2		4	
Tetranitromethane	509-14-8	1	8			
Trinitrotoluene (TNT )	118-96-7		0.5 (resp)		3	
o-Tolidine	119-93-7				0.02	carcinogen
Toluene	108-88-3	100	375	150	500	
m-Toluidine	108-44-1	2	9			
o-Toluidine	95-53-4	2	9			
p-Toluidine	106-49-0	2	9			
Toluene 2,4-diamine	95-80-7		2			
Toluene sulphonyl chloride	98-59-9		5			
Toluene di-isocyanate (TDI)		0.005				
Toluene -2,4- di-isocyanate	0584-84-9	0.005		0.02		
Toluene -2,6-di-isocyanate	91-08-7	0.005				
Toluidine (all isomers)	95-53-4	2	9			
Tributyl phosphate	126-73-8	0.2	2.5	0.4	4	
Trichloroacetic acid	76-03-9	1	6.8			
Trichlorofluoromethane (F-11)	75-69-4	1000	5600			
Trichloromethylene	79-01-6					
Trichlorotrifluoroethane (F-113)	76-13-1	1000	7600	1250	9500	
Trichloroethylene	79-01-6	50	270			carcinogen
Trichloropronaphthalene	1321-65-9		5			
Triclopyr						
Trichloropropane	96-18-4	10	60			
Triethylamine	121-44-8	10	40	15	60	
Trifluorobromomethane (F1381)	75-63-8	1000	6100	1200	7300	
Trimellitic anhydride	552-30-7	0.005	0.04			extremely toxic
Trimethylamine(TMA)	75-50-3	10	24	15	36	suspected carcinogen
Trimethylphosphate	512-56-1					
Trimethyl phosphite	121-45-9	2	10	5	25	
Triorthocresylphosphate	78-30-8		0.1			
Triphenylamine	603-34-9		5			

Triphenylphosphate (TPP)	115-86-6		3		6	
Turpentine	8006-64-2	100	560	150	840	
Ultramarines						
Undecane-1-thiol	5332-52-5			0.5	3.9	
Urea	57-13-6		10			
Urethane fumes	51-79-6		5		10	suspected carcinogen
n-Valeraldehyde	110-62-3	50	175			
Vegetable oil mist	68956-68-3		10 (tot) 5 (resp)			
Vinyl acetate	108-05-4	10	35	20	70	
Vinyl bromide	593-60-2	5	22(20)			carcinogen
Vinyl chloride	75-01-4	1	2	5	10	
Vinyl cyclohexene dioxide	106-87-6	10	60			carcinogen
Vinyl fluoride	75-0205	1	2	5	10	
Vinyl toluene	25013-15-4	50	240	100	485	
Vinylidene chloride	75-35-4	1	4	5	20	carcinogen
Vinylidene fluoride	75-38-7	1		5		
Warfarin	81-81-2		0.1		0.3	
Xylene (o-, m-, p-isomers)	1330-20-7	100	435	150	655	
m-xylene	108-38-3	100		150		
o-xylene	95-47-6	100		150		
p-xylene	106-42-3	100		150		
m-xylene a,a'- diamine	1477-55-0	0.1				
m-xylene a,a'-di-isocyanate	3634-83-1	0.005				
Xylidine	1300-73-8	0.5	2.5			
2,4-xylidine	95-68-1	5	25			

### C. PERMISSIBLE EMISSION LIMITS FOR PESTICIDES

Analytical Method: HPLC, GC-(FID, NPD, MS)

CHEMICAL NAME	CAS		TWA		STEL	Remarks
		ppm	mg m <sup>-3</sup>	ppm	mg m <sup>-3</sup>	
2,4-D	94-75-7		10		50	
2,4,5-T (Tordon)	93-76-5		10			PIC
Acetoisopropylphenylcarbamate			2			
Aldrin	309-00-2		0.25		0.75	POP/PIC
Ambush			5		10	
Atrazine	1912-24-9		5			
BHC (Hexachlorohexane)	118-74-1		0.025			
BHC gamma HCH gammexane	58-89-9		0.5		1.5	
Camphechlor (see toxaphin)			0.5		1	POP
Captafol	01/06/25		0.1			carcinogen/PIC
Carbaryl	63-25-2		5		10	
Carbofuran	1563-66-2		0.1			PIC
Chlordane	57-74-9		0.5		2	POP /PIC
Chlorpyrifos	2921-88-2		0.2		0.6	
DDT	50-29-3		0.5		3	carcinogen/POP/PIC
Diazinon	333-41-5		0.1		0.3	
Dichlorvos (DDVP)	62-73-7	0.1	1	0.3	3	PIC
Dieldrin	60-57-1		0.25		0.75	carcinogen/POP/PIC
Dioxathion (Delnav)	78-34-2		0.2			
Diquat	85-00-7		0.5		1	
Diuron	330-54-1		10			
Divinyl benzene (DVB)	108-57-6	10	50			
Endosulfan	115-29-7		0.1			POP
Endrin	72-20-8		0.1		0.3	POP
Fenamiphos	22224-92-6		0.1			
Fenthion	55-38-9		0.1		0.3	
Fonofos	944-22-9		0.1			
Furadan 10G			0.1			

Furadan 5G			0.1			
Glyphosate	1071-83-6		16			
Heptachlor	76-44-6		0.5		2	POP/PIC
Malathion	121-75-5		10			
Maneb			0.5			
Methyl parathion	298-00-0		0.2		0.6	PIC
Methoxychlor	72-43-5		10 (Tot)			carcinogen
Metribuzin	21087-64-9		5			
Mevinphos (Phosdrin)	7786-34-7	0.0 1	0.1	0.03	0.3	
Mirex			5 (resp)			(POP)
Monocrotophos	6923-22-4		0.25			PIC
Paraquat	4685-14-7					POP
Paraquat dichloride (arammoxone)	1910-42-5		0.1 (resp)			
Paraquat dimethylsulphate	2074-50-2					
Parathion (thyphose)	56-38-2		0.1		0.3	
Pentachlorophenol	87-86-5		0.5		1.5	PIC
Pyrethrum	8003-34-7		5			
Rotenone	83-79-4		5		10	
Sulfotep (TEDP)	3689-24-5		0.2		0.6	
Temephos	3383-96-8		10 (tot) 5 (resp)			
Tetrachlorvinphos						
Tetrahydrofuran (THF)	109-99-9	200	590	250	735	
Toxaphene (chlorinated camphene)	8001-35-2		0.5			POP

## D. PERMISSIBLE EMISSION LIMITS FOR OTHER TRACE ELEMENTS

Analytical Method: Atomic absorption spectrometry (AAS), X-ray fluorescence or Inductive coupled plasma (ICP)

CHEMICAL NAME	CAS		TWA		STEL	Remarks
		ppm	mg m <sup>-3</sup>	ppm	mg m <sup>-3</sup>	
Aluminium chloride	7446-70-0		2			
Aluminium fumes	7429-90-5		5			
Aluminium oxide	1344-28-1		10 (total) 5 (resp.)			
Aluminium powder	7429-90-5		10 (total) 5 (resp.)			
Antimony fumes, dusts, mists	7440-36-0		0.5			
Antimony compounds	1327-33-9		0.5			
ANTU	86-88-4		0.3		0.9	
Arsine	7784-42-1	0.05				
Arsenic compounds (inorg.)	7440-38-2		0.01		0.002	
Arsenic compounds (org.) (as As)			0.5			
Arsenic trioxide	1327-53-3		0.01		0.02	
Asbestos fibres (amosite)		0.1				unit: fibres/ml
Asbestos fibres (chrysolite)	12001-29-5	1.0				unit: fibres/ml
Asbestos fibres (crocidolite)	12001-28-4	0.1				unit: fibres/ml
Asbestos fibres (other forms)		0.1				unit: fibres/ml
Asbestos fibres (any mixture)		0.1				unit: fibres/ml
Asphalt fumes	8052-42-4		5		10	carcinogen
Baggasse fibres			10 (tot)			
Barban			5 (resp)			
Barium soluble compounds	7440-39-3		0.5			
Barium Chromate	10294-40-3		0.1			
Barium sulphate	7727-43-7		10 (total)			

			5 (resp.)			
Bark dust (Hardwood)			1			
Bark dust (Soft wood)			5			
Beryllium and compounds(as Beryllium)	7440-41-7		0.002		0.005	carcinogen
Biological agents (bacteria & fungi)			10 <sup>6</sup> -10 <sup>8</sup>			unit: particles/m <sup>3</sup>
Bismuth telluride	1304-82-1		10			
selenium sulphide			5			
Bismuth telluride (undeped)			10 (total) 5 (resp)			
Borax anhydrous	1330-43-4		1			
Borax decahydrate	1303-96-4		5			
Borax pentahydrate	12179-04-3		1			
Boric acid	10043-35-3		10		20	
Boron oxide	1303-86-2		10		20	
Boron tribromide	10294-33-4	1	10	3	30	
Boron trifluoride	7637-07-2	1	2.8			
Bromacil (Uracil)	314-40-9	1	10	2	20	
Bromine	7726-95-6	0.1	0.7	0.3	2	
Bromine pentafluoride	7789-30-2	0.1	0.72			
Cadmium /dust (as Cd)	7440-43-9		0.005		0.01	carcinogen
Cadmium oxide fumes (as Cd)	1306-19-0		0.005		0.01	carcinogen
Calcium arsenate (as ar)	7778-44-1		0.002		0.01	carcinogen
Calcium carbonate	471-34-1		10 (total)			
			5 (resp)			
Calcium chromate			0.001			
Calcium cyanamide	156-62-7		0.5		1	
Calcium fluoride	7789-75-5		2.5			
Calcium hydroxide	1305-62-0		10 (total) 5 (resp)			
Calcium oxide	1305-78-8		2			
Calcium sulphate	7778-18-		10			



	9		(total)			
			5(resp)			
Calcium silicate	13444-95-2		10 (total) 5(resp)			
Carbon blacks	1333-86-4		3.5			
Carbon dioxide	124-38-9	5000	9000	15000	27000	
Carbon disulphide	75-15-0	10	30			
Carbon monoxide	630-08-0	30		200		
Carbon tetrabromide	558-13-4	0.1	1.4	0.3	4.1	
Carbon tetrachloride	56-23-5	5	31	10	62	
Carbonyl fluoride	353-50-4	2	5	5	15	
Catechol	120-80-9	5				
Caesium hydroxide	21351-79-1		2			
Cellulose	9004-34-6		10 (total) 5 (resp)			
Cement dust			10 (total) 5 (resp)			
Ceramic fibres		0.5				fibres/ml
Charcoal dust			3.5			
Chromates and chromic acid	1333-82-0		0.05			carcinogen
Chromium (III) compounds			0.5			
Chromium (VI) compounds			0.05			
Chromium powder (metal)	7440-47-3		0.5			
Chromium (II) salts			0.5			
Chromyl chloride	14977-61-8	0.025	0.15			carcinogen
Clopidol	2971-90-6		10(tot)			
Clopyralid			5 (resp)			
Coal tar pitch (benzene extract)	8007-45-2		0.2			carcinogen
Cobalt (metal dust & fumes)	7440-48-4		0.05			
Cobalt carbonyl (as Co)	10210-68-1		0.1			
Cobalt hydrocarbonyl (as Co)	16842-03-8		0.1			
Coffee dust			10 (total) 5 (resp)			
Coke oven emissions			0.5-0.7			
Copper fumes (as Cu)	1317-38-0		0.1			

Copper powder (dust & mist)	7440-50-8		1			
Cotton dust (raw)			0.2			
EDTA	6381-92-6					
Emery	112-62-9		10 (total) 5 (resp)			
Fluorine	7782-41-4	0.1	0.2		1	
Glass wool fibres		0.5				fibres/ml
Graphite (natural)	7782-42-5		10 (tot) 2.5 (resp)			
Graphite (synthetic), activated carbon	7740-44-0		10 (tot) 2 (resp) 0.1 (resp)			
Guanidium hydroxide						
Guazatine						
Gypsum (see calcium sulphate)			10 (tot) 5 (resp)			
Hydrogen chloride	7647-01-1	5	10			
Hydrogen cyanide	74-90-8	4.7	5			
Hydrogen fluoride	7664-39-3	3	2.5	6	5	
Hydrogen iodide	10034-85-2					
Hydrogen peroxide	7722-84-1	1	1.4	2	3	
Hydrogen seranite	05/02/83	0.05	0.2			
Hydrogen sulphide	7783-06-4	10	14	15	21	
Iron oxide fumes & dust (as Fe)	1309-37-1		5		10	
Iron pentacarbonyl (as Fe)	13463-40-6	0.1	0.8	0.2	1.6	
Iron salts (soluble as Fe)			1		2	
Kaolin (clay)	1332-58-7		10 (tot) 5 (resp)			
Lead acetate	6086-56-4		0.15			
Lead arsenate	10102-48-2		0.15		0.45	
Lead chromate (as Cr)	18454-12-1		0.05			
Lead dust and fumes	7439-92-1		0.05			
Lead sulphide			0.15			
Limestone dust	1317-65-3		10 (tot) 5 (resp)			

Magnesite	546-90-0		10 (tot) 5 (resp)			
Magnesium oxide	1309-48-4		10			
Magnesium sulphate	7487-88-9		10 (tot) 5 (resp)			
Maleic anhydride	108-31-6	0.25	1			
Manganese & compounds (as Mn)	7439-96-5		1		3	
Marble	1317-65-3		10 (tot) 5 (resp)			
Mercaptoacetic acid	68-11-1	1	5			
Mercury (element)	7439-97-6		0.05			PIC
Mercury (inorganic)			0.1			PIC
Mineral wool fibres			10 (tot)			
Molybdenum	7439-98-7		10 (Tot)		20	
Molybdenum soluble compounds (as Mo)			5 (resp)		10	
Molybdenum insoluble compounds			10			
Neon	7440-01-9					Asphyxiant
Nickel (metal)	7440-02-0		1			
Nickel (soluble compounds)			0.1			carcinogen
Nickel carbonyl	13463-39-3	0.001	0.007			carcinogen
Nitric acid	7697-37-2	2	5	4	10	
Nitric oxide	10102-43-9	25	30	35	45	
Nitrogen	7727-37-9					
Nitrogen dioxide	10102-44-0	3	6	5	10	
Nitrogen trifluoride	7783-54-2	10	30	15	45	
Nitrous oxide	10024-97-2	25	45			
Oxygen	7782-44-7					
Oxygen difluoride	7783-41-7	0.05	0.1	0.15	0.3	poor warning
Ozone	10028-15-6	0.1	0.2	0.3	0.6	
Particulates (inert dust)			10 (tot) 0.5 (resp)			
Particulates (nuisance)			10 (tot)			

			5 (resp) 10 (tot) 5 (resp)			
Phosphrous (yellow& red)	7723-14-0		0.1		0.3	
Phosphorous oxychloride	10025-87-3	0.1	0.6	0.5	3	
Phosphrous pentachloride	10026-13-8	0.1	1			
Phosphorous pentasulphide	1314-80-3		1		3	
Phosphorous trichloride	7719-12-2	0.2	1.5	0.5	3	
Phosphrous pentoxide	1314-56-3				1	
Plaster of Paris	26499-65-0		10 (tot) 5 (resp)			
Platinum (black, metal, sponge)	7440-06-4		1			
Platinum (soluble salts as Pt)			0.002			
Potassium bromate	7758-01-2		0.1			
Potassium cyanide	151-50-8			4.7	5	
Potassium hydroxide	1310-58-3		2			
Potassium permanganate	7722-64-7		5			
Resorcinol	108-46-3	10	45	20	90	
Rhodium (as rhodium)	7440-16-6		0.1			
Rhodium ( as rhodium))			0.001			
Ronnel (Fenchlorophos)	299-84-3		10			
Rosin core solder			0.1		0.3	
Rouge (Iron (III) oxide)	1309-37-1		10 (tot) 5 (resp)			
Selenium	7782-49-2		0.2		0.05	
Selenium disulphide	7488-56-4		0.2			
Selenium hexafluoride	7783-79-1	0.05	0.4			
Silicon fumes	7440-21-3		10 (tot) 5 (resp)			
Silicon carbide	409-21-2		10 (tot)			
Silicon tetrahydride	7803-62-5	5	7	1	1.5	
Silver fumes, dust & soluble cpds	7440-22-4		0.01			
Simazine			2			
Soapstone (with less than			6 (tot)			

1% quartz)			3 (resp)			
Sodium arsenate	1000-48-95-0		0.002			
Sodium aluminium fluoride (cryolite)	15096-52-3		2.5			
Sodium bicarbonate	144-55-8		10 (tot) 5 (resp)			
Sodium bisulphate	7681-38-1		10 (tot)			
			5 (resp)			
Sodium hydrogen sulphite	7631-90-5		5			
Sodium chloride	7758-19-2		10 (tot) 5 (resp)			
Sodium cyanide (as CN)	143-33-9		4.7	5		
Sodium fluoride (as F)	7681-49-4		2.5			
Sodium fluoroacetate	62-74-8		0.05		0.15	
Sodium hydroxide	1310-73-2		2			
Sodium hypochlorite	7681-52-9		2			
Sodium metabisulphite	7681-57-4		5			
Strontium chromate (as Cr)	02/06/89		0.05			
Sulphur dioxide	7446-09-5	2	5	5	10	
Sulphur hexafluoride	2551-62-4	1000	6000	1250	7500	
Sulphur monochloride	10025-67-9	1	6	3	18	
Sulphur pentafluoride	5714-22-7	0.01	0.1	0.075	0.75	
Sulphur tetrafluoride	7783-60-0	0.1	0.4	0.3	1	
Sulphuryl chloride	7791-25-5		5			
Sulphuryl fluoride	2699-79-8	5	20	10	40	
Sulphur trioxide	7446-11-9	0.3	1			
Sulphuric acid	7664-93-9		1			
Sulprofos	35400-43-2		1			
Superfine glass fibres		0.5				fibres/ml
Synthetic mineral fibres		0.5				fibres/ml
Talc (no asbestos)	14807-96-6		2 (resp)			
Tantalum (metal and oxide)	7440-25-7		5		10	

Tea dust			10 (tot) 5 (resp)			
TEPP	1-7-49-3	0.004	0.05	0.01	0.2	
Tellurium and cpds except hexafluoride	13494- 80-9		0.1			
Tellurium hexafluoride	7783-80- 4	0.02	0.2			
Tetraethyl lead (as Pb)	78-00-2		0.075			
Tetramethyl lead (as Pb)	75-74-1		0.075			
Tetramethylsuccinonitrile	3333-52- 6	0.5	3	2	12	
Tetrasodium pyrophosphate	7722-88- 5		5			
Tetryl	479-45-8		1.5		3	
Thallium (soluble cpds as Th)	7440-28- 0		0.1			
Thionyl chloride	7719-09- 7	1	5			
Thioglycolic acid	68-11-1	1	4			
Thiram	137-26-8		5		10	
Tin (metal & inorg. cpds)	7440-31- 5		2		4	
Tin (org. cpds as Sn)			0.1		0.2	
Tin (II) oxide (as Sn)	21651- 19-4		2			
Tin (IV) oxide (as Sn)	18282- 10-5		2			
Titanium	7440-32- 6					
Titanium dioxide	13463- 67-7		10 (Tot)		20	carcinogen
Tungsten	7440-33- 7		5		10	
Tungsten soluble cpds (as tungsten)			1		3	
Tungsten insoluble cpds (as tungsten)			5		10	
Uranium	7440-61- 1					
Uranium (insoluble cpds as uranium)	7440-61- 1		0.2		0.6	carcinogen
Uranium (soluble cpds)	7440-61- 1		0.05			carcinogen
Vanadium dust and fumes	1314-62- 2		0.05			
Vanadim	7440-62- 2		1			
Vanadium pentoxide (dust)	1314-62- 1		0.05			
Vanadium pentoxide (dust)	1314-62- 1		0.05			
Welding fumes			5			

Wheat flour			10 (tot) 5 (resp)			
Wood dust (hard wood)			1			
Wood dust (soft wood)			5		10	
Wood preservatives		300	1350	400	1800	
Yttrium (metal, cpds, dust & mist)	7440-65- 5		1		3	
Zinc chloride fumes	7646-85- 7		1		2	
Zinc chromate (as Cr)	13530- 65-9		0.05			
Zinc oxide dust	1314-13- 2		5 (tot)			
Zinc oxide fumes	1314-13- 2		5		10	
Zinc stearate	557-05-1		10 (tot) 5 (resp)			
Zirconium compounds (as Zr)	7440-67- 7		5		10	

**SCHEDULE 2:**

**Regulation12**

**PERMISSIBLE EMISSION LIMITS FOR SOURCE SPECIFIC AIR POLLUTANTS FROM INDUSTRIAL OPERATIONS**

<b>Pollutant</b>	<b>Standard For Ambient Air</b>	<b>Standard For Emissions (Point Sources)</b>	<b>Averaging Time For Ambient Air</b>	<b>Analytical method</b>
Carbon monoxide	100 mg/m <sup>3</sup>		15 minutes	Non-dispersive Infrared Spectrometry
	60 mg/m <sup>3</sup>		30 minutes	
	23 mg/m <sup>3</sup>	28 mg/m <sup>3</sup>	1 hour	
	11 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	8 hours	
Carbon dioxide	63 mg/m <sup>3</sup>	1800 mg/m <sup>3</sup>	1 hour	Non-dispersive infrared absorption spectroscopy (NDIR) and/or Gas chromatograph (GC) equipped with a thermal conductivity detector (TCD)
	16 mg/m <sup>3</sup>	1800 mg/m <sup>3</sup>	8 hr	
Grain dust	200µgNm-3	15 mg/m3	24 hr	Respirable particulate matter sampler-X-ray techniques
Hydrocarbons		<b>Refer to individual Hydrocarbon (Annex A)</b>	24 hr	Chromatography (GC/HPLC)
Lead	1.0 µgNm-3	0.5 µg/m3	1 month	Atomic absorption spectrometry (AAS), X-ray fluorescence or Inductively coupled plasma (ICP)
Nitrogen dioxide	200 µg/m3	80 µg/m3	1 hour	Modified Jacob & Hochheisser (Na-Arsenite) or Chemiluminescence
	40 µg/m3	40 µg/m3	1 year	
Nitrogen oxides (NOx)	0.2 mg/m3	300 mg/Nm3	24 hr 1 year Arithmetic mean	Modified Jacob & Hochheisser (Na-Arsenite) or Chemiluminescence



Sulphur dioxide	2600 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>	10 minutes	Spectrophotometry and ion exchange chromatography
	655 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>	24 hours	
	260 mg/m <sup>3</sup>		1 year	
Sulphur trioxide	200µgNm <sup>-3</sup>		24 hr	Spectrophotometry and ion exchange chromatography

### SCHEDULE 3

Regulation 21

#### PERMISSIBLE EMISSION LIMITS FOR SOURCE SPECIFIC AIR POLLUTANTS FROM CEMENT FACTORIES

Pollutant	Standard For Ambient Air	Standard For Emissions (Point Sources)	Averaging Time For Ambient Air	Analytical method
Acid mist	100 $\mu\text{gNm}^{-3}$	10.0 $\text{mg/m}^3$ HBr; 5.0 $\text{mg/m}^3$ HNO <sub>3</sub> ; 1.0 $\text{mg/m}^3$ H <sub>3</sub> PO <sub>4</sub> ; 1.0 $\text{mg/m}^3$ H <sub>2</sub> SO <sub>4</sub>	10 hr	Ion Chromatography
Ammonia	200 $\mu\text{gNm}^{-3}$	50 $\text{mg/Nm}^3$	24 hr	Chemiluminescence
Carbon monoxide	100 $\text{mg/m}^3$ 60 $\text{mg/m}^3$ 23 $\text{mg/m}^3$ 11 $\text{mg/m}^3$	28 $\text{mg/m}^3$ 10 $\text{mg/m}^3$	15 minutes 30 minutes 1 hour 8 hours	Non-dispersive Infrared Spectrometry
Carbon dioxide	63 $\text{mg/m}^3$ 16 $\text{mg/m}^3$	1800 $\text{mg/m}^3$ 1800 $\text{mg/m}^3$	1 hour 8 hr	Non-dispersive infrared absorption spectroscopy (NDIR) and/or Gas chromatograph (GC) equipped with a thermal conductivity detector (TCD)
Cement	200 $\mu\text{gNm}^{-3}$	50 $\text{mg/Nm}^3$	24 hr	High volume Sampler (HVS), by continuous suction of a 1 $\text{m}^3$ /minute pump
Cobalt	3 $\mu\text{g/m}^3$	6.0 $\mu\text{g/m}^3$	1 month	Atomic absorption spectrometry (AAS), X-ray fluorescence or Inductively coupled plasma (ICP)

Copper dust	1.0 $\mu\text{gNm}^{-3}$	0.5 $\text{mg/Nm}^3$	1 month	Atomic absorption spectrometry (AAS), or Inductively coupled plasma (ICP)
Grain dust	200 $\mu\text{gNm}^{-3}$	15 $\text{mg/m}^3$	24 hr	Respirable particulate matter sampler-X-ray techniques
Group III elements (Hg, Cd, Th, Sb, As, Cr, Mn, Ni, V)		<b>Refer to (Annex A)</b>	24 hr	Atomic absorption spectrometry (AAS), X-ray fluorescence or Inductively coupled plasma (ICP)
Dioxins (PCDDs, PCDFs and coplanar PCBs)	Not exceeding 0.6pg-TEQ/ $\text{m}^3$		Annual average	High resolution gas chromatograph - high resolution mass spectrometry (HRGC-HRMS).
Lead	1.0 $\mu\text{gNm}^{-3}$	0.5 $\mu\text{g/m}^3$	1 month	Atomic absorption spectrometry (AAS), X-ray fluorescence or Inductively coupled plasma (ICP)
Lime	200 $\mu\text{gNm}^{-3}$	15 $\text{mg/m}^3$	24 hr	Gravimetric analysis or X-ray techniques
Nitrogen dioxide	200 $\mu\text{g/m}^3$ 40 $\mu\text{g/m}^3$	80 $\mu\text{g/m}^3$ 40 $\mu\text{g/m}^3$	1 hour 1 year	Modified Jacob & Hochheisser (Na-Arsenite) or Chemiluminescence
Nitrogen oxides ( $\text{NO}_x$ )	0.2 $\text{mg/m}^3$	300 $\text{mg/Nm}^3$	24 hr 1 year Arithmetic mean	Modified Jacob & Hochheisser (Na-Arsenite) or Chemiluminescence
Sulphur dioxide	2600 $\text{mg/m}^3$ 655 $\text{mg/m}^3$ 260 $\text{mg/m}^3$	0.5 $\text{mg/m}^3$ 0.2 $\text{mg/m}^3$	10 minutes 24 hours 1 year	Spectrophotometry and ion exchange chromatography
Sulphur trioxide	200 $\mu\text{gNm}^{-3}$		24 hr	Spectrophotometry and ion exchange chromatography
Particulate matter $\text{PM}_{10}$	100 $\mu\text{g m}^{-3}$ 60 $\mu\text{g m}^{-3}$	100 $\mu\text{g m}^{-3}$ 60 $\mu\text{g m}^{-3}$	24 hr 1 year	-x-ray analysis -Tapered Element Oscillating

				Microbalance (TEOM) - Gravimetric
Particulate matter PM <sub>2.5</sub>	60 µg m <sup>-3</sup> 40 µg m <sup>-3</sup>	60 µg m <sup>-3</sup> 40 µg m <sup>-3</sup>	24 hr 1 year	=Gravimetric -x-ray analysis -Tapered Element Oscillating Microbalance (TEOM)
VOCs	6 mgNm <sup>-3</sup>	20mg/Nm <sup>3</sup>	24 hr	Chromatography (GC/HPLC)

## SCHEDULE 4

### PERMISSIBLE EMISSION LIMITS FOR MOTOR VEHICLES

Regulation 22(1)

Vehicle type	CO	HC	NOx	PM	Test Procedure
Grams/kilometer					
Passenger cars	2.00	0.25	0.80 (Petrol) 1.25 (Diesel)	0.125	ECE R 49
Light duty truck (<3860 kg)	2.30	0.25	1.43	0.160	ECE R 49
Light Duty Truck (<3860 kg)	6.20	0.50	1.43	0.160	ECE R 49
Grams per kilowatt hour					
Heavy Duty Diesel	4.50	1.10	7.00	0.36	ECE R 49

## SCHEDULE 5:

### PERMISSIBLE EMISSION LIMITS FOR MOTORCYCLES

Regulation 22(2)

Engine Displacement	Engine/Vehicle Type	Emission Standard				Test Procedure
		CO (g/km)	HC (g/km)	NOx (g/km)	Evap. (g/test)	
< 700 c.c.	2-stroke	7.0	1.0		2.0	ECE R40 Cold start excluding 0-40 seconds idle
	2-stroke	7.0	1.0		2.0	
< 50 c.c.	2-wheeler	1.0	1.2		NA	ECE R40 Warm start
	3-wheeler	3.5	1.2			
> 50 c.c.	2-wheeler	5.5	1.2	0.3		
	3-wheeler	7.0	1.5	0.4		

**SCHEDULE 6:****PERMISSIBLE DARK SMOKE LIMITS FOR NEW FACILITIES**

Regulation 23

<b>Pollutant</b>	<b>Standard For Emissions (Point Sources)</b>	<b>Averaging Time For Ambient Air</b>	<b>Analytical method</b>
Smoke	No. 1 on the Ringelmann Smoke Chart, or greater than twenty (20%) percent opacity, exclusive of water vapor	Not to exceed 5 min. in any one hour	Ringelmann Smoke Chart

**SCHEDULE 7:****PERMISSIBLE DARK SMOKE LIMITS FOR EXISTING FACILITIES**

Regulation 24

<b>Pollutant</b>	<b>Standard For Emissions (Point Sources)</b>	<b>Averaging Time For Ambient Air</b>	<b>Analytical method</b>
Smoke	No.2 on the Ringelmann scale or 40% observed at 6m or more	Not to exceed 5 min. in any one hour	Ringelmann Smoke Chart

**SCHEDULE 8: INDOOR AIR QUALITY STANDARDS**

Regulation 28

<b>Pollutant</b>	<b>Standard For Emissions (Point Sources)</b>	<b>Criteria</b>
Acetaldehyde	180 mg m <sup>-3</sup>	Environmental Health Criteria
Asbestos	0.01 fibres ml <sup>-1</sup>	Epidemiological dose-response studies
Benzene	16 mg m <sup>-3</sup>	
Carbon monoxide	28 mg/m <sup>3</sup> 10 mg/m <sup>3</sup>	Health end point critical level of COHb <2.5%
Environmental tobacco smoke (ETS)	0.0 µg/m <sup>3</sup>	Unit risk of health effects associated with ETS exposure
Formaldehyde	1.2	
Glass wool fibres	0.5 fibres/ml	

Grain dust	15 mg/m <sup>3</sup>	Occupational Safety and epidemiological data
n-Hexane	180 mg m <sup>-3</sup>	
Nitric acid HNO <sub>3</sub>	5.0 mg/m <sup>3</sup>	Environmental Health Criteria
Nitrogen dioxide	80 µg/m <sup>3</sup> 40 µg/m <sup>3</sup>	Human clinical exposure data
Ozone	120 µg/m <sup>3</sup>	Epidemiological data
Particulate matter PM <sub>10</sub>	100 µg m <sup>-3</sup>	Epidemiological dose-response studies
Particulate matter PM <sub>2.5</sub>	60 µg m <sup>-3</sup>	Epidemiological dose-response studies
Smoke	No. 1 on the Ringelmann Smoke Chart, or greater than twenty (20%) percent opacity, exclusive of water vapor	Occupational Health Guideline
Soot	500 µgN m <sup>-3</sup>	
Styrene (monomer)	215 mg m <sup>-3</sup>	
Tetrachloroethylene	7 mg m <sup>-3</sup>	Carcinogenic
Trichloroethylene	270 mg m <sup>-3</sup>	Carcinogenic
Toluene	375 mg m <sup>-3</sup>	Carcinogenic
VOCs	20mg/Nm <sup>3</sup>	Unit risk data
Xylene (o-, m-, p-isomers)	435 mg m <sup>-3</sup>	Carcinogenic

### Schedule 9: Currency Point

Regulation 32

A currency point shall be equivalent to twenty thousand shillings