

## 1991 No. 49

## CLEAN AIR

**The Alkali, &c. Works Order (Northern Ireland) 1991**

*Made* . . . . . 15th February 1991

*Coming into operation* . . . . . 1st April 1991

*To be laid before Parliament under paragraph 3(3) of  
Schedule 1 to the Northern Ireland Act 1974*

The Department of the Environment, in exercise of the powers conferred on it by Article 25(9) of the Clean Air (Northern Ireland) Order 1981(a) and of every other power enabling it in that behalf, hereby makes the following Order:

*Citation and commencement*

1. This Order may be cited as the Alkali, &c. Works Order (Northern Ireland) 1991 and shall come into operation on 1st April 1991.

*Interpretation*

2. In this Order, "the Alkali Act" means the Alkali, &c. Works Regulation Act 1906(b) as amended by the Alkali, &c. Works Order (Northern Ireland) 1987(c).

*Noxious and offensive gases*

3. For the list of noxious or offensive gases mentioned in section 27 of the Alkali Act there shall be substituted the list set out in Schedule 1.

*Works*

4. For the list of works mentioned in the First Schedule to the Alkali Act there shall be substituted the list of works set out in Schedule 2.

*Revocation*

5. The Alkali, &c. Works Order (Northern Ireland) 1987 is hereby revoked.

Sealed with the Official Seal of the Department of the Environment on  
15th February 1991.

(L.S.)

*R. W. Rogers*

Assistant Secretary

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(a) S.I. 1981/158 (N.I. 4)

(b) 1906 c. 14

(c) S.R. 1987 No. 123

**List of Noxious or Offensive Gases in substitution for that contained in  
Section 27 of the Alkali Act**

The expression "noxious or offensive gas" includes the following gases and fumes—

Acetic acid or its anhydride

Acetylene

Acrylates

Acrylic acid

Aldehydes

Amines

Ammonia or its compounds

Arsenic or its compounds

Bromine or its compounds

Carbon dioxide

Carbon disulphide

Carbon monoxide

Chlorine or its compounds

Cyanogen or its compounds

Di-isocyanates

Ethylene and higher olefines

Fluorine or its compounds

Fumaric acid

Fumes containing aluminium, antimony, arsenic, asbestos, beryllium, cadmium, calcium, chlorine, chromium, copper, gallium, glass fibres, iron, lead, magnesium, manganese, mercury, mineral fibres, molybdenum, nickel, phosphorus, platinum, potassium, selenium, silicon, silver, sodium, sulphur, tellurium, thallium, tin, titanium, tungsten, uranium, vanadium, zinc or their compounds

Fumes from benzene works, paraffin oil works, petrochemical works, petroleum works, tar works or bitumen works

Hydrocarbons

Hydrogen sulphide

Iodine or its compounds

Isocyanates

Lead or its compounds

Maleic acid or its anhydride

Mercury or its compounds

Metal carbonyls

Muriatic acid (Hydrogen chloride)

Nitric acid or oxides of nitrogen

Nitriles

Phenols

Phosphorus or its compounds

Phthalic acid or its anhydride

Products containing hydrogen from the partial oxidation of hydrocarbons

Pyridine or its homologues

Styrene

Sulphuric acid or sulphur trioxide

Sulphurous acid or sulphur dioxide

Vinyl chloride

Volatile organic sulphur compounds.

**List of Works in substitution for that contained in the First Schedule to the Alkali Act****LIST OF WORKS**

- (1) Sulphuric acid (Class I) works  
Works in which the manufacture of sulphuric acid is carried on by the lead chamber process, namely, the process by which sulphurous acid is converted into sulphuric acid by the agency of oxides of nitrogen and by the use of a lead chamber or by any other process involving the use of oxides of nitrogen.
- (2) Sulphuric acid (Class II) works  
Works in which the manufacture of sulphuric acid is carried on by any process other than the lead chamber process, and works for the concentration or distillation of sulphuric acid.
- (3) Chemical fertilizer works  
Works in which the manufacture of chemical fertilizer is carried on, and works in which any mineral phosphate is subjected to treatment involving chemical change through the application or use of any acid and works for the granulating of chemical fertilizers involving the evolution of any noxious or offensive gas.
- (4) Gas liquor works  
Works (not being sulphate of ammonia works or chloride of ammonia works as defined in paragraph (6)) in which hydrogen sulphide or any other noxious or offensive gas is evolved by the use of ammoniacal liquor in any manufacturing process, and works in which any such liquor is desulphurized by the application of heat in any process connected with the purification of gas.
- (5) Nitric acid works  
Works in which the manufacture of nitric acid is carried out and works in which nitric acid is recovered from oxides of nitrogen and works where in the manufacture of any product any acid-forming oxide of nitrogen is evolved.
- (6) Sulphate of ammonia works, and chloride of ammonia works  
Works in which the manufacture of sulphate of ammonia or of chloride of ammonia is carried on.
- (7) Chlorine works  
Works in which chlorine is made or used in any manufacturing process.
- (8) Muriatic acid works (Hydrochloric acid works)
  - (a) muriatic acid works or works (not being alkali works as defined in section 27(1) of the Alkali Act) where muriatic acid gas (hydrogen chloride) is evolved either during the preparation of liquid muriatic acid or for use in any manufacturing process or as the result of the use of chlorides in a chemical process;
  - (b) tinplate flux works in which any residue or flux from tinplate works is calcined for the utilisation of such residue or flux, and in which muriatic acid gas is evolved; and

- (c) salt works (not being works in which salt is produced by refining rock salt, otherwise than by the dissolution of rock salt at the place of deposit) in which the extraction of salt from brine is carried on, and in which muriatic acid gas is evolved.

(9) Sulphide works

Works in which—

- (a) hydrogen sulphide is evolved by the decomposition of metallic sulphides; or  
(b) hydrogen sulphide is used in the production of such sulphides; or  
(c) hydrogen sulphide or mercaptans are—  
(i) made; or  
(ii) used in any chemical process; or  
(iii) evolved as part of any chemical process.

(10) Arsenic works

Works for the preparation of arsenious acid, or where nitric acid or a nitrate is used in the manufacture of arsenic acid or an arsenate and works in which any volatile compound of arsenic is evolved in any manufacturing process and works in which arsenic is made.

(11) Nitrate and chloride of iron works

Works in which nitric acid or a nitrate is used in the manufacture of nitrate or chloride of iron.

(12) Carbon disulphide works

Works for the manufacture, use or recovery of carbon disulphide.

(13) Picric acid works

Works in which nitric acid or a nitrate is used in the manufacture of picric acid.

(14) Paraffin oil works

Works in which crude shale oil is produced or refined, and works in which—

- (a) any product of the refining of crude shale oil is treated so as to cause the evolution of any noxious or offensive gases; or  
(b) any such product as aforesaid is used in any subsequent chemical manufacturing process except as a solvent.

(15) Bisulphite works

- (a) works in which sulphurous acid is used in the manufacture of acid sulphites of the alkalis or alkaline earths; or  
(b) works, not defined elsewhere in this Schedule, in which oxides of sulphur are—  
(i) made; or  
(ii) used or evolved in any chemical manufacturing operation; or  
(iii) used in the production of sulphurous acid.

(16) Tar works and bitumen works

- (a) works (not being works described elsewhere in this Schedule) in which gas tar or coal tar or bitumen is distilled or is heated in any manufacturing process, and any product of the distillation of gas tar or coal tar or bitumen is distilled or heated in any process involving the evolution of any noxious or offensive gas; or

- (b) works in which heated materials produced from gas tar or coal tar or bitumen are applied in coating or wrapping of iron or steel pipes or fittings.
- (17) Zinc works  
Works in which by the application of heat, zinc is extracted from the ore, or from any residue containing that metal, and works in which compounds of zinc are made by methods giving rise to dust or fumes.
- (18) Benzene works  
Works (not being tar works or bitumen works as defined in paragraph (16)) in which—  
(a) any wash oil used for the scrubbing of coal gas is distilled; or  
(b) any crude benzol is distilled; or  
(c) benzene is distilled or recovered.
- (19) Pyridine works  
Works in which pyridines or picolines or lutidines are recovered or made.
- (20) Bromine works  
Works in which bromine is made or is used in any manufacturing operation.
- (21) Hydrofluoric acid works  
Works in which—  
(a) hydrogen fluoride is evolved either in the manufacture of liquid hydrofluoric acid or its compounds, or as the result of the use of fluorides in a chemical process; or  
(b) mineral phosphates are treated with acid other than in fertilizer manufacture; or  
(c) mineral phosphates are defluorinated.
- (22) Cement works  
Works in which—  
(a) argillaceous and calcareous materials are used in the production of cement clinker; or  
(b) cement clinker is handled and ground.
- (23) Lead works  
(a) works (not being works defined elsewhere in this Schedule) in which by the application of heat—  
(i) lead is extracted or recovered from any material containing lead or its compounds; or  
(ii) lead is refined; or  
(iii) lead is applied as a surface coating to other metals by spraying;  
(b) works (not being works defined elsewhere in this Schedule) in which compounds of lead are manufactured, extracted, recovered or used in processes which give rise to dust or fumes, but excluding the manufacture of electric accumulators and the application of glazes or vitreous enamels; and  
(c) works in which organic lead compounds are made.

## (24) Fluorine works

Works (not being works defined elsewhere in this Schedule) in which fluorine or its compounds with other halogens are made or used in the manufacture of any product, and works for the manufacture of fluorides, borofluorides or silicofluorides.

## (25) Iron works and steel works

Works in which—

- (a) iron ores or iron ores and other materials for the production of iron are handled, stored or prepared, but excluding the winning of iron ores; or
- (b) iron ores are calcined, sintered or pelletised; or
- (c) iron or ferro-alloys are produced in a blast furnace or by direct reduction; or
- (d) iron or steel is melted in electric arc, induction, rotary or resistance furnaces, or hot or cold blast cupolas in foundries having a total melting capacity of 5 tonnes or greater; or
- (e) steel is produced, melted or refined in Tropenas, open hearth or electric arc furnaces; or
- (f) air or oxygen or air enriched with oxygen is used for the refining of iron or for the production, shaping or finishing of steel; or
- (g) ferro-alloys are made by methods giving rise to dust or fumes; or
- (h) iron or ferro-alloys produced in any process described in sub-paragraphs (c), (d) or (g) are desulphurised by methods giving rise to dust or fumes; or
- (i) grease, oil or other non-metallic contamination is removed from any iron, steel or ferro-alloy by heating in a furnace,

including any auxiliary foundry operation carried out in conjunction with and at the same location as any process covered by this paragraph.

## (26) Copper works

Works in which—

- (a) by the application of heat—
  - (i) copper is extracted from any ore or concentrate or from any material containing copper or its compounds; or
  - (ii) molten copper is refined; or
  - (iii) copper or copper alloy swarf is degreased; or
  - (iv) copper alloys are recovered from scrap fabricated metal, swarf or residues by processes designed to reduce the zinc content; or
  - (v) copper alloys are recovered from scrap fabricated metal, swarf or residues; or

(b) copper or copper alloy is melted and cast,

but in sub-paragraphs (a)(v) and (b) excluding works with a design holding capacity of less than 1 tonne.

## (27) Aluminium works

Works in which—

- (a) oxide of aluminium is extracted from any ore; or
- (b) aluminium is extracted from any compound containing aluminium by a process evolving any noxious or offensive gases; or

- (c) aluminium or aluminium alloys are made or melted in any furnace, bath or holding vessel with a design holding capacity of 0.5 tonnes or more; or
  - (d) aluminium swarf is degreased by the application of heat; or
  - (e) aluminium or aluminium alloys are recovered from aluminium or aluminium alloy scrap fabricated metal, swarf, skimmings, or other residues by melting under flux cover; or
  - (f) aluminium is recovered from slag or drosses; or
  - (g) molten aluminium or aluminium alloys are treated by chlorine or its compounds; or
  - (h) materials used in the above processes or the products thereof are treated or handled by methods which cause noxious or offensive gases to be evolved.
- (28) Electricity works  
Works in which solid, liquid or gaseous fuel is burned—
- (a) for the generation of electricity solely for distribution to the general public or for the purposes of public transport, but excluding compression ignition engines burning distillate fuel with a sulphur content of less than 1 per cent; or
  - (b) for the generation of electricity for any purpose where the net rated thermal input of the works is 50 megawatts or more, other than those mentioned in sub-paragraph (a).
- (29) Producer gas works  
Works in which producer gas is made from coal and in which raw producer gas is transmitted or used.
- (30) Gas and coke works  
Works (not being producer gas works as defined in paragraph (29)) in which—
- (a) coal, oil, or other carbonaceous materials (excluding wood) or products of petroleum refining or natural gas or methane from coal mines or gas derived from fermentation of carbonaceous materials are handled or prepared for carbonisation or gasification or reforming and in which these materials are subsequently carbonised or gasified or reformed; or
  - (b) water gas is produced or purified; or
  - (c) coke or semi-coke or other solid smokeless fuel is produced and quenched, cut, crushed or graded; or
  - (d) gases derived from any processes mentioned in sub-paragraph (a) are subjected to purification processes.
- (31) Ceramic works  
Works in which—
- (a) heavy clay or refractory goods are fired by coal or oil in any kiln in which a reducing atmosphere is essential; or
  - (b) salt glazing of any earthenware or clay material is carried on.
- (32) Lime works  
Works in which—
- (a) calcium carbonate or calcium-magnesium carbonate is burnt through the agency of solid, liquid or gaseous fuels; or

- (b) lime is slaked on premises where any process described in sub-paragraph (a) is carried out.
- (33) Caustic soda works  
Works in which black liquor produced in the manufacture of paper is calcined in the recovery of caustic soda.
- (34) Uranium works  
Works (not being works licensed under the Nuclear Installations Acts 1965(a) and 1969(b) and not being nuclear reactors or works involving the processing of irradiated fuel therefrom for the purpose of removing fission products) in which—
- (a) any ore or concentrate or any material containing uranium or its compounds is treated for the production of uranium or its alloys or compounds; or
  - (b) any volatile compounds of uranium are manufactured or used; or
  - (c) uranium or its compounds are manufactured, fashioned or fabricated by methods giving rise to dust or fumes.
- (35) Beryllium works  
Works in which—
- (a) any ore or concentrate or any material containing beryllium or its compounds is treated for the production of beryllium or its alloys or its compounds; or
  - (b) any material containing beryllium or its alloys or its compounds is treated, processed or fabricated in any manner giving rise to dust or fumes.
- (36) Selenium works  
Works in which—
- (a) any ore or concentrate or any material containing selenium or its compounds is treated for the production of selenium or its alloys or its compounds; or
  - (b) any material containing selenium or its alloys or its compounds other than as colouring matter is treated, processed or fabricated in any manner giving rise to dust or fumes.
- (37) Phosphorus works  
Works in which—
- (a) phosphorus is made; or
  - (b) yellow phosphorus is used in any chemical or metallurgical process.
- (38) Ammonia works  
Works in which ammonia is—
- (a) made or recovered; or
  - (b) used in the ammonia-soda process; or
  - (c) used in the manufacture of carbonate, hydroxide, nitrate or phosphate of ammonia, or urea or nitriles.

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(a) 1965 c. 57

(b) 1969 c. 18



- (39) Hydrogen cyanide works  
Works in which hydrogen cyanide is made or is used in any chemical manufacturing process.
- (40) Acetylene works  
Works in which acetylene is made or used in any chemical manufacturing process.
- (41) Amines works  
Works in which—  
(a) any methylamine or any ethylamine is made; or  
(b) any methylamine or any ethylamine is used in any chemical process.
- (42) Aldehyde works  
Works in which formaldehyde, acetaldehyde or acrolein or the methyl, ethyl or propyl derivatives of acrolein are made.
- (43) Anhydride works  
Works in which acetic, maleic or phthalic anhydrides or the corresponding acids are made or recovered.
- (44) Chromium works  
Works in which—  
(a) any chrome ore or concentrate is treated for the production therefrom of chromium compounds; or  
(b) chromium metal is made by methods giving rise to dust or fumes.
- (45) Magnesium works  
Works in which magnesium or its alloys or any compound of magnesium is made by methods giving rise to dust or fumes.
- (46) Cadmium works  
Works in which—  
(a) metallic cadmium is recovered; or  
(b) cadmium alloys are made or recovered; or  
(c) any compound of cadmium is made by methods giving rise to dust or fumes.
- (47) Manganese works  
Works in which manganese or its alloys or any compound of manganese is made by methods giving rise to dust or fumes.
- (48) Metal recovery works  
Works in which metal is recovered from scrap cable by burning in a furnace.
- (49) Petroleum works  
Works in which—  
(a) crude or stabilised crude petroleum or associated gas, or condensate is—  
(i) handled or stored; or  
(ii) refined; or  
(b) any product of such refining is subjected to further refining or to conversion; or

- (c) natural gas is refined or odorised; or
- (d) any product of any of the foregoing operations is used, except as a solvent, in any subsequent chemical manufacturing process, provided that the process is not described elsewhere in this Schedule; or
- (e) used lubricating oil is prepared for re-use by any thermal process.

## (50) Acrylates works

Works in which acrylates are—

- (a) made or purified; or
- (b) made and polymerised; or
- (c) purified and polymerised.

## (51) Di-isocyanate works

Works in which—

- (a) di-isocyanates or partly polymerised di-isocyanates are made; or
- (b) di-isocyanates or partly polymerised di-isocyanates are used in the manufacture of flexible or rigid polyurethane foams or elastomers; or
- (c) polyurethane foams are subject to hot-wire cutting or flame-bonding.

## (52) Mineral Works

Works in which—

- (a) metallurgical slags; or
- (b) pulverised fuel ash; or
- (c) lignite; or
- (d) minerals, other than moulding sand in foundries or coal,

are subjected to any size reduction, grading, handling or heating by processes giving rise to dust, not being works described elsewhere in this Schedule.

## (53) Smelting works

Works in which sulphides or sulphide ores, including regulus or mattes are calcined or smelted.

## (54) Asbestos works

Works in which—

- (a) raw asbestos ore is produced, but excluding any process directly associated with the mining of the ore; or
- (b) asbestos is used in the manufacture or industrial finishing of—
  - (i) asbestos cement; or
  - (ii) asbestos cement products; or
  - (iii) asbestos fillers; or
  - (iv) asbestos filters; or
  - (v) asbestos floor coverings; or
  - (vi) asbestos friction products; or
  - (vii) asbestos insulating board; or
  - (viii) asbestos jointing, packaging and reinforcement materials; or
  - (ix) asbestos packing; or

- (x) asbestos paper and card; or
- (xi) asbestos textiles; or
- (c) any of the products covered in sub-paragraph (b) are used or finished in any manufacturing process; or
- (d) crocidolite is stripped from railway vehicles other than as part of repair or maintenance or during vehicle recovery after an accident; or
- (e) railway vehicles containing crocidolite are destroyed by burning at purpose built installations.

For the purposes of this paragraph "asbestos" means any of the following fibrous silicates — actinolite, amosite, anthophyllite, chrysotile, crocidolite or tremolite.

(55) Carbonyl works

Works in which metal carbonyls are manufactured or used in any chemical or metallurgical manufacturing process.

(56) Petrochemical works

Works in which—

- (a) any hydrocarbons are used for the production of ethylene or propylene or other olefines; or
- (b) (i) ethylene or propylene or other olefines or mixtures thereof are used in any chemical manufacturing process, not being a chemical manufacturing process defined elsewhere in this Schedule; or
- (ii) any product of the processes to which sub-paragraph (b)(i) applies is used, except as a solvent, in any subsequent chemical manufacturing process, not being a chemical manufacturing process defined elsewhere in this Schedule; or
- (c) ethylene or propylene or other olefines or products of processes defined at sub-paragraphs (b)(i) and (ii) or mixtures thereof are polymerised.

(57) Vinyl chloride works

Works in which vinyl chloride is made or polymerised or used.

(58) Bulk chemical storage works

Works (not being works described elsewhere in this Schedule) in which the following substances are stored and handled in fixed tanks, where the aggregate capacity of the tanks is greater than the tonnage specified in brackets—

- (a) acrylates (20 tonnes); or
- (b) acrylonitrile (20 tonnes); or
- (c) anhydrous ammonia (100 tonnes); or
- (d) anhydrous hydrogen fluoride (1 tonne); or
- (e) toluene di-isocyanate (20 tonnes); or
- (f) vinyl chloride monomer (20 tonnes).

(59) Fibre works

Works in which glass fibre or mineral fibre (other than asbestos fibre) is made.

## (60) Glass works

Works in which—

- (a) glass frit or enamel frit is made; or
- (b) glass or glass products are made using lead or any lead compound in the manufacturing process; or
- (c) glass is made with a manufacturing capacity of 5000 tonnes or more a year; or
- (d) glass or glass products are polished or etched using hydrofluoric acid.

## (61) Incineration works

Works for the destruction by burning of—

- (a) waste produced from chemical manufacturing processes; or
- (b) chemical waste containing combined bromine, cadmium, chlorine, fluorine, iodine, lead, mercury, nitrogen, phosphorus, sulphur or zinc; or
- (c) waste produced in the manufacture of plastics; or
- (d) other waste, where the works are capable of incinerating 1 tonne or more of waste per hour.

For the purposes of this paragraph “waste” has the same meaning as in Article 36(1) of the Pollution Control and Local Government (Northern Ireland) Order 1978(a).

## (62) Large combustion works

Works (other than those mentioned elsewhere in this Schedule) in which solid, liquid or gaseous fuel is burned in—

- (a) a boiler or furnace with a net rated thermal input of 50 megawatts or more; or
- (b) 2 or more boilers or furnaces capable of discharging via a common stack and where the aggregated net rated thermal input of these boilers or furnaces is 50 megawatts or more.

## (63) Large paper pulp works

Works capable of producing 25,000 tonnes or more of paper pulp by chemical methods per year.

## EXPLANATORY NOTE

*(This note is not part of the Order.)*

The discharge of certain noxious or offensive gases from certain types of works is subject to control under the Alkali, &c. Works Regulation Act 1906 ("the Act of 1906"). Article 25(9) of the Clean Air (Northern Ireland) Order 1981 empowers the Department to make orders amending or extending both the list of gases and the list of works in the Act of 1906. The existing list of such gases is set out in section 27(1) of that Act, as extended and amended by the Alkali, &c. Works Order (Northern Ireland) 1987, and the existing list of works is set out in the First Schedule to that Act, also as extended and amended by that order. This order further extends and amends both these lists, and revokes the order of 1987.

By virtue of Article 3 and Schedule 1 acrylic acid, isocyanates, phenols, phosphorus or its compounds, styrene, and fumes containing asbestos, gallium, glass fibres, mineral fibres, nickel, platinum, silver, sulphur, tellurium, thallium or tin have been added to the list of noxious or offensive gases for the purposes of section 27(1) of the Act of 1906.

Schedule 2 extends the classes of premises from which emissions into the atmosphere may be controlled under the Act of 1906 to include premises on which certain asbestos works, large combustion works, electricity works above a specified capacity, fibre works, glass works, large paper pulp works and large general purpose incinerators (including those owned and operated by public authorities) are carried on.

This order takes account of Council Directive 84/360/EEC (O.J. No. L188, 16.7.84, p. 20) on the combating of air pollution from industrial plants and Council Directive 87/217/EEC (O.J. No. L85, 28.3.87, p. 40) on the prevention and reduction of environmental pollution by asbestos, and makes certain other provisions for the control of air pollution. Plants belonging to the categories listed in Annex I to Council Directive 84/360/EEC, and certain other plants, which were not previously subject to air pollution control under the provisions of the Act of 1906, are by this order made subject to such control.

Copies of the relevant Directives and of extracts from the Official Journal of the European Communities may be obtained from Her Majesty's Stationery Office, 80 Chichester Street, Belfast BT1 4JY.