

ENVIRONMENTAL PROTECTION ACT 1990

THE ENVIRONMENTAL PROTECTION ACT (SOLVENT EMISSIONS DIRECTIVE) (ENGLAND) DIRECTION 2002

The Secretary of State for Environment, Food and Rural Affairs in exercise of the powers conferred on her by sections 7(3) and 10(6) of the Environmental Protection Act 1990⁽¹⁾ and all other powers enabling her in that behalf, hereby gives the following direction to enforcing authorities with respect to the carrying out of their functions under that Act -

Citation, commencement and application

1.(1) This direction may be cited as the Environmental Protection Act (Solvent Emissions Directive) (England) Direction 2002 and shall come into force on 22nd March 2002.

(2) This direction is given to all enforcing authorities exercising functions under Part I of the Environmental Protection Act 1990.

(3) This direction applies to England only.

Interpretation

2. In this direction,

“the 1990 Act” means the Environmental Protection Act 1990;

“the Directive” means Council Directive 99/13/EC on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations⁽²⁾. The “scope of the Directive” means the purposes and scope set out in Part I of Schedule 1;

“an activity within the scope of the Directive” means an activity listed in Part II of Schedule 1 when operated above the solvent consumption threshold listed in Parts III or IV of Schedule 1. In each case the activity includes the cleaning of the equipment but not the cleaning of products unless otherwise specified;

“Directive 96/61/EC” means Council Directive 96/61/EC concerning integrated pollution prevention and control⁽³⁾;

“authorisation” means an authorisation granted under section 6 of the 1990 Act;

“installation” means a stationary technical unit where one or more activities falling within the scope of the Directive are carried out, and any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions;

“existing installation” means an installation in operation or, in accordance with legislation existing before 1st April 2001, an installation which is authorized or registered or, in the view of the enforcing authority, the subject of a full request for

⁽¹⁾ 1990 c.43.

⁽²⁾ OJ No. L85, 29.3.99, p.01-22.

⁽³⁾ OJ No. L257, 10.10.96, p.26-40.

authorization, provided that the installation is put into operation no later than 1st April 2002;

“small installation” means an installation which falls within the lower threshold band of items 1, 3, 4, 5, 8, 10, 13, 16 or 17 of Part III of Schedule 1 or for the other activities of that Part which have a solvent consumption of less than 10 tonnes/year;

“substantial change”

— for an installation falling within the scope of Directive 96/61/EC, means a change in operation which, in the opinion of the enforcing authority, may have significant negative effects on human beings or the environment;

— for a small installation, means a change of the nominal capacity leading to an increase of emissions of volatile organic compounds of more than 25 %. Any change that may have, in the opinion of the enforcing authority, significant negative effects on human health or the environment is also a substantial change,

— for all other installations, means a change of the nominal capacity leading to an increase of emissions of volatile organic compounds of more than 10 %. Any change that may have, in the opinion of the enforcing authority, significant negative effects on human health or the environment is also a substantial change;

“emission” means any discharge of volatile organic compounds from an installation into the environment;

“fugitive emissions” means any emissions not in “waste gases” of volatile organic compounds into air, soil and water as well as, unless otherwise stated in Part III of Schedule 1, solvents contained in any products. They include uncaptured emissions released to the outside environment via windows, doors, vents and similar openings;

“waste gases” means the final gaseous discharge containing volatile organic compounds or other pollutants, from a stack or abatement equipment into air. The volumetric flow rates shall be expressed in m³/h at standard conditions;

“total emissions” means the sum of fugitive emissions and emissions in waste gases;

“emission limit value” means the mass of volatile organic compounds, expressed in terms of certain specific parameters, concentration, percentage and/or level of an emission, calculated at standard conditions, N, which may not be exceeded during one or more periods of time;

“substances” means any chemical element and its compounds, as they occur in the natural state or as produced by industry, whether in solid or liquid or gaseous form;

“preparation” means mixtures or solutions composed of two or more substances;

“organic compound” means any compound containing at least the element carbon and one or more of hydrogen, halogens, oxygen, sulphur, phosphorus, silicon or nitrogen, with the exception of carbon oxides and inorganic carbonates and bicarbonates;

“volatile organic compound” (VOC) means any organic compound having at 293.15K a vapour pressure of 0.01 kPa or more, or having a corresponding volatility under the particular conditions of use. For the purpose of this direction, the fraction of creosote which exceeds this value of vapour pressure at 293.15 K shall be considered as a VOC;

“organic solvent” means any VOC which is used alone or in combination with other agents, and without undergoing a chemical change, to dissolve raw materials, products or waste materials, or is used as a cleaning agent to dissolve

contaminants, or as a dissolver, or as a dispersion medium, or as a viscosity adjuster, or as a surface tension adjuster, or a plasticiser, or as a preservative;

“halogenated organic solvent” means an organic solvent which contains at least one atom of bromine, chlorine, fluorine or iodine per molecule;

“coating” means any preparation, including all the organic solvents or preparations containing organic solvents necessary for its proper application, which is used to provide a decorative, protective or other functional effect on a surface;

“adhesive” means any preparation, including all the organic solvents or preparations containing organic solvents necessary for its proper application, which is used to adhere separate parts of a product;

“ink” means a preparation, including all the organic solvents or preparations containing organic solvents necessary for its proper application, which is used in a printing activity to impress text or images on to a surface;

“varnish” means a transparent coating;

“consumption” means the total input of organic solvents into an installation per calendar year, or any other 12-month period, less any VOCs that are recovered for reuse;

“input” means the quantity of organic solvents and their quantity in preparations used when carrying out an activity, including the solvents recycled inside and outside the installation, and which are counted every time they are used to carry out the activity;

“reuse of organic solvents” means the use of organic solvents recovered from an installation for any technical or commercial purpose and including use as a fuel but excluding the final disposal of such recovered organic solvent as waste;

“mass flow” means the quantity of VOCs released, in unit of mass/hour;

“nominal capacity” means the maximum mass input of organic solvents by an installation averaged over one day, if the installation is operated under conditions of normal operation at its design output;

“normal operation” means all periods of operation of an installation or activity except start-up and shut-down operations and maintenance of equipment;

“contained conditions” means conditions under which an installation is operated such that the VOCs released from the activity are collected and discharged in a controlled way either via a stack or abatement equipment and are therefore not entirely fugitive;

“standard conditions” means a temperature of 273.15 K and a pressure of 101.3kPa;

“average over 24 hours” means the arithmetic average of all valid readings taken during the 24-hour period of normal operation;

“start-up and shut-down operations” means operations whilst bringing an activity, an equipment item or a tank into or out of service or into or out of an idling state. Regularly oscillating activity phases are not to be considered as start-ups and shut-downs;

and except in so far as the context otherwise requires, words and expressions used in this direction which are also used in the Directive shall have the same meaning as in the Directive.

Conditions of Authorisations

3.(1) The enforcing authority shall include in any authorisation specific conditions for the purpose of ensuring that installations where activities within the scope of the Directive are being carried out are operated in accordance with Schedule 2.

(2) Such conditions shall:

- (a) in the case of an existing installation, be included in the authorisation no later than 31st October 2007;
- (b) in the case of a new installation, subject to subparagraph (c), be included in the authorisation when granted;
- (c) where a new installation was authorized before 22nd March 2002, be included in the authorisation no later than 22nd July 2002.

4.(1) For the purposes of Article 3, where an existing installation undergoes a substantial change or comes within the scope of this direction for the first time following a substantial change, subject to paragraph (2) below, that part of the installation which undergoes the substantial change shall be treated as a new installation.

(2) That part of the installation which undergoes the substantial change may be treated as an existing installation where the total emissions of the whole installation do not exceed those that would have resulted had the substantially changed part been treated as a new installation.

(3) Where paragraph (1) above applies:-

- (a) if the substantial change was made on or after 22nd March 2002, Article 3(2)(b) shall apply as if the words “when varied” were substituted for “when granted”;
- (b) if the substantial change was made on or after 1st April 2001 but before 22nd March 2002, Article 3(2)(c) shall apply as if the words “where the substantial change was made” were substituted for “where a new installation was authorised”.

5. The enforcing authority shall require any operator of an existing installation who intends to rely on the reduction scheme in Schedule 3 (pursuant to paragraph 1(b) of Part 1 of Schedule 2), to notify the enforcing authority of this intention by 31st October 2005.

Authorised by the Secretary of State
for Environment Food and Rural Affairs

.....
[insert name]
[insert position]
Department for Environment
Food and Rural Affairs

SCHEDULE 1

PART I PURPOSE AND SCOPE OF THE DIRECTIVE

The purpose of the Directive is to prevent or reduce the direct and indirect effects of emissions of volatile organic compounds into the environment, mainly into air, and the potential risks to human health, by providing measures and procedures to be implemented for the activities defined in Annex I of the Directive (set out in Part II of this Schedule), in so far as they are operated above the solvent consumption thresholds listed in Annex IIA of the Directive (set out in Parts III and IV of this Schedule).

PART II SCOPE

This Part contains the categories of activity referred to in Part I of this Schedule. When operated above the thresholds listed in Part III and IV of this Schedule, the activities mentioned in this Part fall within the scope of this direction. In each case the activity includes the cleaning of the equipment but not the cleaning of products unless specified otherwise.

Adhesive coating

- Any activity in which an adhesive is applied to a surface, with the exception of adhesive coating and laminating associated with printing activities.

Coating activity

- Any activity in which a single or multiple application of a continuous film of a coating is applied to:
 - vehicles as listed below:
 - new cars, defined as vehicles of category M1 in Directive 70/156/EEC⁽¹⁾, and of category N1 in so far as they are coated at the same installation as M1 vehicles,
 - truck cabins, defined as the housing for the driver, and all integrated housing for the technical equipment, of vehicles of categories N2 and N3 in Directive 70/156/EEC,
 - vans and trucks, defined as vehicles of categories N1, N2 and N3 in Directive 70/156/EEC, but not including truck cabins, buses, defined as vehicles of categories M2 and M3 in Directive 70/156/EEC,
 - trailers, defined in categories O1, O2, O3 and O4 in Directive 70/156/EEC,
 - metallic and plastic surfaces including surfaces of airplanes, ships, trains, etc.,
 - wooden surfaces,

⁽¹⁾ Council Directive 70/156/EEC of 6th February 1970 on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers (OJ L 42, 23.2.1970, p.1.) as last amended by Directive 97/27/EC (OJ L 233, 25.8.1997, p.1).

- textile, fabric, film and paper surfaces,
- leather.

It does not include the coating of substrate with metals by electrophoretic and chemical spraying techniques. If the coating activity includes a step in which the same article is printed by whatever technique used, that printing step is considered part of the coating activity. However, printing activities operated as a separate activity are not included, but may be covered by the Directive if the printing activity falls within the scope thereof.

Coil coating

- Any activity where coiled steel, stainless steel, coated steel, copper alloys or aluminium strip is coated with either a film forming or laminate coating in a continuous process.

Dry cleaning

- Any industrial or commercial activity using VOCs in an installation to clean garments, furnishing and similar consumer goods with the exception of the manual removal of stains and spots in the textile and clothing industry.

Footwear manufacture

- Any activity of producing complete footwear or parts thereof.

Manufacturing of coating preparations, varnishes, inks and adhesives

- The manufacture of the above final products, and of intermediates where carried out at the same site, by mixing of pigments, resins and adhesive materials with organic solvent or other carrier, including dispersion and predispersion activities, viscosity and tint adjustments and operations for filling the final product into its container.

Manufacturing of pharmaceutical products

- The chemical synthesis, fermentation, extraction, formulation and finishing of pharmaceutical products and where carried out at the same site, the manufacture of intermediate products.

Printing

- Any reproduction activity of text and/or images in which, with the use of an image carrier, ink is transferred onto whatever type of surface. It includes associated varnishing, coating and laminating techniques. However, only the following sub-processes are subject to the Directive:
 - *flexography* – a printing activity using an image carrier of rubber or elastic photopolymers on which the printing areas are above the non-printing areas, using liquid inks which dry through evaporation,

- *heatset web offset* – a web-fed printing activity using an image carrier in which the printing and non-printing area are in the same plane, where web-fed means that the material to be printed is fed to the machine from a reel as distinct from separate sheets. The non-printing area is treated to attract water and thus reject ink. The printing area is treated to receive and transmit ink to the surface to be printed. Evaporation takes place in an oven where hot air is used to heat the printed material,
- *laminating associated to a printing activity* - the adhering together of two or more flexible materials to produce laminates,
- *publication rotogravure* – a rotogravure printing activity used for printing paper for magazines, brochures, catalogues or similar products, using toluene-based inks,
- *rotogravure* – a printing activity using a cylindrical image carrier in which the printing area is below the non-printing area, using liquid inks which dry through evaporation. The recesses are filled with ink and the surplus is cleaned off the non-printing area before the surface to be printed contacts the cylinder and lifts the ink from the recesses,
- *rotary screen printing* – a web-fed printing activity in which the ink is passed onto the surface to be printed by forcing it through a porous image carrier, in which the printing area is open and the non-printing area is sealed off, using liquid inks which dry only through evaporation. Web-fed means that the material to be printed is fed to the machine from a reel as distinct from separate sheets,
- *varnishing* - an activity by which a varnish or an adhesive coating for the purpose of later sealing the packaging material is applied to a flexible material.

Rubber conversion

- Any activity of mixing, milling, blending, calendering, extrusion and vulcanisation of natural or synthetic rubber and any ancillary operations for converting natural or synthetic rubber into a finished product.

Surface cleaning

- Any activity except dry cleaning using organic solvents to remove contamination from the surface of material including degreasing. A cleaning activity consisting of more than one step before or after any other activity shall be considered as one surface cleaning activity. This activity does not refer to the cleaning of the equipment but to the cleaning of the surface of products.

Vegetable oil and animal fat extraction and vegetable oil refining activities

- Any activity to extract vegetable oil from seeds and other vegetable matter, the processing of dry residues to produce animal feed, the purification of fats and vegetable oils derived from seeds, vegetable matter and/or animal matter.

Vehicle refinishing

- Any industrial or commercial coating activity and associated degreasing activities performing:
 - the coating of road vehicles as defined in Directive 70/156/EEC, or part of them, carried out as part of vehicle repair, conservation or decoration outside of manufacturing installations, or
 - the original coating of road vehicles as defined in Directive 70/156/EEC or part of them with refinishing-type materials, where this is carried out away from the original manufacturing line, or
 - the coating of trailers (including semi-trailers)(category O).

Winding wire coating

- Any coating activity of metallic conductors used for winding the coils in transformers and motors, etc.

Wood impregnation

- Any activity giving a loading of preservative in timber.

Wood and plastic lamination

- Any activity to adhere together wood and/or plastic to produce laminated products.

**PART III
THRESHOLDS AND EMISSION CONTROLS**

	Activity (solvent consumption threshold in tonnes/year)	Threshold (solvent consumption threshold in tonnes/year)	Emission limit values in waste gases (mg C/Nm ³)	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
				New	Existing	New	Existing	
1	Heatset web offset printing (> 15)	15 – 25 > 25	100 20	30 ⁽¹⁾ 30 ⁽¹⁾				⁽¹⁾ Solvent residue in finished product is not to be considered as part of fugitive emissions
2	Publication rotogravure (> 25)	> 25	75	10	15			
3	Other rotogravure, flexography, rotary screen printing, laminating or varnishing units (> 15) rotary screen printing on textile/cardboard (> 30)	15 – 25 > 25 > 30 ⁽¹⁾	100 100 100	25 20 20				⁽¹⁾ Threshold for rotary screen printing on textile and on cardboard.
4	Surface cleaning ⁽¹⁾ (> 1)	1 – 5 > 5	20 ⁽²⁾ 20 ⁽²⁾	15 10				⁽¹⁾ Using compounds specified in Article 5(6) & (8). ⁽²⁾ Limit refers to mass of compounds in mg/Nm ³ , and not to total carbon.
5	Other surface cleaning (> 2)	2 – 10 > 10	75 ⁽¹⁾ 75 ⁽¹⁾	20 ⁽¹⁾ 15 ⁽¹⁾				⁽¹⁾ Installations which demonstrate to the competent that the average organic solvent content of all cleaning material used does not exceed 30% by weight are exempt from the application of these values.
6	Vehicle coating (< 15) and vehicle refinishing	> 0.5	50 ⁽¹⁾	25				⁽¹⁾ Compliance in accordance with Article 9(3) should be demonstrated based on 15 minute average measurements.

	Activity (solvent consumption threshold in tonnes/year)	Threshold (solvent consumption threshold in tonnes/year)	Emission limit values in waste gases (mg C/Nm ³)	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
				New	Existing	New	Existing	
7	Coil coating (> 25)	> 25	50 ⁽¹⁾	5	10			⁽¹⁾ For installations which use techniques which allow reuse of recovered solvents, the emission limit shall be 150.
8	Other coating, including metal, plastic, textile ⁽⁵⁾ , fabric, film and paper coating (> 5)	5 – 15 > 15	100 ^{(1) (4)} 50/75 ^{(2) (3) (4)}	25 ⁽⁴⁾ 20 ⁽⁴⁾				⁽¹⁾ Emission limit value applies to coating application and drying processes operated under contained conditions. ⁽²⁾ The first emission limit value applies to drying processes, the second to coating application processes. ⁽³⁾ For textile coating installations which use techniques which allow reuse of recovered solvents, the emission limit applied to coating application and drying processes taken together shall be 150. ⁽⁴⁾ Coating activities which cannot be applied under contained conditions (such as shipbuilding, aircraft painting) may be exempted from these values, in accordance with Article 5(3)(b). ⁽⁵⁾ Rotary screen printing on textile is covered by activity No 3.
9	Winding wire coating (> 5)	> 5				10 g/kg ⁽¹⁾ 5 g/kg ⁽²⁾		⁽¹⁾ Applies for installations where average diameter of wire = 0.1 mm. ⁽²⁾ Applies for all other installations.
10	Coating of wooden surfaces (> 15)	15 – 25 > 25	100 ⁽¹⁾ 50/75 ⁽²⁾	25 20				⁽¹⁾ Emission limit applies to coating application and drying processes operated under contained conditions. ⁽²⁾ The first value applies to drying processes, the second to coating application processes.

	Activity (solvent consumption threshold in tonnes/year)	Threshold (solvent consumption threshold in tonnes/year)	Emission limit values in waste gases (mg C/Nm ³)	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
				New	Existing	New	Existing	
11	Dry cleaning					20 g/kg ⁽¹⁾⁽²⁾		⁽¹⁾ Expressed in mass of solvent emitted per kilogram of product cleaned and dried. ⁽²⁾ The emission limit in Article 5(8) does not apply for this sector.
12	Wood impregnation (> 25)	> 25	100 ⁽¹⁾	45		11 kg/m ³		⁽¹⁾ Does not apply for impregnation with creosote.
13	Coating of leather (> 10)	10 – 25 > 25 > 10 ⁽¹⁾				85 g/m ² 75 g/m ² 150 g/m ²	Emission limits are expressed in grams of solvent emitted per m ² of product produced. ⁽¹⁾ For leather coating activities in furnishing and particular leather goods used as small consumer goods like bags, belts, wallets etc.	
14	Footwear manufacture (> 5)	> 5				25 g per pair		Total emission limit values are expressed in grams of solvent emitted per pair of complete footwear produced.
15	Wood and plastic lamination (>5)	> 5				30 g/m ²		
16	Adhesive coating (> 5)	5 – 15 > 15	50 ⁽¹⁾ 50 ⁽¹⁾	25 20				⁽¹⁾ If techniques are used which allow reuse of recovered solvent, the emission limit value in waste gases shall be 150.
17	Manufacture of coating preparations, varnishes, inks and adhesives (> 100)	100 – 1 000 > 1 000	150 150	5 3		5% of solvent input 3% of solvent input		The fugitive emission value does not include solvent sold as part of a coatings preparation in a sealed container.

	Activity (solvent consumption threshold in tonnes/year)	Threshold (solvent consumption threshold in tonnes/year)	Emission limit values in waste gases (mg C/Nm ³)	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
				New	Existing	New	Existing	
18	Rubber conversion (> 15)	> 15	20 ⁽¹⁾	25 ⁽²⁾		25% of solvent input		(1) If techniques are used which allow reuse of recovered solvent, the emission limit value in waste gases shall be 150 (2) The fugitive emission value does not include solvent sold as part of products or preparations in a sealed container.
19	Vegetable oil and animal fat extraction and vegetable oil refining activities (> 10)	> 10				Animal fat: 1.5 kg/tonne Castor: 3 kg/tonne Rape seed: 1 kg/tonne Sunflower seed: 1 kg/tonne Soya beans (normal crush): 0.8 kg/tonne Soya beans (white flakes): 1.2 kg/tonne Other seeds and other vegetable matter: 3 kg/tonne ⁽¹⁾ 1.5 kg/tonne ⁽²⁾ 4 kg/tonne ⁽³⁾		(1) Total emission limit values for installations processing individual batches of seeds and other vegetable matter should be set by the competent authority on a case-by-case basis, applying the best available techniques. (2) Applies to all fractionation processes excluding de-gumming (the removal of gums from oil). (3) Applies to de-gumming.
20	Manufacturing of pharmaceutical products (>50)	> 50	20 ⁽¹⁾	5 ⁽²⁾	15 ⁽²⁾	5% of solvent input	15 % of solvent input	(1) If techniques are used which allow reuse of recovered solvent, the emission limit value in waste gases shall be 150. (2) The fugitive emission limit value does not include solvent sold as part of products or preparations in a sealed container.

PART IV
THE VEHICLE COATING INDUSTRY

The total emission limit values are expressed in terms of grams of solvent emitted in relation to the surface area of product in square metres and in kilograms of solvent emitted in relation to the car body.

The surface area of any product dealt with in the table below is defined as follows:
- the surface area calculated from the total electrophoretic coating area, and the surface area of any parts that might be added in successive phases of the coating process which are coated with the same coatings as those used for the product in question, or the total surface area of the product coated in the installation. The surface of the electrophoretic coating area is calculated using the formula:

$$2 \times \text{total weight of product shell}$$

$$\text{average thickness of metal sheet} \times \text{density of metal sheet}$$

This method shall also be applied for other coated parts made out of sheets. Computer aided design or other equivalent methods shall be used to calculate the surface area of the other parts added, or the total surface area coated in the installation.

The total emission limit value in the table below refers to all process stages carried out at the same installation from electrophoretic coating, or any other kind of coating process, through to the final wax and polish of topcoating inclusive, as well as solvent used in cleaning of process equipment, including spray booths and other fixed equipment, both during and outside of production time. The total emission limit value is expressed as the mass sum of organic compounds per m² of the total surface area of coated product and as the mass sum of organic compounds per car body.

Activity (solvent consumption threshold in tonnes/year)	Production threshold (refers to annual production of coated item)	Total emission limit value	
		New	Existing
Coating of new cars (> 15)	> 5000	45 g/m ² or 1.3 kg/body + 33 g/m ²	60 g/m ² or 1.9 kg/body + 41 g/m ²
	= 5000 monocoque or > 3 500 chassis-built	90 g/m ² or 1.5 kg/body + 70 g/m ² Total emission limit (g/m ²)	90 g/m ² or 1.5 kg/body + 70 g/m ²
Coating of new truck cabins (> 15)	= 5 000	65	85
	> 5 000	55	75
Coating of new vans and trucks (> 15)	= 2 500	90	120
	> 2 500	70	90
Coating of new buses (> 15)	= 2 000	210	290
	> 2 000	150	225

Vehicle coating installations below the solvent consumption thresholds in the table above shall meet the requirements for the vehicle refinishing sector in Part III above.

SCHEDULE 2

PART I

REQUIREMENTS

1. All installations shall comply with:
 - (a) (i) the emission limit values in waste gases and the fugitive emission values; or
(ii) the total emission limit values,
together with the other requirements laid down in Parts III or IV of Schedule 1; or
 - (b) the requirements of the reduction scheme specified in Schedule 3.

2. (a) For fugitive emissions, enforcing authorities shall apply fugitive emission values to installations as an emission limit value. However, where it is demonstrated to the satisfaction of the enforcing authority that for an individual installation this value is not technically and economically feasible, the enforcing authority can make an exception for such an individual installation provided that significant risks to human health or the environment are not to be expected. For each derogation, the operator must demonstrate to the satisfaction of the enforcing authority that the best available technique is being used;
(b) activities which cannot be operated under contained conditions may be exempted from the controls of Part III or IV of Schedule 1, when this possibility is explicitly mentioned in those Parts. The reduction scheme in Schedule 3 is then to be used, unless it is demonstrated to the satisfaction of the enforcing authority that this option is not technically and economically feasible. In this case, the operator must demonstrate to the satisfaction of the enforcing authority that the best available technique is being used.

3. For installations not using the reduction scheme, any abatement equipment installed after 1st April 2001 shall meet all the requirements of Parts III or IV of Schedule 1.

4. Installations where two or more activities are carried out, each of which exceeds the thresholds in Parts III or IV of Schedule 1 shall:
 - (a) as regards the substances specified in paragraphs 5, 6 and 7 meet the requirements of those paragraphs for each activity individually;
 - (b) as regards all other substances, either:
 - (i) meet the requirements of paragraph 1 for each activity individually; or
 - (ii) have total emissions not exceeding those that would have resulted had point (i) been applied.

5. Substances or preparations which, because of their content of VOCs classified as carcinogens, mutagens, or toxic to reproduction under Directive 67/548/EEC⁽¹⁾, are assigned or need to carry the risk phrases R45, R46, R49, R60, R61, shall be replaced, as far as possible and by taking into account the guidance published by the Commission in accordance with Article 7(1) of the Directive, by less harmful substances or preparations within the shortest possible time.

⁽¹⁾ Council Directive 67/548/EEC of 27th June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (OJ B 196, 16.8.1967, p.1-5), amended for the 7th time by Directive 92/32/EEC (OJ L 154, 5.6.1992, p.1-29).

6. For discharges of the VOCs referred to in paragraph 5, where the mass flow of the sum of the compounds causing the labelling referred to in that paragraph is greater than, or equal to, 10 g/h, an emission limit value of 2 mg/Nm³ shall be complied with. The emission limit value refers to the mass sum of the individual compounds.

7. For discharges of halogenated VOCs which are assigned the risk phrase R40, where the mass flow of the sum of the compounds causing the labelling R40 is greater than, or equal to, 100 g/h, an emission limit value of 20 mg/Nm³ shall be complied with. The emission limit value refers to the mass sum of the individual compounds.

The discharge of VOCs referred to in paragraphs 5 and 7 shall be controlled as emissions from an installation under contained conditions as far as technically and economically feasible to safeguard public health and the environment.

8. Discharges of those VOCs which, after 29th March 1999, are assigned or need to carry one of the risk phrases mentioned in paragraphs 5 and 7, shall have to comply with the emission limit values mentioned in paragraphs 6 and 7 respectively, within the shortest possible time.

9. All appropriate precautions shall be taken to minimise emissions during start-up and shut-down.

10. Existing installations which operate existing abatement equipment and comply with the following emission limit values:

- 50 mg C/Nm³ in the case of incineration,

- 150 mg C/Nm³ in the case of any other abatement equipment,

shall be exempt from the waste gases emission limit values in the table in Part III of Schedule 1 for a period of 12 years from 1st April 2001, provided the total emissions of the whole installation do not exceed those that would have resulted had all the requirements of the table been met.

11. Neither the reduction scheme nor the application of paragraph 10 exempt installations discharging substances specified in paragraphs 5, 6 and 7 from fulfilling the requirements of those paragraphs.

PART II MONITORING

12. The operator of an installation shall supply the enforcing authority once a year or on request with data that enables the enforcing authority to verify compliance with this direction.

13. Channels to which abatement equipment is connected, and which at the final point of discharge emit more than an average of 10 kg/h of total organic carbon, shall be monitored continuously for compliance.

14. In cases not falling within paragraph 13, the enforcing authority shall ensure that either continuous or periodic measurements are carried out. For periodic

measurements at least three readings shall be obtained during each measurement exercise.

15. Measurements are not required in the case where end-of-pipe abatement equipment is not needed to comply with this direction.

PART III COMPLIANCE WITH EMISSION LIMIT VALUES

16. Compliance with the following shall be demonstrated to the satisfaction of the enforcing authority:

- emission limit values in waste gases, fugitive emission values and total emission limit values,
- the requirements of the reduction scheme under Schedule 3,
- the provisions of paragraph 2 above.

Guidance is provided in Schedule 4 on solvent management plans serving to demonstrate compliance with these parameters.

Gas volumes may be added to the waste gas for cooling or dilution purposes where technically justified but shall not be considered when determining the mass concentration of the pollutant in the waste gas.

17. Following a substantial change, compliance shall be reverified.

18. In the case of continuous measurements the emission limit values shall be considered to be complied with if:

- (a) none of the averages over 24 hours of normal operation exceeds the emission limit values, and
- (b) none of the hourly averages exceeds the emission limit values by more than a factor of 1.5.

19. In the case of periodic measurements the emission limit values shall be considered to be complied with if, in one monitoring exercise:

- (a) the average of all the readings does not exceed the emission limit values, and
- (b) none of the hourly averages exceeds the emission limit value by more than a factor of 1.5.

20. Compliance with the provisions of paragraphs 6 and 7 shall be verified on the basis of the sum of the mass concentrations of the individual volatile organic compounds concerned. For all other cases, compliance shall be verified on the basis of the total mass of organic carbon emitted unless otherwise specified in Parts III or IV to Schedule 1.

SCHEDULE 3

REDUCTION SCHEME

1. Principles

The purpose of the reduction scheme is to allow the operator the possibility to achieve by other means emission reductions, equivalent to those achieved if the emission limit values were to be applied. To that end the operator may use any reduction scheme, specially designed for his installation, provided that in the end an equivalent emission reduction is achieved.

2. Practice

In the case of applying coatings, varnishes, adhesives or inks, the following scheme can be used. Where the following method is inappropriate the enforcing authority may allow an operator to apply any alternative exemption scheme which it is satisfied fulfils the principles outlined here. The design of the scheme takes into account the following facts:

- (i) where substitutes containing little or no solvent are still under development, a time extension must be given to the operator to implement his emission reduction plans;
- (ii) the reference point for emission reductions should correspond as closely as possible to the emissions which would have resulted had no reduction action been taken.

The following scheme shall operate for installations for which a constant solid content of product can be assumed and used to define the reference point for emission reductions:

- (i) the operator shall forward an emission reduction plan which includes in particular decreases in the average solvent content of the total input and/or increased efficiency in the use of solids to achieve a reduction of the total emissions from the installation to a given percentage of the annual reference emissions, termed the target emission. This must be done on the following time frame:

Time period		Maximum allowed total annual emissions
New installations	Existing installations	
By 31.10.2001	By 31.10.2005	Target emission x 1.5
By 31.10.2004	By 31.10.2007	Target emission

(ii) The annual reference emission is calculated as follows:

(a) The total mass of solids in the quantity of coating and/or ink, varnish or adhesive consumed in a year is determined. Solids are all materials in coatings, inks, varnishes and adhesives that become solid once the water or the volatile organic compounds are evaporated.

(b) The annual reference emissions are calculated by multiplying the mass determined in (a) by the appropriate factor listed in the table below. Enforcing authorities may adjust these factors for individual installations to reflect documented increased efficiency in the use of solids.

Activity	Multiplication factor for use in item (ii)(b)
Rotogravure printing; flexography printing; laminating as part of a printing activity; varnishing as part of a printing activity; wood coating; coating of textiles, fabric film or paper; adhesive coating	4
Coil coating, vehicle refinishing	3
Food contact coating, aerospace coatings	2.33
Other coatings and rotary screen printing	1.5

(c) The target emission is equal to the annual reference emission multiplied by a percentage equal to:

- (the fugitive emission value + 15), for installations falling within item 6 and the lower threshold band of items 8 and 10 of Part III of Schedule 1,
- (the fugitive emission value + 5) for all other installations.

(d) Compliance is achieved if the actual solvent emission determined from the solvent management plan is less than or equal to the target emission.

SCHEDULE 4

SOLVENT MANAGEMENT PLAN

1. Introduction

This Annex provides guidance on carrying out a solvent management plan. It identifies the principles to be applied (paragraph 2) and provides a framework for the mass balance (paragraph 3) and an indication of the requirements for verification of compliance (paragraph 4).

2. Principles

The solvent management plan serves the following purposes:

- (i) verification of compliance as specified in paragraph 16 of Part III of Schedule 2;
- (ii) identification of future reduction options;
- (iii) enabling of the provision of information on solvent consumption, solvent emissions and compliance with the Directive to the public.

3. Definitions

The following definitions provide a framework for the mass balance exercise.

(a) Inputs of organic solvents (I):

I1 The quantity of organic solvents or their quantity in preparations purchased which are used as input into the process in the time frame over which the mass balance is being calculated.

I2 The quantity of organic solvents or their quantity in preparations recovered and reused as solvent input into the process. (The recycled solvent is counted every time it is used to carry out the activity.)

(b) Outputs of organic solvents (O):

O1 Emissions in waste gases.

O2 Organic solvents lost in water, if appropriate taking into account waste water treatment when calculating O5.

O3 The quantity of organic solvents which remains as contamination or residue in products output from the process.

O4 Uncaptured emissions of organic solvents to air. This includes the general ventilation of rooms, where air is released to the outside environment via windows, doors, vents and similar openings.

O5 Organic solvents and/or organic compounds lost due to chemical or physical reactions (including for example those which are destroyed, e.g. by incineration or other waste gas or waste water treatments, or captured, e.g. by adsorption, as long as they are not counted under O6, O7 or O8).

O6 Organic solvents contained in collected waste.

O7 Organic solvents, or organic solvents contained in preparations, which are sold or are intended to be sold as a commercially valuable product.

O8 Organic solvents contained in preparations recovered for reuse but not as input into the process, as long as not counted under O7.

O9 Organic solvents released in other ways.

4. Guidance on use of the solvent management plan for verification of compliance

The use made of the solvent management plan will be determined by the particular requirement which is to be verified, as follows:

(i) Verification of compliance with the reduction option in Schedule 3, with a total emission limit value expressed in solvent emissions per unit product, or otherwise stated in Parts III or IV of Schedule 1.

(a) For all activities using the solvent management plan in Schedule 4 it should be done annually to determine consumption (C). Consumption can be calculated according to the following equation:

$$C = I1 - O8$$

A parallel exercise should also be undertaken to determine solids used in coating in order to derive the annual reference emission and the target emission each year.

(b) For assessing compliance with a total emission limit value expressed in solvent emissions per unit product or otherwise stated in Parts III or IV of Schedule 1, the solvent management plan should be done annually to determine emissions (E).

Emissions can be calculated according to the following equation:

$$E = F + O1$$

where F is the fugitive emission as defined in section (ii)(a). The emission figure should then be divided by the relevant product parameter.

(c) For assessing compliance with the requirements of paragraph 4(b)(ii) of Part I of Schedule 2, the solvent management plan should be done annually to

determine total emissions from all activities concerned, and that figure should then be compared with the total emissions that would have resulted had the requirements of Parts III and IV of Schedule 1 and Schedule 3 (as applicable) been met for each activity separately.

(ii) Determination of fugitive emissions for comparison with fugitive emission values in Part III of Schedule 1:

(a) Methodology

The fugitive emission can be calculated according to the following equation:

$$F = I1 - O1 - O5 - O6 - O7 - O8$$

or

$$F = O2 + O3 + O4 + O9$$

This quantity can be determined by direct measurement of the quantities.

Alternatively, an equivalent calculation can be made by other means, for instance by using the capture efficiency of the process.

The fugitive emission value is expressed as a proportion of the input, which can be calculated according to the following equation:

$$I = I1 + I2$$

(b) Frequency

Determination of fugitive emissions can be done by a short but comprehensive set of measurements. It need not be done again until the equipment is modified.