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## **Guidance on the Solvent Emissions (Scotland) Regulations 2004**

**Implementing EC Directive 1999/13/EC on the  
Limitation of Emissions of Volatile Organic  
Compounds**

June 2004  
Paper 2004/9

Scottish Executive Environment Group

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## **1. INTRODUCTION**

### **1.1 Scope of the Document**

This document is issued by the Scottish Executive to the Scottish Environment Protection Agency (SEPA) and operators as guidance on implementation of the Solvent Emissions Directive (Council Directive 1999/13/EC “on the limitation of emissions of volatile organic compounds (VOCs) due to the use of organic solvents in certain activities and installations”, the SED).

The guidance gives an overview of the current UK regulatory regimes, identifies the application procedure and summarises the main technical requirements of the SED.

### **1.2 Regulatory Overview**

The Solvent Emissions Directive was fully transposed into Scots law on 28 January 2004 when the “Solvent Emissions (Scotland) Regulations 2004” (SER 2004) came into force.

As transposition of the SED was delayed from the 1 April 2001 deadline required by the European Commission transitional arrangements have had to be included in SER 2004 for both application and compliance arrangements.

The SER 2004 amends the existing regulatory regimes of Local Air Pollution Control (LAPC), Integrated Pollution Control (IPC), and Pollution Prevention and Control (PPC) to designate SED listed activities as prescribed processes or activities for control under these existing regimes. In this way SER 2004 requires that SEPA include such necessary conditions in authorisations / permits to deliver the technical requirements of the SED.

The SED sets minimum technical standards, which may well be superseded by the underlying requirement for operators to apply BATNEEC (Best Available Techniques Not Entailing Excessive Cost) or BAT (Best Available Techniques) for LAPC / IPC or PPC respectively.

The provision of this guidance to SEPA and operators is intended to secure consistent interpretation of the SED requirements and contribute to the effective regulation of activities using VOCs.

Additional technical guidance has been issued by the Department for Environment, Food and Rural Affairs (DEFRA) and the Devolved Administrations which identifies the technical compliance requirements for each specific industrial sector which falls within the scope of the SED. This guidance can be viewed via the following web link :

<http://www.defra.gov.uk/environment/airquality/lapc/pgnotes/default.htm>

## **2. SOLVENT EMISSIONS DIRECTIVE AND REGULATIONS**

### **2.1 Directive 1999/13/ EC (SED)**

European Council Directive 1999/13/EC “on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations” (“the SED”) required to be implemented into Member States’ law by 1 April 2001.

A copy of the SED can be found at:

[http://europa.eu.int/eur-lex/en/consleg/pdf/1999/en\\_1999L0013\\_do\\_001.pdf](http://europa.eu.int/eur-lex/en/consleg/pdf/1999/en_1999L0013_do_001.pdf)

### **2.2 1 March 2002 Directions**

In Scotland the SED was largely transposed by directions issued by the Scottish Executive to SEPA on 1 March 2002 under Part 1 of the Environmental Protection Act 1990 (“EPA 1990”) and under the Pollution Prevention and Control (Scotland) Regulations 2000 (“PPC 2000”). The directions, which applied to all SED installations regulated at the time under EPA 1990 and PPC 2000, required SEPA to exercise its powers to include the requirements of the SED in permits or authorisations granted under that legislation.

### **2.3 Solvent Emissions (Scotland) Regulations 2004**

Complete transposition of the SED into Scottish law took place on 28 January 2004 when the Solvent Emission (Scotland) Regulations 2004 (SSI 2004 No 26) came into force.

A copy of the SER 2004 can be found at:

<http://www.scotland-legislation.hmso.gov.uk/legislation/scotland/ssi2004/20040026.htm>

### **2.4 2004 Directions**

The 1 March 2002 directions were revoked on 27 February 2004 by directions issued under the Environmental Protection Act 1990 (EPA 90) and PPC 2000 on the basis that the original directions have now been superseded by the SER 2004. It is the provisions of SER 2004 which now apply to the regulation of SED activities. The new EPA 90 direction issued on 27 February 2004 also addresses a particular provision in the SER 2004.

A copy of the new EPA and PPC directions can be found at:

<http://www.scotland.gov.uk/library5/environment/seddo4.pdf>

### **2.5 PPC Amendment Regulations**

The Pollution Prevention and Control (Scotland) Amendment Regulations 2004 (SSI 2004 No 110) which came into force on 31 March 2004 acted, amongst other things, to amend the SER 2004. This amendment has had the effect of correcting an error in the original regulations by setting the annual solvent consumption threshold for the coating of trailers at 0.5 tonnes as opposed to the 5 tonne threshold which appears in the original version of the SER 2004. A copy of the PPC Amendment Regulations 2004 can be found at :

<http://www.hmso.gov.uk/legislation/scotland/ssi2004/20040110.htm>

### **2.6 Council Directive on the VOC Content of Paints**

Directive 2004/42/EC on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products (VOC in Paints Directive) came into force on 30 April 2004. The Directive amends SED.

Article 13(1) of the VOC in Paints Directive acts to amend Annex 1 of the SED in the section entitled "vehicle refinishing" by deleting the following activity : "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"

Article 13(2) of the VOC in Paints Directive allows Member States the flexibility to maintain or introduce national measures for the control of emissions from vehicle refinishing activities deleted from the scope of Directive 1999/13/EC.

Member States have to implement the requirements of this new Directive (known as the VOC in Paints Directive) by no later than 30 October 2005.

The Scottish Executive expects to issue a public consultation document later in the year containing proposals for how this new Directive will be implemented and in particular how SER 2004 may be amended with regard to the vehicle refinishing sector.

A copy of the VOC in Paints Directive can be viewed at :

[http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/l\\_143/l\\_14320040430en00870096.pdf](http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/l_143/l_14320040430en00870096.pdf)

### **3. OBJECTIVE OF THE SOLVENT EMISSIONS (SCOTLAND) REGULATIONS 2004**

The purpose of the Solvent Emissions (Scotland) Regulations 2004 (**SER 2004**) (SSI 2004/26) is to prevent or reduce the direct and indirect effects of emissions of VOCs into the environment, mainly into air. Measures to reduce VOCs must be implemented by those activities which exceed the solvent consumption thresholds specified in Schedule 1 to the SER.

The SER 2004 are not limited to releases to air but relate to the control of fugitive releases to all media. This is a step change in the way that those Part B activities affected by SER 2004 will be regulated; previously only releases to air were controlled.

For more harmful VOCs, such as suspected carcinogens, mutagens etc., there is a requirement to use less harmful substitutes within the shortest possible time. Section 9 of this note provides guidance on this subject. For other VOCs there is a requirement to meet emission limit values (ELVs) or to implement a solvent reduction plan with an equivalent impact.

The requirement to reduce releases of VOCs on a trans-national basis is primarily to reduce the formation of ground level ozone, a secondary pollutant harmful to vegetation and human health. Ozone is produced in a complex series of chemical reactions involving VOCs, sunlight and other pollutants such as oxides of nitrogen. Ground level concentrations of ozone are rising and some medical research has linked exposure to ozone as a factor in the development of asthma in children.

### **4. SCOPE OF THE SER 2004**

#### **4.1 Summary of SED Activities**

Schedule 1 to the SER 2004 creates a new Chapter 7 in Part 1 of Schedule 1 to the PPC Regulations. Activities identified in Part B of the new Chapter 7 fall within the scope of the SED if the annual solvent consumption for that activity exceeds, or is likely to exceed, the specified threshold level.

Table 1 below reproduces these SED activities and corresponding solvent consumption thresholds.

**Table 1: SED Activities and Consumption Thresholds**

<b>ACTIVITY</b>	<b>Solvent consumption threshold in tonnes/year</b>
Heatset web offset printing	15
Publication rotogravure	25
Other rotogravure, flexography, rotary screen printing, laminating or varnishing units	15
Rotary screen printing on textile/cardboard	30
Surface cleaning using substances or preparations which because of their content of volatile organic compounds classified as carcinogens, mutagens or toxic to reproduction under Directive 67/548/EEC (1) are assigned or need to carry one or more of the risk phrases R45, R46, R49, R60 or R61, or halogenated volatile organic compounds which are assigned or need to carry the risk phrase R40	1
Other surface cleaning	2
Vehicle coating and vehicle refinishing	0.5
Coil coating	25
Other coating activities, including metal, plastic, textile (except rotary screen printing on textile), fabric, film and paper coating	5
Winding wire coating	5
Coating activity applied to wooden surfaces	15
Dry cleaning	0
Wood impregnation	25
Coating activity applied to leather	10
Footwear manufacture	5
Wood and plastic lamination	5
Adhesive coating	5
Manufacture of coating preparations, varnishes, inks and adhesives	100
Rubber conversion	15
Vegetable oil and animal fat extraction and vegetable oil refining activities	10
Manufacturing of pharmaceutical products	50

(1) O.J. 196, 16.8.1967, p.1 as last amended by Commission Directive 98/98/EC (O.J. L355, 30.12.1998, p.1)



A number of the twenty one activities described in Table 1 are already subject to Part A or Part B regulation by SEPA under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991 and the PPC Regulations. Where the new Chapter 7 prescribes SED activities for first time, regulation of these activities will be subject to PPC Part B control eg small scale vehicle refinishing (0.5 – 1 tonne) and dry cleaning. The activities which are prescribed for PPC Part B regulatory control for the first time as a result of the SER 2004 are identified in Table 2.

**Table 2: SED Activities Prescribed for First Time PPC Part B Control under SER 2004**

SECTOR	Annual solvent consumption threshold (tonnes)
dry cleaning	-
vehicle refinishing	0.5 – 1
vehicle coating in the course of manufacture	0.5 – 5
coating not in the course of manufacture	> 5
surface cleaning using certain specified risk phrase compounds*	> 1
surface cleaning not using certain specified risk phrase compounds*	> 2
rubber conversion not using carbon black	> 15
formulation and finishing of pharmaceuticals	> 50
Extraction of 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 where the process is incidental to the cooking for human consumption	> 10
timber treatment treating less than 1000m <sup>3</sup> with solvent	> 25

Note : Where no threshold is specified then there is no equivalent minimum and the activity is prescribed for control regardless of size or capacity.

\*The specified risk phrase compounds are substances or preparations which because of their content of VOCs are classified as carcinogens, mutagens, or toxic to reproduction under Directive 67/548/EEC are assigned or need carry the risk phrases R45, R46, R49, R60 or R61 and halogenated VOCs which are assigned the risk phrase R40.

#### **4.2 Who & What is Affected by the SER 2004?**

The SER 2004 applies to those activities listed in Schedule 1 to the SER 2004 where the solvent consumption is above the threshold specified in that Schedule. The following section details how to identify whether the SER 2004 will apply to an activity, how to calculate the SER activity consumption, and the timescales for making applications.

A series of flow charts are used to identify key criteria under the SER 2004, and should enable clear identification of application requirements.

In order to determine whether an activity should be regulated under SER 2004 it is necessary to define some of the terms used. These are contained within the SER 2004 and are reproduced here in a simplified version for the purposes of this guidance.

## Definitions

**'SED Listed Activity'** – an activity listed in Chapter 7, Part 1 of Schedule 1 to the SER 2004.

**'Directly Associated Activity'** – any directly associated activity that has a technical connection with the SED listed activity, carried out at the same site and which could have an effect on any discharge of VOCs into the environment.

**'SED Activity'** – an activity falling within Chapter 7, Part 1 of Schedule 1, where operated above the solvent consumption threshold specified for that activity (NOTE: consumption is calculated as being the total solvent consumption of the SED listed activity plus the solvent consumption of the directly associated activities)

**'SED Installation' ('SEDI')** means a stationary technical unit where one or more SED activities are carried out; and any other location on the same site where any other directly associated activities are carried out.

**'Solvent Consumption'** means the total input of organic solvents less any VOCs that are recovered for reuse.

**'Reuse'** means the use of any organic solvents recovered for any technical or commercial purpose and including use as a fuel, but excluding the final disposal of such recovered organic solvents as waste.

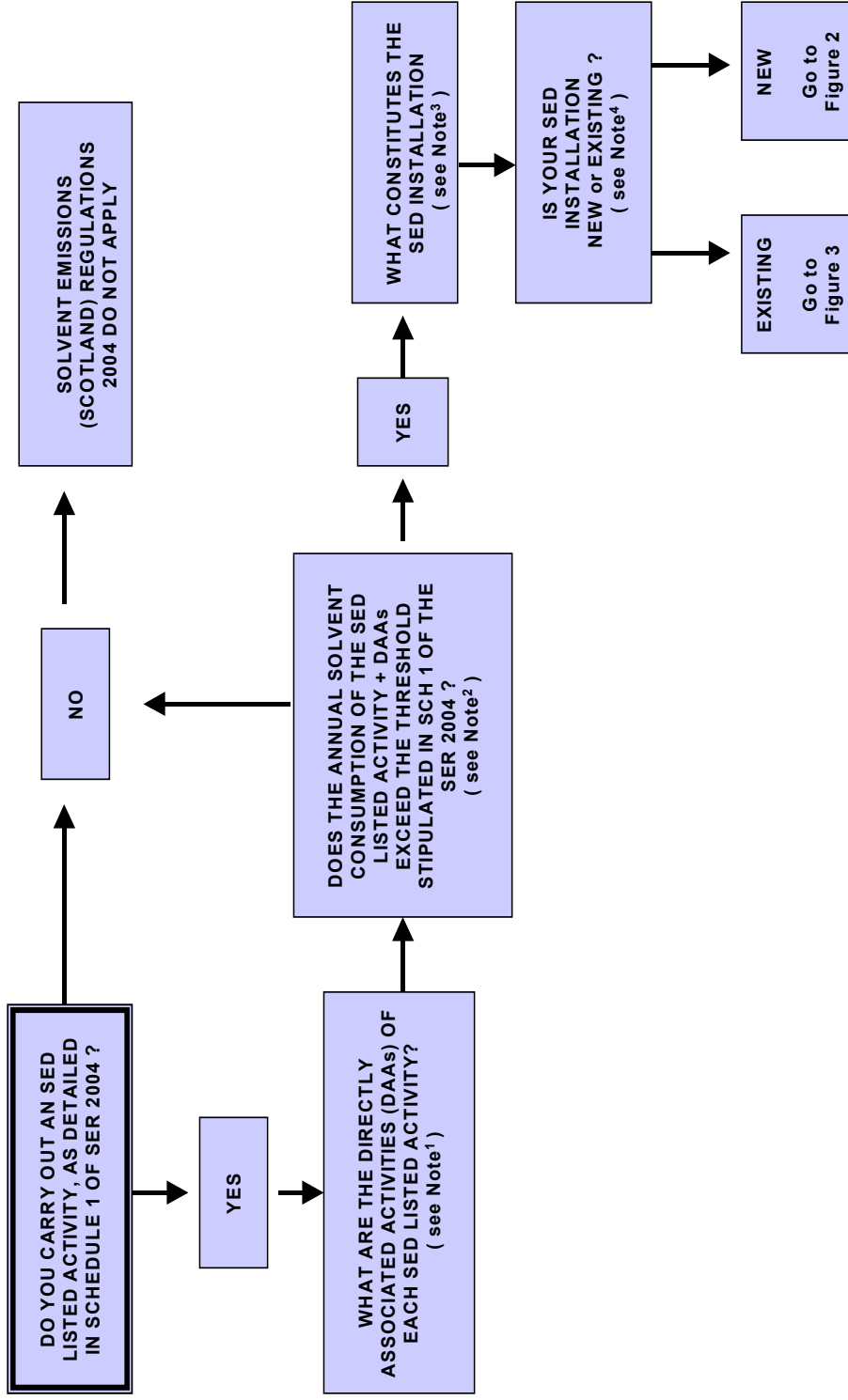
**'New SED Installation'** means an installation that was put into operation after 1 April 2001, other than an existing SED installation.

**'Existing SED Installation'** means an installation that was;

- put into operation before 1 April 2001 ; or
- put into operation after 1 April 2001 but before 1 April 2002 and operated under an EPA 1990 authorisation or PPC permit granted before 1 April 2001 or an application for an EPA authorisation or PPC permit was duly made before 1 April 2001.

Figure 1 illustrates the pathway for determining whether an activity will fall within the scope of SER 2004.

Figure 1: Determining whether an Activity is covered by the Solvent Emission Regulations



Notes

1. If more than one listed SED activity is carried out, the DAAs for each SED listed activity must be identified separately
2. The figure required is the annual solvent consumption of the SED listed activity plus the annual solvent consumption of any DAAs. If this figure exceeds the threshold for that SED activity then the operation will be subject to the Solvent Emissions Regulations
3. In order to determine what constitutes the SED installation you must identify what SED activities are undertaken and any relevant DAAs.
4. 'New' SED installation means an installation that was put into operation after 1/4/2001, other than an existing SED).  
 'Existing' SED Installation means an installation that was:  
 1) put into operation <1/4/2001  
 2) put into operation >1/4/2001 but <1/4/2002, and- it was operated under a EPA authorisation or PPC permit granted <1/4/2001; or  
 - an application for a EPA authorisation or PPC permit was duly made <1/4/2001

## **5. GENERAL PROVISIONS OF THE SER 2004**

### **5.1 Introduction**

The permit application timeframes for activities prescribed for first time PPC Part B control as a result of SER 2004 are being phased in until 31 October 2006. There are transitional arrangements in place to enable existing SED installations (SEDI) to come into the new regulatory regime. The application arrangements for new and existing SED installations are described in section 6.

### **5.2 Application Forms**

SEPA has standard PPC application forms that should be completed when, for example, an operator is making an application for a permit or for a variation to a permit. However, because the SER 2004 imposes specific requirements on activities falling within its scope, SEPA requires certain operational details in order to determine any application relating to a SEDI. SER 2004 application form SER 1 is available from local SEPA offices and can also be found on SEPA's web site via the following link :-

[http://www.sepa.org.uk/ppc/solvent/sed\\_application\\_form.pdf](http://www.sepa.org.uk/ppc/solvent/sed_application_form.pdf)

SER 1 has been designed to help ensure that the necessary information is provided to SEPA and should be completed in addition to the relevant standard PPC application forms.

All SED sectors subject to first time PPC Part B regulation purely as a result of the SER 2004 will have the same advertising and consultation procedures as other standard PPC Part B activities.

Dry cleaning operators, however, will not be required to advertise their permit applications and applications for substantial change while SEPA will not be required to undertake consultation on such applications. A separate simplified permit application form is to be devised for the dry cleaning sector.

### **5.3 Charging Arrangements**

All SED sectors subject to first time PPC Part B regulation purely as a result of the SER 2004 have been allocated into category 3 of SEPA's existing PPC Part B Charging Scheme other than dry cleaners who have been allocated into category 1. Category 3 is effectively the standard charging bracket for Part B activities; Category 1 is set at a discounted rate to take account of the simplified application form and procedure to be applied to dry cleaning activities. The amended charging scheme can be viewed on the SEPA web site via the following link :-

[http://www.sepa.org.uk/charging/booklets/2004\\_05.htm](http://www.sepa.org.uk/charging/booklets/2004_05.htm)

## **6. APPLICATION TIMETABLES AND ARRANGEMENTS**

### **6.1 When Should Applications be Made?**

Operators of currently regulated SED Installations (i.e. SEDIs already regulated in full or in part under an EPA authorisation or a PPC permit) must apply to SEPA for a variation to include the requirements of the SER 2004, as relevant to their operations, unless SEPA has already included SED requirements (eg as a result of reviewing the authorisation / permit).

Operators of currently unregulated SEDIs must apply for a PPC permit (e.g. dry cleaners).

The SER 2004 does not state specific 'application timescales' for each SER activity. Instead, the date by which the operator is required to apply is determined by a number of factors, including whether the SEDI is 'new' or 'existing'; the nature of the operations undertaken; the type of VOCs used; and how the operator intends to comply with the SER 2004. These factors and the application timescales are detailed further in the following sections.

## **6.2 Application Timescales for 'New' SED Installations**

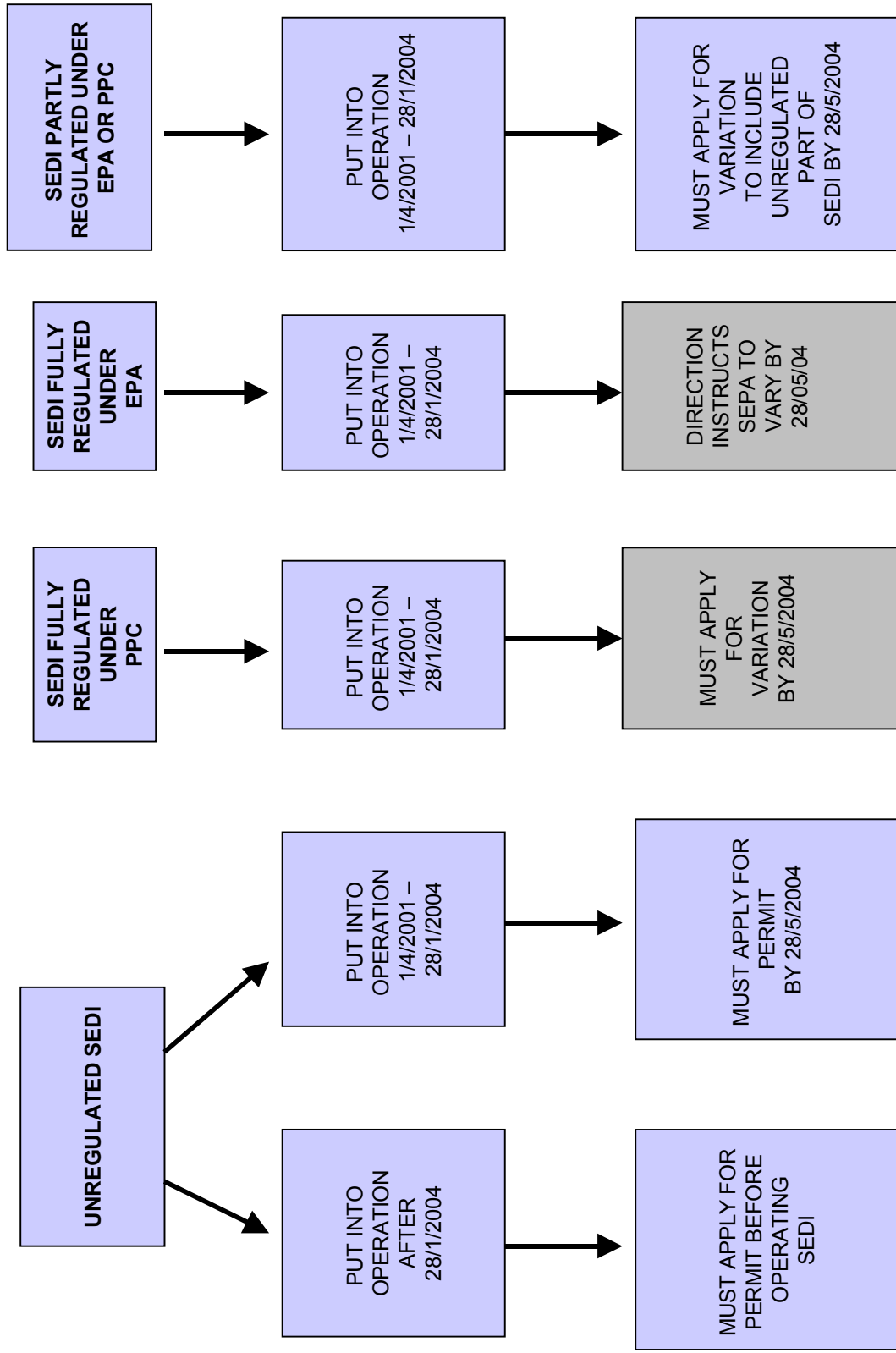
The date the operator of a 'new' SEDI has to apply is determined by two factors, namely;

- whether the SEDI is already regulated (either fully or partly under PPC or EPA);  
and
- when the SEDI was put into operation (i.e. between 1 April 2001 and 28 January 2004, or after 28 January 2004).

In addition SEPA is required, where appropriate, to conduct variations to installations issued with an EPA 90 authorisation between 1 April 2001 and 28 January 2004 to include SED compliant conditions by 28 May 2004.

Figure 2 details the application windows for scenarios where there are 'new' SEDs.

Figure 2: Application Timescales for 'New' SEDIs



### 6.3 Application Timescales for 'Existing' SED Installations

The date the operator of an 'existing' unregulated SEDI has to apply for a PPC Part B permit is determined by the 3 factors listed in Table 3 below.

**Table 3: Application Timetables for Existing SEDIs**

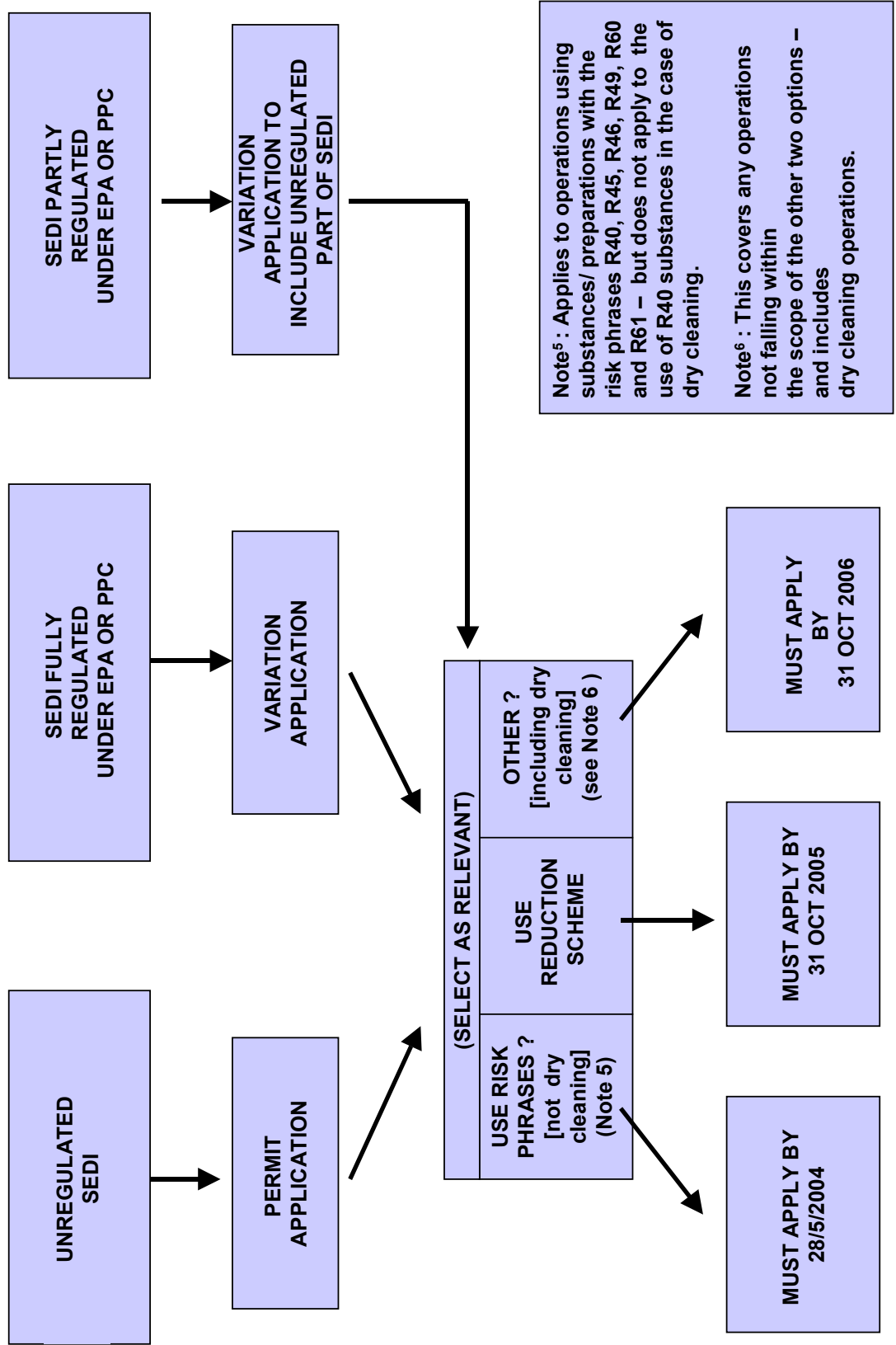
Scenario	Application Timescale
The operations involve the use of any substances/preparations with the risk phrases R40, R45, R46, R49, R60 and R61 (but excluding the use of R40 substances/preparations in dry cleaning operations).	No later than 28 May 2004
Compliance with the SER 2004 will be achieved via a reduction scheme.	No later than 31 October 2005
All other operations	No later than October 2006

**Table 4: Risk Phrases and Definitions**

Risk Phrase *	Definition
R40	Possible Risk of Irreversible Effects
R45	May Cause Cancer
R46	May Cause Heritable Genetic Damage
R49	May Cause Cancer by Inhalation
R60	May Impair Fertility
R61	May Cause Harm to the Unborn Child
* Taken from the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 ("CHIP 3")	

Figure 3 below details the application windows for the various scenarios for 'existing' SEDIs.

Figure 3: Application Timescales for 'Existing' SEDIs





## 6.4 Further Application Rules for Existing Installations

There are a number of additional factors which require to be taken into account when determining the date by which an existing installation must make an application to SEPA. These factors are as follows :

- Whether VOC abatement equipment has been installed, and when
- If a substance allocated a risk phrase is to be used in future
- A substance is re-allocated a specific risk phrase
- Whether the operation is to undergo a substantial change

These scenarios are explained further in table 5 below

**Table 5: Additional Factors Affecting Application Deadline**

Scenario	Current Status of Installation	Application Timeframe
Operator has installed VOC Abatement equipment between 1 April 2001 and 28 Jan 2004	Regulated (1)	Application to vary permit/authorisation made by 28/05/2004
	Unregulated	Apply for a new permit by 28/05/2004
Operator to install new VOC abatement equipment after 28 Jan 2004	Regulated	Application to vary authorisation/ permit must be made <b>before</b> equipment is installed. (2)
	Unregulated	Application for new permit made and granted before the equipment is operated.
A substance or preparation in use becomes reassigned to take a relevant risk phrase (3)	Regulated	Application for variation to be made within 4 months from the date of reassignment
	Unregulated	Application for a permit to be made within 4 months of the date of reassignment
An operator wishes to start using a substance or preparation assigned with a relevant risk phrase (3)	Regulated	Application for variation to be made and granted before the substance can be used
	Unregulated	Application for a permit to be made and granted before the substance can be used.

Scenario	Current Status of Installation	Application Timeframe
Operator proposes to undergo a substantial change to the activity (4)	Regulated	Application for a substantial change variation made and granted before any change is implemented.
	Unregulated	Where deemed "new" then application for permit made and granted before change may be implemented  Where deemed "existing" then application for permit made in accordance with the timetable set out in Figure 3 above.

(1) Operators who currently hold a Part A authorisation may apply for a permit for the whole PPC installation rather than the part affected only by SED and may therefore bring forward the timeframe for full transfer of the installation to PPC.

(2) In this scenario the equipment cannot be INSTALLED until the variation to the permit or authorisation has been granted. This is different to the current regimes of PPC and EPA where equipment could be installed but not operated.

(3) This scenario affects any substance which is re-assigned any of the following risk phrases: R40, R45, R46, R49, R60, R61

(4) Operators proposing to use such substances or preparations for the first time will be expected to provide a strong justification against the criteria in Article 7(1) of the SED for why less harmful alternatives cannot be used.

## 6.5 Expected Dates of Transfer

In recognition of the factors described above it is anticipated that ,with regard to existing installations, the 10 currently unregulated SED sectors (i.e. those sectors not previously regulated under EPA 1990 or PPC 2000) are likely to come into regulation in the timeframes described in Table 6 below :

**Table 6: Likely Application Dates for Existing Unregulated SEDIs**

	Industrial Sector	Likely Application Date
1	Surface cleaning using > 1 tonnes of solvent/yr, with the risk phrases R40, R45, R46, R49, R60 or R61	by 28/05/2004
2	Formulation and/or finishing of pharmaceutical products using > 50 tonnes of solvent/yr	by 28/05/2004
3	Rubber conversion not using carbon black using > 15 tonnes of solvent/yr	by 28/05/2004
4	Vehicle refinishing using 0.5 - 1 tonnes solvent/yr	by 31/10/2005
5	Vehicle coating using 0.5 - 5 tonnes solvent/yr	by 31/10/2005

	Industrial Sector	Likely Application Date
6	Coating other than in the course of manufacturing using > 5 tonnes of solvent/yr	by 31/10/2005
7	Dry Cleaning (no threshold)	by 31/10/2006
8	Surface cleaning using > 2 tonnes of solvents/yr, other than those with the specified risk phrases	by 31/10/2006
9	Manufacturing less than 1000m <sup>3</sup> of wood products using > 25 tonnes of solvent/yr	by 31/10/2006
10	Animal and vegetable oil extraction and purification using > 10 tonnes solvent/yr	by 31/10/2006

## 6.6 SEPA Variations

Operators are not required to apply for a variation to their authorisation/permit in any of the above circumstances where SEPA has already varied the authorisation/permit to include **all** necessary SED conditions.

Where the operator does not make an application for variation in respect of a 'partly regulated SEDI' then they must make an application for a permit for the whole SEDI.

## 7. OTHER APPLICATION ISSUES

### 7.1 Supplementary Applications

Any operator who has made, or who is deemed to have made, an application for a permit under PPC may submit a supplementary application if certain changes are proposed to the activity during the determination period.

### 7.2 Triviality

There is no triviality for SED Activities (i.e. PPC triviality clause does not apply to SED Activities).

### 7.3 Derogations

The derogations from permitting for fume cupboards, museums etc (as per PPC, Schedule 1, Part 2) does not apply to SED Activities.

## 8. SUMMARY OF TECHNICAL COMPLIANCE REQUIREMENTS

### 8.1 Introduction and Options for Compliance

The SER 2004 require SEPA to include such necessary conditions in authorisations/permits to deliver the technical requirements of the SED. Accordingly, in this section of the guidance, reference will be made in most cases to the explicit technical requirements of the SED.

## Compliance Timescales:

In general terms there are two main compliance timeframes:-

**New installations** have to comply with the SED requirements prior to being brought into operation.

**Existing installations** have until 31 October 2007 to fully comply with the SED requirements.

Compliance timeframes should always be determined on a site specific basis. In particular specific compliance timeframes apply to operators who use substances or preparations described in Article 5(6) or 5(8) of the SED.

Additional technical guidance has been issued by DEFRA and the devolved administrations which identifies the technical compliance requirements for each specific industrial sector which falls within the scope of the SED. This guidance can be viewed via the following web link:

<http://www.defra.gov.uk/environment/airquality/lapc/pgnotes/default.htm>

### **8.2 Options for Compliance (overview)**

The SED allows three options for compliance: the operator may choose, where available, any one of these three options.

The three compliance options are:

Emission limit values in waste gases and fugitive emission values contained within Annex IIA of the SED (see Appendix 2 to this document), or

The total emission limit detailed in Annex IIA of the SED (see Appendix 2 to this document), or

The requirements of the reduction scheme detailed in Annex IIB of the SED (see Appendix 3 to this document).

### **8.3 Solvent Management Plans**

Operators of all SEDs are required to submit an annual Solvent Management Plan ('SMP') to SEPA. The SMP must include the following information;

- a) The Annual Solvent Consumption of the SEDI;
- b) Demonstration of compliance.

Further guidance on solvent management plans is given in Appendix 4 of this document.

### **8.4 Two or More Activities at the Same Installation**

Where two or more SED activities are carried on at the same SED installation,

- Compliance is required individually for each activity as regards controls specified in Articles 5(6), 5(7) and 5(8) of the SED for the potentially more harmful VOCs.

For all other substances the SED installations are,

Required to meet the emission limits values for waste gases and fugitive emissions or the total emission limit values as listed in Annex IIA of the SED for each activity individually; or

To have total emissions not exceeding those that would have resulted had each activity been required to meet the above requirements individually (**Note:** In such a situation the Solvent

Management Plan will have to be calculated in a manner which determines the total emissions from all activities concerned).

This allows some flexibility as to how the burden in meeting SED requirements is spread amongst two or more SED activities forming part of the same SED installation. Such flexibility is conditional on total emissions not exceeding that which would have occurred if the SED requirements regarding emissions had been met by each SED activity (See Appendix 5 for a worked example).

## **9. RISK PHRASES: REPLACEMENT, CONTAINMENT AND ELV COMPLIANCE**

### **9.1 Introduction**

Articles 5(6) – 5(9) of the SED sets controls on the use of substances or preparations which contain certain harmful VOCs which have been assigned or need to carry the risk phrases R45, R46, R49, R60, R61 or halogenated VOCs which have been assigned the risk phrase R40. In particular operators who use such VOCs are required to consider issues such as containment, compliance with emission limit values and the feasibility of substituting to less harmful alternatives in the shortest possible time (the latter requirement regarding substitution does not apply to the use of halogenated VOCs which have been assigned the risk phrase R40).

### **9.2 Shortest Possible Time**

The term “shortest possible time” is used in connection with the substitution of certain VOCs\* and/or compliance with emission limit values applicable to these VOCs in the Solvent Emissions (Scotland) Regulations 2004 (SSI 2004/26), which implement the EU Solvent Emissions Directive (1999/13/EC). This note gives guidance on this term.

\*These VOCs are what are referred to as “designated risk phrase materials” and comprise

- a halogenated VOC which is assigned or needs to carry the risk phrase R40
- a substance which is a VOC and which is assigned or needs to carry the risk phrases R45, R46, R49, R60 or R61, and
- a preparation which, because of its content of substances which are VOCs, is assigned or needs to carry the risk phrases R45, R46, R49, R60 or R61.

A preparation which contains substances to which risk phrases have been assigned, but which itself is not assigned or does not carry the risk phrases, is not a designated risk phrase material.

#### **9.2.1 Substitution of Article 5(6) Solvents in Shortest Possible Time**

Regulators will need to reach a view on what constitutes the **shortest possible time** with regard to the Article 5(6) obligation on operators to substitute substances or preparations, which because of their VOC content are assigned or need to carry the risk phrases R45, 46, 49, 60 or 61. Decisions should be taken on the facts of each individual case, taking account of the following:

(a) the views of operators contained in submitted substitution plans; and

(b) all of the factors as set out in Article 7(1) of the SED ; namely

fitness for use;

potential effects on human health and occupational exposure in particular;

potential effects on the environment;

the economic consequences, in particular the costs and benefits of the options available,

in relation to both the existing substances/preparations and their potential substitutes, and  
(c) any guidance published by the European Commission under Article 7(1).

Without prejudice to paragraph 9.2.1, while recognising that there may be justifiable cases under paragraph 9.2.1 why substitution may not be feasible or must be a medium/long-term objective, as a general principle the Scottish Executive considers that substitution should normally be no later than the following dates for existing installations (and may often be appropriate before these dates):-

- in the case of substances/preparations assigned these risk phrases before 29 March 1999 : **31 October 2007**
- in the case of substances/preparations assigned these risk phrases after 29 March 1999 : **6 years from the date of assignment / reclassification.**

It is considered that in most cases when designing a new installation, avoiding the substances or preparations referred to in Article 5(6) will be less costly and more technically feasible than for replacement at an existing installation, and therefore these substances or preparations can reasonably be excluded from use. Any operator proposing to use these substances or preparations at a new installation for the first time will be expected to provide a strong justification against the criteria in paragraph 9.2.1(b) above. The same applies to operators of existing installations who propose to start using any of these substances or preparations for the first time.

### **9.2.2 Shortest Possible Time and Compliance with Emission Limit Values**

If an operator of an existing installation uses substances or preparations which were assigned or needed to carry the risk phrase categories described in (a) or (b) below **before 29 March 1999** and the corresponding mass flow thresholds are exceeded then compliance with the emission limit values described in Articles 5(7) or 5(8) of the SED is required **by 31 October 2007**.

If an operator of an existing installation uses substances or preparations which are assigned or need to carry the risk phrase categories described in (a) or (b) below **after 29 March 1999** and the corresponding mass flow thresholds are exceeded then compliance with the emission limit values described in Articles 5(7) or 5(8) of the SED is required **within the shortest possible time**.

Paragraphs referred to above:

(a) substances or preparations which because of their VOC content are assigned or need to carry the risk phrases R45, R46, R49, R60 or R61 and the mass flow is greater than or equal to 10g/hour;

(b) halogenated VOCs which are assigned the risk phrase R40 and the mass flow is greater than or equal to 100g/hour.

Regulators will need to reach a view on what constitutes the shortest possible time with respect to compliance with the emission limit values described in Articles 5(7) or 5(8) if an operator of an existing installation uses substances or preparations which are assigned or need to carry the risk phrase categories described in paragraphs (a) or (b) above after 29 March 1999. Although decisions should be taken on the facts of each individual case as a general principle the Executive considers that emission limit value compliance should normally be no later than 6 years from the date of classification where corresponding mass flow thresholds are exceeded, with no requirement to take account of the criteria described in paragraphs 9.2.1(a) to (c).

The above applies to containment also, except for the reference to mass flow which should be disregarded.

### 9.2.3 Substitution and Emission Limits

Operators will be subject to shortest possible time compliance obligations for both substitution and emission limit values if substances or preparations are used which because of their VOC content are assigned or need to carry the risk phrases R45, R46, R49, R60 or R61.

In such cases, although the criteria for determining shortest possible time for compliance with emission limit values and for substitution are different, and it is possible that the period could be substantially shorter in the former case, the Executive considers it likely that in the great majority of cases the timescales will be the same – not least because the additional cost of meeting emission limit values for only an interim period prior to substitution is likely to outweigh the public health and environmental benefits. One instance where the timescale for compliance with emission limit values could be shorter than that for substitution is where there is justifiable doubt about the prospects of substitution being achieved within the specified period.

**Table 7: Summary of Guidance on the Compliance Requirements of SED Activities 5(6) - 5(9)**

Requirement	Compliance date		
	Existing Installation:  risk phrase assigned before 29 March 1999	Existing Installation:  risk phrase assigned on or after 29 March 1999	New Installation:  risk phrase assigned at any date
<b>ELV Compliance</b> Article 5(6) VOCs where mass flow exceeds 10g/hour + Article 5(8) VOCs where mass flow exceeds 100g/hour	31 October 2007	Shortest Possible Time  No later than 6 years from classification	Immediate
<b>Containment</b> for Article 5(6) and 5(8) VOCs	31 October 2007	Shortest Possible Time  No later than 6 years from classification	Immediate
<b>Substitution</b> for Article 5(6) VOCs only	Shortest Possible Time  No later than 31 October 2007	Shortest Possible Time  No later than 6 years from classification	Shortest Possible Time (1) + (2)

#### Notes on Table 7

(1) see paragraph 9.2.1 above

(2) in circumstances where a justification is accepted for the continued use of Article 5(6) VOCs a condition would be placed in the authorisation / permit requiring annual reappraisal of the feasibility of substitution.

(3) the date when a substance or preparation is considered to have been assigned an Article 5(6) or 5(8) risk phrase category is the date when the substance appears on the Approved Supply List in which the substance is listed with one or more of the relevant R phrases. (The Approved Supply List provides information approved for the classification and labelling of substances and preparations dangerous for supply in accordance with the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 [the CHIP Regulations].)

#### **9.2.4 Risk Phrase Data and Assignment**

Risk phrase data for a substance/preparation may be found on the product safety data sheet, the transport packaging or the product container. Labelling of packaging with the correct risk phrase is required under the CHIP Regulations (Chemicals Hazard Information and Packaging for Supply) Regulations 1994 (as amended).

The date when a substance or preparation is considered to have been assigned an Article 5(6) or 5(8) risk phrase category is the date when the substance first appears on the Approved Supply List with one or more of the relevant R Phrases. The Approved Supply List provides information approved for the classification and labelling of substances and preparations dangerous for supply in accordance with the Chemical (Hazard Information and Packaging for Supply) Regulations 2002 (the CHIP Regulations). The HSE can assist with any queries on when a substance or preparation was first assigned or needed to carry a particular risk phrase. The HSE Helpline is: 08701 545500.

## **10. IDENTIFICATION OF SUBSTANTIAL CHANGE UNDER SED**

### **10.1 Introduction**

The SER 2004 has acted to amend the PPC 2000 definition of “substantial change in operation” as follows:

“substantial change in operation” means, in relation to an installation or mobile plant, a change in operation which, in the opinion of SEPA, may have significant negative effects on human beings or the environment or which in itself constitutes the carrying out of an activity falling within Schedule 1 exceeding any threshold capacity therein, and shall include (except in relation to Part 1 of Schedule 3):

(i) in relation to a small SED installation which does not fall wholly within the scope of the IPPC Directive, a change of the nominal capacity leading to an increase of emissions of volatile organic compounds of more than 25 per cent;

(ii) in relation to all other SED installations which do not fall wholly within the scope of the IPPC Directive, a change of the nominal capacity leading to an increase of emissions of volatile organic compounds of more than 10 per cent”.

“Small SED installation“ means an SED installation which falls within the lower threshold band of items 1, 3, 4, 5, 8, 10, 13, 16 or 17 of Annex IIA to the SED or, for other activities of Annex IIA, which have a solvent consumption of less than 10 tonnes per year.

A substantial change which falls under the terms of the SER 2004 may be treated as ‘new’ or ‘existing’. Figure 4 below provides a simplified explanation of this process.

### **10.2 ‘New’ Substantial Change**

Where an installation undergoes a substantial change or comes within the scope of the SED for the first time following a substantial change;



That part of the installation which undergoes the substantial change shall be treated as a 'new' installation unless it fulfils the criteria to be considered as 'existing' (see below section). Where a substantial change is treated as 'new' that part of the installation will have to comply with the requirements of the SED prior to coming into operation and an application for substantial variation should be made.

### **10.3 'Existing' Substantial Change**

A substantial change shall be treated as 'existing' where the following criteria are met:

Where the total mass emission of VOC from the SED installation after the substantial change is less than or equal to:

The total mass emission of the installation prior to the change

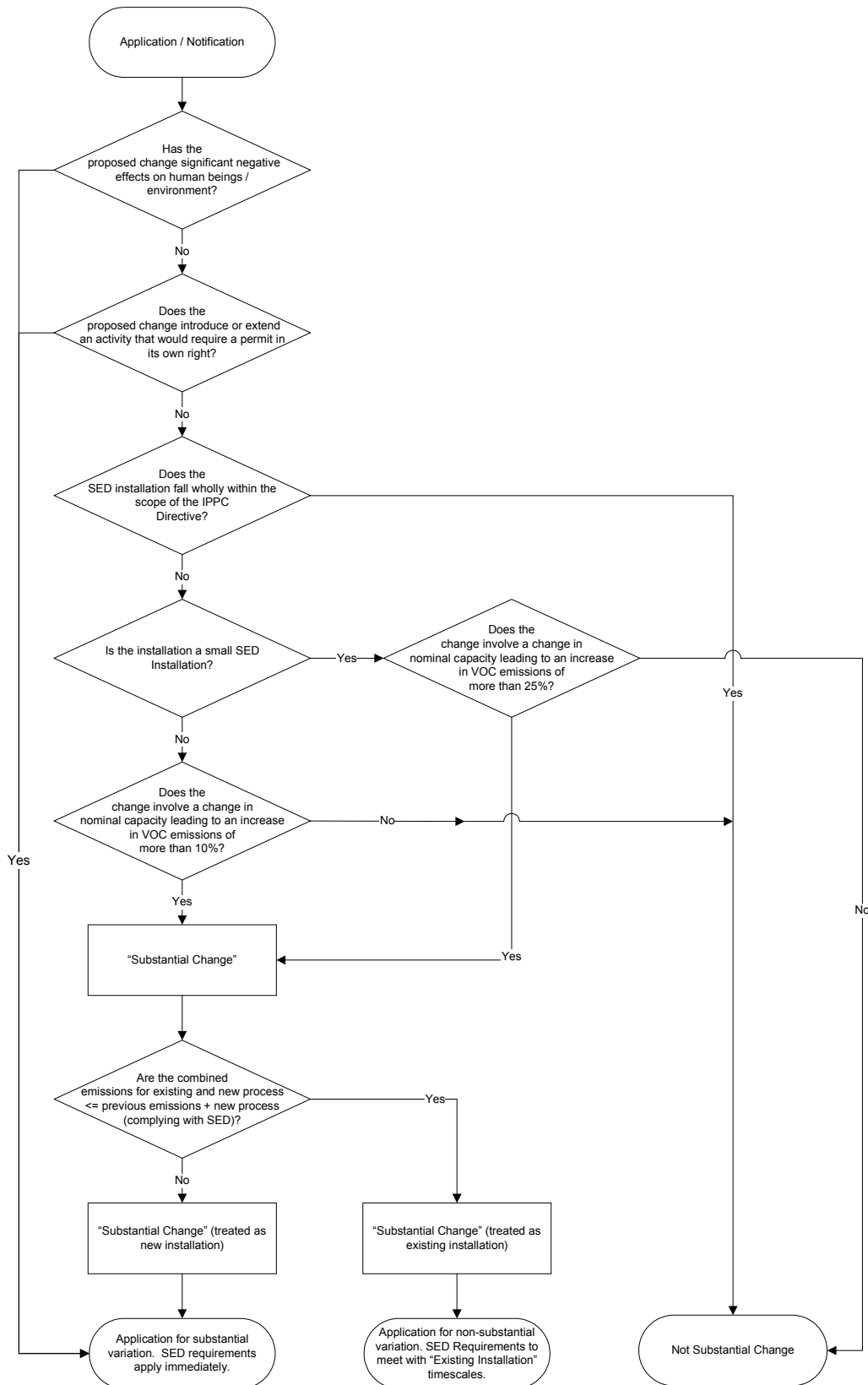
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The calculated additional mass emission of the changed part of the installation had it fully complied with the SED VOC requirements immediately (i.e. those requirements being either emission and fugitive limits, or total emission limits, or the reduction scheme, as appropriate).

In such circumstances an application for a non-substantial variation should be made. Where a substantial change is treated as existing then compliance with the majority of SED obligations is not required until 31 October 2007.

Figure 4 provides a summary of how to determine substantial change and identify whether the status of the substantial change should be considered as "new" or "existing" under SER 2004.

**Figure 4: Determination of Substantial Change and Status as 'New' or 'Existing' Under SER 2004**



## **11. GUIDANCE ON MONITORING REQUIREMENTS**

### **11.1 Annual Demonstration of Compliance**

The SED places an obligation on Member States to ensure that all installations subject to the SED, supply appropriate information to demonstrate compliance with the SED at least once per year

Operators will be required to provide SEPA with solvent management plans (SMP) on an annual basis to demonstrate compliance. In addition the SMP will require the operator to report on the solvent consumption of the activity.

Where the solvent consumption falls below the thresholds specified in the SER 2004, then the installation is no longer subject to the requirements of the SED and the SER 2004 no longer applies.

### **11.2 Continuous Monitoring Requirements**

Continuous monitoring for compliance must be fitted where:

- abatement equipment is fitted; and
- at the final point of discharge from the abatement equipment there is an emission of more than an average of 10kg/hour of total organic carbon

This can include surrogate measurements such as monitoring the operating temperature or carbon monoxide emissions from thermal oxidisers.

Where an activity is also prescribed under PPC, the BAT requirements identified in technical guidance notes can require the continuous monitoring of surrogate parameters, even if the final release is less than an average of 10kg/hr of total organic carbon.

### **11.3 Compliance Criteria for Continuous Measurements**

Where continuous monitoring is applied the emission limit values (ELVs) shall be considered to be complied with if:

- none of the averages over 24 hours of normal operation exceeds the ELVs; and
- none of the hourly averages exceeds the ELVs by more than a factor of 1.5.

### **11.4 Periodic Measurements**

Where continuous monitoring is not a requirement, periodic measurements of solvent emissions must be carried out at least annually. At least three measurements must be obtained during each measurement exercise. The sampling time will be dependent on the operation of the particular activity and expected VOC loading. Initially the total VOC emission profile should be determined over the period of time that the process is operating to identify peak emissions.

Sampling should be conducted to cover the period of peak emissions. The sampling period should be agreed with the operator based on the emission profile and the minimum sampling time in the method used. Compliance shall be assessed based on a minimum of three samples and the hourly average must not exceed the ELV by a factor of 1.5.

### **11.5 Standard Monitoring Methods**

The European standard method for measuring VOC as carbon is:

CEN 13526: "Stationary Source Emission Determination of the Mass Concentration of Total Gaseous Organic Carbon at High Concentration (20 to 500mg/m<sup>3</sup> VOC) in Flue Gas Continuous Flame Ionisation Method."

This method involves extraction of a gas sample through a heated line to avoid condensation losses into a heated flame ionisation detector (FID). The FID is calibrated with propane or methane and gives a direct reading as parts per million per volume propane or methane equivalent VOC which can then be converted to mg/m<sup>3</sup> carbon at standard temperature and pressure (STP, 273.15 K, 760mmHg) using the mass of carbon in the calibration gas and the molar volume 22.4 litres at STP. For further advice on monitoring operators should contact the local SEPA office for assistance.

#### **11.6 Addition of Cooling or Dilution Gases**

Gas volumes can be added to the waste gas for cooling or dilution purposes, where technically justified. However any such addition shall not be considered when determining the mass concentration of the pollutant in the waste gas.

#### **11.7 Compliance Criteria for Periodic Measurements**

In the case of periodic measurements the ELVs shall be considered to be complied with if, in one monitoring exercise:

- the average of all the readings does not exceed the ELVs; and
- none of the hourly averages exceeds the ELV by more than a factor of 1.5.

There is no guidance on the length of a monitoring exercise, but in the case of batch operations it would be reasonable to assume that the monitoring exercise would cover one batch with at least one of the three measurements required being made during a period when the maximum VOC concentration in the waste gas would be expected.

#### **11.8 Verification of Compliance Following a Substantial Change**

Following a substantial change to any activity compliance should be reconfirmed. During commissioning, compliance should be assessed on the same basis as is applied annually, i.e. when the substantially changed part of the plant is running at normal operating parameters.

## Appendix 1: DEFINITIONS AND ACRONYMS

The terms described in Appendix 1 below are defined in full in the SED and the SER. The definitions below are modified for the purposes of this guidance to provide clarity.

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.
Authorisation	authorisation shall mean a written decision by which the competent authority grants permission to operate all or part of an installation. In Scotland, "authorisation" means either an IPC/LAPC authorisation or a PPC permit.
Average Over 24 Hours	shall mean the arithmetic average of all valid readings taken during the 24 hour period of normal operation.
Competent Authority	shall mean the authority or authorities or bodies responsible under the legal provisions of the Member States for carrying out the obligations arising from this Directive. In Scotland SEPA is the competent authority.
Consumption	shall mean the total input of organic solvents into an installation per calendar year or any other 12-month period, less any volatile organic compounds that are recovered for reuse (see also reuse).
Contained Conditions	shall mean 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. This differentiates contained from uncontained conditions. Uncontained activities are activities such as painting a ship in the open air, where all releases are fugitive.
Emission	shall mean any discharge of volatile organic compounds from an installation into the environment. Note that the definition of emission includes not just releases to air but also water and land and for certain activities, any VOC in the product.
Emission Limit Value	shall mean 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. For emission limit values in waste gases the usual parameters are mg C/Nm <sup>3</sup> , where N is standard conditions (273.15K and a pressure of 101.3kPa), and C is the number of grams of carbon in the VOC (e.g. 78 grams of benzene or one mole would be expressed as 72 grams of carbon for the purposes of SED).

Existing SED Installation	<p>means an SED installation which was -</p> <p>put into operation before 1<sup>st</sup> April 2001; or</p> <p>put into operation on or after that date but before 1<sup>st</sup> April 2002, provided that</p> <p>the operation of the installation was authorised by the grant of a permit or authorisation before 1<sup>st</sup> April 2001; or</p> <p>an application for such a permit or authorisation was duly made before that date.</p>
Fugitive Emissions	<p>shall mean any emissions not in waste gases of volatile organic compounds into air, soil and water as well as, unless otherwise stated in Annex IIA, solvents contained in any products. They include un-captured emissions released to the outside environment via windows, doors, vents and similar openings. Note that fugitive emissions include releases into soil, water, air and for certain activities any VOC in the product. Fugitive emissions are principally defined as "emissions not in waste gases". Fugitive emissions include storage tank vents, extraction vents from building for hygiene purposes etc.</p>
Halogenated Organic Solvent	<p>means an organic solvent which contains at least one atom of bromine, chlorine, fluorine or iodine per molecule.</p>
Ink	<p>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.</p>
Input	<p>shall mean 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. Essentially this means the total quantity of solvents used for the activity. For example if solvents were used in a batch process and the solvents were then recovered and reused in the next batch, then input would be the solvents used in the batch irrespective of whether they had been recovered or not from previous batches. It should also be noted that solvents in preparations used in the activity are also counted.</p>
SED Installation	<p>means a stationary technical unit where one or more activities listed in Part 1, Schedule 1, Chapter 7 of the Solvent Emission Regulations are carried out; and</p> <p>any other location on the same site where any other directly associated activities are carried out which have a technical connection with the activities carried out on that site and which could have an effect on emissions.</p>
Mass Flow (Mass Emission)	<p>mass flow otherwise referred to in this guidance document as mass emission shall mean the quantity of VOCs released, in unit of mass/hour.</p>

Nominal Capacity	shall mean 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. This is the maximum capacity over one day, with due allowance for maintenance and start up and shutdown. Day is a 24 hour period and nominal capacity would be on the basis that production takes place over the whole 24 hour period.
Normal Operation	shall mean all periods of operation of an installation or activity except start up and shut down operations and maintenance of equipment.
Operator	shall mean any natural or legal person who operates or controls the installation or, where this is provided for in national legislation, to whom decisive economic power over the technical functioning of the installation has been delegated.
Organic Compound	organic compound shall mean 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;
Organic Solvent	means any volatile organic compound which is used- <ul style="list-style-type: none"> <li>(a) alone or in combination with other agents, and without undergoing a chemical change, to dissolve raw materials, products or waste materials, or;</li> <li>(b) as a cleaning agent to dissolve contaminants, or</li> <li>(c) as a dissolver, or</li> <li>(d) as a dispersion medium, or</li> <li>(e) as a viscosity adjuster, or</li> <li>(f) as a surface tension adjuster, or</li> <li>(g) as a plasticiser, or</li> <li>(h) as a preservative.</li> </ul>
Preparation	shall mean mixtures or solutions composed of two or more substances.
Registration	shall mean a procedure, specified in a legal act, involving at least notification to the competent authority by the operator of the intention to operate an installation or activity falling within the scope of the SED.
Reuse	means the use of organic solvents recovered for any technical or commercial purpose and including use as a fuel but excluding the final disposal of such recovered organic solvent as waste. See Appendix 5 for a practical example.

Small SED Installation	means an SED installation which falls within the lower threshold band of items 1, 3, 4, 5, 8, 10, 13, 16 or 17 of Annex IIA to the SED or for the other activities of Annex IIA which have a solvent consumption of less than 10 tonnes/year. For the specified numbered activities there are two or more sets of emission limit values dependant on whether the plant is specified as a small installation.
Start Up & Shutdown Operations	shall mean 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 shutdowns.
Substances	shall mean 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.
Substantial Change	Shall mean in relation to an installation or mobile plant, a change which, in the opinion of SEPA, may have significant negative effects on human beings or the environment or which in itself constitutes the carrying out of an activity falling within Schedule 1 exceeding any threshold therein, and shall include (except in relation to Part 1 of Schedule 3) – in relation to a small SED installation which does not fall wholly within the scope of the IPPC Directive, a change in the nominal capacity leading to an increase in emissions of volatile organic compounds of more than 25 percent; in relation to all other SED installations which do not fall wholly within the scope of the IPPC Directive, a change in the nominal capacity leading to an increase of emissions of volatile organic compounds of more than 10 per cent.
Total Emissions	shall mean the sum of fugitive emissions and emissions in waste gases.
Varnish	means a transparent coating.
Volatile Organic Compound (VOC)	shall mean any organic compound having at 293.15 K a vapour pressure of 0.01 kpa or more, or having a corresponding volatility under the particular conditions of use. For the purpose of activities falling within the scope of the SER 2004, the fraction of creosote which exceeds this value of vapour pressure at 293,15 K shall be considered as a VOC.
Waste Gases	shall mean 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 m <sup>3</sup> /hr at standard conditions. The principal words are "final gaseous discharge..... from a stack or abatement equipment". It is the intent that waste gases are only defined as the final release of waste gases from the activity. All other releases should be regarded as fugitive. It is also expected that the flow will be sufficient to be measurable in m <sup>3</sup> /hr. Emission limit values (mg C/Nm <sup>3</sup> ) are applied to waste gas streams. If the gas stream is saturated with VOCs such as a storage tank vent, or a nitrogen purge discharge from a storage tank, then the release must be regarded as fugitive as the use of emission limit values for a saturated gas stream would be inappropriate.



**Appendix 2: THRESHOLDS AND EMISSION CONTROLS**

Copy of Annex IIA from the SED

	Activity (solvent consumption threshold in tonnes/year)	Threshold (solvent consumption threshold in tonnes/year)	Emission limit values in waste gases (mg C/Nm <sup>3</sup> )	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
				New	Existing	New	Existing	
1	Heatset web offset printing (> 15)	1.5 – 2.5	100	30 <sup>(1)</sup>				(1) Solvent residue in finished product is not to be considered as part of fugitive emissions
		> 25	20	30 <sup>(1)</sup>				
2	Publication rotogravure (> 25)	> 25	75	10	15			

Activity (solvent consumption threshold in tonnes/year)	Threshold (solvent consumption threshold in tonnes/year)	Emission limit values in waste gases (mg C/Nm <sup>3</sup> )	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
			New	Existing	New	Existing	
3		100	25				(1) Threshold for rotary screen printing on textile and on cardboard.
Other rotogravure, flexography, rotary screen printing, laminating or varnishing units (> 15) rotary screen printing on textile /cardboard (> 30)	15 – 25	100	20				
	> 25	100	20				
	> 30 (1)						

	Activity (solvent consumption threshold in tonnes/year)	Threshold (solvent consumption threshold in tonnes/year)	Emission limit values in waste gases (mg C/Nm <sup>3</sup> )	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
				New	Existing	New	Existing	
4	Surface cleaning <sup>(1)</sup> (> 1)	1 – 5	20 <sup>(2)</sup>					<sup>(1)</sup> Using compounds specified in Article 5(6) & (8). <sup>(2)</sup> Limit refers to mass of compounds in mg/Nm <sup>3</sup> , and not to total carbon.
		> 5	20 <sup>(2)</sup>					
5	Other surface cleaning (> 2)	2 – 10	75 <sup>(1)</sup>		20 <sup>(1)</sup>			<sup>(1)</sup> 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 application of these values.
		> 10	75 <sup>(1)</sup>		15 <sup>(1)</sup>			

Activity (solvent consumption threshold in tonnes/year)	Threshold (solvent consumption threshold in tonnes/year)	Emission limit values in waste gases (mg C/Nm <sup>3</sup> )	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
			New	Existing	New	Existing	
6 Vehicle coating (< 15) and vehicle refinishing	> 0.5	50 <sup>(1)</sup>	25				<sup>(1)</sup> Compliance in accordance with Article 9(3) should be demonstrated based on 15 minute average measurements.
7 Coil coating (> 25)	> 25	50 <sup>(1)</sup>	5	10			<sup>(1)</sup> For installations which use techniques which allow reuse of recovered solvents, the emission limit shall be 150.

Activity (solvent consumption threshold in tonnes/year)	Threshold (solvent consumption threshold in tonnes/year)	Emission limit values in waste gases (mg C/Nm <sup>3</sup> )	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
			New	Existing	New	Existing	
8 Other coating including metal, plastic, textile <sup>(5)</sup> , fabric, film and paper coating (> 5)	5 - 15	100 <sup>(1)(4)</sup>	25 <sup>(4)</sup>				<p><sup>(1)</sup> Emission limit value applies to coating application and drying processes operated under contained conditions.</p> <p><sup>(2)</sup> The first emission limit value applies to drying processes, the second to coating application processes.</p> <p><sup>(3)</sup> 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.</p> <p><sup>(4)</sup> 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).</p> <p><sup>(5)</sup> Rotary screen printing on textile is covered by activity No 3.</p>
	> 15	50/75 <sup>(2)(3)(4)</sup>	20 <sup>(4)</sup>				

Activity (solvent consumption threshold in tonnes/year)	Threshold (solvent consumption threshold in tonnes/year)	Emission limit values in waste gases (mg C/Nm <sup>3</sup> )	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
			New	Existing	New	Existing	
9 Winding wire coating (> 5)	> 5				10 g/kg <sup>(1)</sup> 5 g/kg <sup>(2)</sup>		<sup>(1)</sup> Applies for installations where average diameter of wire ≤ 0.1 mm.  <sup>(2)</sup> Applies for all other installations.
10 Coating of wooden surfaces (> 15)	15 – 25  > 25	100 <sup>(1)</sup>  50/75 <sup>(2)</sup>	25  20				<sup>(1)</sup> Emission limit applies to coating application and drying processes operated under contained conditions.  <sup>(2)</sup> 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 <sup>3</sup> )	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
				New	Existing	New	Existing	
11	Dry cleaning					20 g/kg <sup>(1) (2)</sup>		<p><sup>(1)</sup> Expressed in mass of solvent emitted per kilogram of product cleaned and dried.</p> <p><sup>(2)</sup> The emission limit in Article 5(8) does not apply for this sector.</p>
12	Wood impregnation (> 25)	> 25	100 <sup>(1)</sup>	45		11 kg/m <sup>3</sup>		<p><sup>(1)</sup> Does not apply for impregnation with creosote.</p>

Activity (solvent consumption threshold in tonnes/year)	Threshold (solvent consumption threshold in tonnes/year)	Emission limit values in waste gases (mg C/Nm <sup>3</sup> )	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
			New	Existing	New	Existing	
13 Coating of leather (> 10)	10 – 25				85 g/m <sup>2</sup>		Emission limits are expressed in grams of solvent emitted per m <sup>2</sup> of product produced.  ( <sup>1</sup> ) For leather coating activities in furnishing and particular leather goods used as small consumer goods like bags, belts, wallets etc.
	> 25				75 g/m <sup>2</sup>		
	> 10 ( <sup>1</sup> )				150 g/m <sup>2</sup>		
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.



Activity (solvent consumption threshold in tonnes/year)	Threshold (solvent consumption threshold in tonnes/year)	Emission limit values in waste gases (mg C/Nm <sup>3</sup> )	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
			New	Existing	New	Existing	
15	Wood and plastic lamination (>5)	> 25			30 g/m <sup>2</sup>		
16	Adhesive coating (> 5)	5 – 15  > 15	50 <sup>(1)</sup>  50 <sup>(1)</sup>	25  20			<sup>(1)</sup> If techniques are used which allow reuse of recovered solvent, the emission limit value in waste gases shall be 150.

Activity (solvent consumption threshold in tonnes/year)	Threshold (solvent consumption threshold in tonnes/year)	Emission limit values in waste gases (mg C/Nm <sup>3</sup> )	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
			New	Existing	New	Existing	
17 Manufacture of coating preparations, varnishes, inks and adhesives (> 100)	100 – 1 000	150	5		5% of solvent input		The fugitive emission value does not include solvent sold as part of a coatings preparation in a sealed container.
	> 1 000	150	3		3% of solvent input		
18 Rubber conversion (> 15)	> 15	20 <sup>(1)</sup>	25 <sup>(2)</sup>		25% of solvent input		<sup>(1)</sup> If techniques are used which allow reuse of recovered solvent, the emission limit value in waste gases shall be 150  <sup>(2)</sup> The fugitive emission value does not include solvent sold as part of products or preparations 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 <sup>3</sup> )	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
			New	Existing	New	Exist- ing	
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 <sup>(1)</sup> 1.5 kg/tonne <sup>(2)</sup> 4 kg/tonne <sup>(3)</sup>		<sup>(1)</sup> Total emission limit values for installations processing individual batches of seeds and other vegetable matter should be set by SEPA on a case-by-case basis, applying the best available techniques.  <sup>(2)</sup> Applies to all fractionation processes excluding de-gumming (the removal of gums from oil).  <sup>(3)</sup> Applies to de-gumming.

Activity (solvent consumption threshold in tonnes/year)	Threshold (solvent consumption threshold in tonnes/year)	Emission limit values in waste gases (mg C/Nm <sup>3</sup> )	Fugitive emission values (percentage of solvent input)		Total emission limit values		Special provisions
			New	Existing	New	Existing	
20 Manufacturing of pharmaceutical products. (> 50)	> 50	20 <sup>(1)</sup>	5 <sup>(2)</sup>	15 <sup>(2)</sup>	5% of solvent input	15 % of solvent input	( <sup>1</sup> ) If techniques are used which allow reuse of recovered solvent, the emission limit value in waste gases shall be 150.  ( <sup>2</sup> ) The fugitive emission limit value does not include solvent preparations in a sealed container.

## Appendix 3: REDUCTION SCHEME

### Copy of Annex IIB from the SED

#### 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 SEPA 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. SEPA 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 Annex IIA of the SED.,

- (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.

## **Appendix 4: SOLVENT MANAGEMENT PLAN**

### **Copy of Annex III from the SED**

#### **1. Introduction**

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

#### **2. Principles**

The solvent management plan serves the following purposes:

- (i) Verification of compliance as specified Article 9(1) of the SED;
- (ii) Identification of future reduction options;
- (iii) Enabling of the provision of information on solvent consumption, solvent emissions and compliance with the SED to the public.

#### **3. Definitions**

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

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)

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 absorption, 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: expressed in solvent emissions per unit product, or otherwise stated in Annex IIA.

(a) For all activities using the reduction scheme in Annex IIB, the solvent management plan 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 Annex IIA 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 Articles 5(5)(b)(ii) 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 Annex II been met for each activity separately.

(ii) Determination of fugitive emissions for comparison with fugitive emission values in Annex IIA

##### 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.



## Appendix 5: PRACTICAL EXAMPLES

### SED Installation

For example, a degreasing plant which carries out a surface cleaning activity (SED Part B) at a surface treatment of metal works (PPC Part A) would normally be part of a single PPC installation for the surface treatment works. For the purposes of SED, there is still a technical connection between the surface cleaning activity and the surface treatment activity. However, operation of the surface cleaning activity is unlikely to have an effect on the emissions of VOCs from the surface treatment activity. In such a case the SED installation would only consist of the surface cleaning activity while the PPC installation would consist of both the surface cleaning and surface treatment activities.

### Small SED Installation

For example for activity 10, coating of wooden surfaces, there is an emission limit value of 100mg C/Nm<sup>3</sup> for a solvent consumption of 15 - 25 tonnes per year and a limit value of 50 mg C/Nm<sup>3</sup> for consumption greater than 25 tonnes per year. Some activities in Annex IIA have specified consumption values of less than 10 tonnes per year, e.g. winding wire coating (activity number 9) has a solvent consumption threshold greater than 5 tonnes per year. Where the consumption threshold is less than 10 tonnes per year then these processes are also regarded as small installations.

### Where Two Or More SED Activities are Carried on at the Same SED Installation

Installation containing one surface cleaning activity (greater than 1 te) and a coil coating activity where each activity uses 25tes of solvent and in terms of Appendix 2 can meet an emission limit and fugitive limit for each activity or one activity can have greater fugitive emissions (assuming that waste gases mass emissions are very small) than the other provided the total emissions from the installation are the same as if each activity was compliant with Appendix 2 i.e. the total emissions for the installation remain the same.

### Examples of Two or More SEDAs in Same SEDI

Example 1		
Type of Activity	Surface Cleaner	Coil Coating
Threshold	>1te	>25te
ELV	20mg/m <sup>3</sup> & 15%	50mg/m <sup>3</sup> & 10%
Solvent Input	25te	25te
Fugitive Limit	3.75 (25 x 0.15)	2.5 (25 x .10)
Example Fugitive Levels	3.75	2.5
Total emissions based on fugitive component (assuming waste gases are negligible)	Total emissions = 6.25te	
Conclusion	No spare fugitive limit capacity	No spare fugitive limit capacity

Example 2		
Type of Activity	Surface Cleaner	Coil Coating
Threshold	>1te	>25e
ELV	20mg/m <sup>3</sup> &15%	50mg/m <sup>3</sup> &10%
Solvent Input	25te	25te
Fugitive Limit	3.75 (25 x 0.15)	2.5 (25 x 0.10)
Example Fugitive Levels	5.00	1.25
Total emissions based on fugitive component (assuming waste gases are negligible)	Total emissions = 6.25te	
Conclusion	Exceeding fugitive limit for the activity by 1.25te	Spare fugitive limit capacity of 1.25te

## Substantial Change

### Practical Example 1

- An existing coating process with 2 coating lines and abatement proposes to add a third line.
- Annual solvent emissions from each of the two existing lines are 5 tonnes ie 10 tonnes in total.
- The operator then has to calculate what the total annual mass emission will be from the substantially changed part (i.e. the third line), assuming full compliance with the SED emission requirements (i.e. complying with waste gas + fugitive or total or Reduction Scheme). This is 4 tonnes in this case.
- The operator then has to add the projected SED regulated emissions from the substantially changed part to the emissions from the existing part. This is 14 tonnes in this case.
- If the existing 2 coating lines do not change their practices and the substantially changed part complies with the SED then the total emission will be 14 tonnes (i.e. the total emissions of the installation after the substantial change is equal to the sum of the original emissions plus the additional emissions from the substantially changed part if it had met the requirements of SED). This means that the third line is treated as existing and is not required to apply for a substantial variation and would not have to meet the SED requirements for monitoring and reporting until 31 October 2007.
- Alternatively if the two existing lines reduced their emissions to 8 tonnes per year and the new line did not meet SED standards but instead had emissions of 5 tonnes per year, the total emissions would still be below 14 tonnes and consequently the third line is not required to meet the SED emission limits or the monitoring and reporting requirements until 31 October 2007.

## Substantial Change

### Practical Example 2

- An existing refinishing process with 2 spray booths proposes to add a third booth.
- Each of the existing spray booths applies 500kg of solids using 700kg of solvent, i.e. a solvent:solids ratio of 1:1.4

- A new booth is planned which will also apply 500kg of solids, for the new booth to comply with SED the amount of solvent allowed is no more than 600kg of solvent (solvent ratio of 1:1.2). Therefore for the substantially changed part of the installation to be considered as existing the total emission from the installation as a whole of solvent must be less than or equal to 2000kgs (700 + 700 + 600).
- If the new booth can only operate such that it will use 650 kg of solvent to apply 500 kg of solids (i.e. ratio of 1:1.3). The total solvent emission would be 700 + 700 + 650 = 2050. This would then not be treated as existing. However, if solvent used on the 2 existing booths is reduced by 25 kg each (by using better cleaning techniques) then the total solvents emission would be 675 + 675 + 650 = 2000 this then could be considered as existing installation.

### Derogation for Existing Abatement

Compliance Requirements (Existing pharmaceutical installation (< 01/04/2001))		
Compliance by 31/10/2007	20 mg/m <sup>3</sup> & 15% of input	
Solvent Input	100te	
Fugitive Limit by > 31/10/2007	15te	
ELV as mass annual mass emission	5te	
Total emissions > 31/10/2007	Total emissions = 20te	
Example 1		
Existing pharmaceutical installation (< 01/04/2001)		
Compliance by 31/10/2007	20 mg/m <sup>3</sup> & 15% of input	
Compliance Requirements (Existing pharmaceutical installation (< 01/04/2001))		
Solvent Input	100te	
Fugitive Limit by 31/10/2007	15te	
Fugitive losses at 31/10/2007	10te	
ELV as mass annual mass emission	5te	
Total emissions 31/10/2007	Total emissions = 15te	
Conclusion	The total emissions are below the 31/10/2007 total emissions limit, therefore the ELV for waste gases can be relaxed until 2013	

**Reduction Scheme**

Existing installation 31/10/2005 – 31/10/2007	
Activity	Coating (> 15te)
Mass of solids used	20te
Emission factor	0.79
Target Emission	$20 \times 0.79 = 15.8$
Actual solvent emissions	To be no greater than 15.8te
Existing installation 31/10/2007 – beyond	Coating (> 15te)
Mass of solids used	20te
Emission factor	0.525
Target emission	$20 \times 0.525 = 10.5$
Actual solvent emissions	To be no greater than 10.5te

## Appendix 6: SED LISTED ACTIVITY DESCRIPTIONS

adhesive coating	means any activity in which an adhesive is applied to a surface excluding the application of adhesive and laminating associated with printing activities.
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.
coating activity	means any activity in which a single or a multiple application of a continuous film of a coating is applied (including a step in which the same article is printed using any technique) but does not include the coating of substrate with metals by electrophoretic and chemical spraying techniques.
coil coating	means 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	means any industrial or commercial activity using volatile organic compounds in an installation to clean garments, furnishing and similar consumer goods excluding the manual removal of stains and spots in the textile and clothing industry.
flexography	means a printing activity using an image carrier of rubber or elastic photopolymers on which the printing areas are above the non-printing areas and using liquid inks which dry through evaporation.
footwear manufacture	means any activity of producing complete footwear or parts of footwear.
heatset web offset printing	means a web-fed printing activity using an image carrier in which the printing and non-printing area are in the same plane, where-(a) the non-printing area is treated to attract water and reject ink;(b) the printing area is treated to receive and transmit ink to the surface to be printed; and(c) evaporation takes place in the oven where hot air is used to heat the printed material.
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.
laminating associated to a printing activity	means the adhering together of two or more flexible materials to produce laminates.

manufacturing of coating preparations, varnishes, inks and adhesives	<p>means the manufacture of coating preparations, varnishes, inks and adhesives as final products and where carried out at the same site the manufacture of intermediates, by the mixing of pigments, resins and adhesive materials with organic solvent or other carrier, including.</p> <p>(a) dispersion and predispersion activities.</p> <p>(b) viscosity and tint adjustments; and</p> <p>(c) operations for filling the final product into its container.</p>
manufacturing of pharmaceutical products	<p>means one or more of the following activities:</p> <p>(a) the chemical synthesis;</p> <p>(b) fermentation;</p> <p>(c) extraction; or</p> <p>(d) formulation and finishing of pharmaceutical products and where carried out at the same site, the manufacture of intermediate products.</p>
other coating activities	<p>means a coating activity applied to:</p> <p>(a) metallic and plastic surfaces including surfaces of airplanes, ships, trains;</p> <p>(b) textile, fabric, film and paper surfaces.</p>
printing activity	<p>means any activity (not being a step in a coating activity) for reproducing text and/or images in which, with the use of an image carrier, ink is transferred onto any type of surface, including the use of associated varnishing, coating and laminating techniques.</p>
publication rotogravure	<p>means a rotogravure printing activity used for printing paper for magazines, brochures, catalogues or similar products, using toluene-based inks.</p>
rotary screen printing	<p>means a web-fed printing activity in which liquid ink which dries only through evaporation 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.</p>
rotogravure	<p>means a printing activity using a cylindrical image carrier in which the printing area is below the non-printing area and liquid inks which dry through evaporation in which 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 those recesses.</p>
rubber conversion	<p>means;</p> <p>(a) any activity of mixing, milling, blending, calendaring, extrusion and vulcanisation of natural or synthetic rubber; and</p> <p>(b) any ancillary operations for converting natural or synthetic rubber into a finished product.</p>

surface cleaning	means any activity, except dry cleaning, using organic solvents to remove contamination from the surface of material including degreasing but excluding the cleaning of equipment; and a cleaning activity consisting of more than one step before or after any other activity shall be considered as one surface cleaning activity.
vehicle coating	<p>means a coating activity applied to the following vehicles:</p> <p>(a) new cars, defined as vehicles of category M1 in Directive 70/156/EEC[11], and of category N1 in so far as they are coated at the same installation as M1 vehicles;</p> <p>(b) 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;</p> <p>(c) vans and trucks, defined as vehicles of categories M2 and M3 in Directive 70/156/EEC, but not including truck cabins</p> <p>(d) buses, defined as vehicles of categories M2 and M3 in Directive 70/156/EEC.</p> <p>(e) trailers, defined in categories O1, O2, O3 and O4 in Directive 70/156/EEC</p>
varnishing	means an activity by which varnish or an adhesive coating for the purpose of sealing the packaging material is applied to a flexible material.
vegetable oil and animal fat extraction and vegetable oil refining activities	means 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 or animal matter.
vehicle refinishing	<p>means any industrial or commercial coating activity and associated degreasing activities performing:</p> <p>(a) 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</p> <p>(b) 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</p> <p>(c) the coating of trailers (including semi-trailers) (category O).</p>
web-fed	means that the material to be printed is fed to the machine from a reel as distinct from separate sheets.
winding wire coating	means any coating activity of metallic conductors used for winding the coils in transformers and motors etc.
wood and plastic lamination	means any activity to adhere together wood or plastic to produce laminated products.
wood impregnation	means any activity giving a loading of preservative in timber.

## **Appendix 7: FURTHER INFORMATION**

### **Websites**

A copy of the SED can be found at:

[http://europa.eu.int/eur-lex/en/consleg/pdf/1999/en\\_1999L0013\\_do\\_001.pdf](http://europa.eu.int/eur-lex/en/consleg/pdf/1999/en_1999L0013_do_001.pdf)

A copy of the VOC in Paints Directive can be found at :-

[http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/l\\_143/l\\_14320040430en00870096.pdf](http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/l_143/l_14320040430en00870096.pdf)

A copy of the SER 2004 can be found at;

<http://www.scotland-legislation.hmso.gov.uk/legislation/scotland/ssi2004/20040026.htm>

A copy of the PPC amendment Regulations 2004 can be found at:

<http://www.hmso.gov.uk/legislation/scotland/ssi2004/20040110.htm>

A copy of SEPA's Charging Scheme can be viewed at

[http://www.sepa.org.uk/charging/booklets/2004\\_05.htm](http://www.sepa.org.uk/charging/booklets/2004_05.htm)

A copy of the SED specific application form SER 1 can be viewed at :-

[http://www.sepa.org.uk/ppc/solvent/sed\\_application\\_form.pdf](http://www.sepa.org.uk/ppc/solvent/sed_application_form.pdf)

A copy of the Scottish Executive Introductory Guidance to the Solvent Emissions Directive (issued in February 2004) can be found at :

<http://www.scotland.gov.uk/library5/environment/ser04.pdf>

A copy of the sector specific technical guidance notes can be viewed at

<http://www.defra.gov.uk/environment/airquality/lapc/pgnotes/default.htm>

Envirowise Publications on Solvent Handling can be viewed at :-

<http://www.envirowise.gov.uk/>

### **Telephone Numbers**

HSE Helpline is 08701 545500

### **Monitoring Methods**

The European standard method for measuring VOC as carbon is "Stationary Source Emission Determination of the Mass Concentration of Total Gaseous Organic Carbon at High Concentration (20 to 500mg/m<sup>3</sup> VOC) in Flue Gas Continuous Flame Ionisation Method CEN 13526.

The European Standard Method "Determination of the Mass Concentration of Individual Gaseous Organic Compounds" CEN 13649 is the best means of determining the mass emission of individual VOCs.



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