



BARROW-IN-FURNESS BOROUGH COUNCIL
POLLUTION PREVENTION AND CONTROL ACT 1999
ENVIRONMENTAL PERMITTING REGULATIONS 2007

Part B Permit with Introductory Note

Ref: PPC/B/05

BAE Systems Submarines Ltd

Installation Address:

**BAE Systems Submarines Ltd
Barrow-in-Furness
Cumbria
LA14 1AF**

Application First Received: 5th July 1999

Current Part B Permit Issued: 26th Nov 2008

EXPLANATORY NOTES

These notes do not form part of the Permit

This Permit is issued under Regulation 12 of the Environmental Permitting (England & Wales) Regulations 2007 (2007 Regulations) to operate an installation carrying out one or more of the activities listed in Part B to Schedule 1 of those Regulations, to the extent authorised by the Permit.

The Permit includes conditions that have to be complied with. It should be noted that aspects of the operation of the installation which are not regulated by those conditions, are subject to the Operator using the best available techniques (BAT) for preventing or, where that is not practical, reducing emissions from the installation. NB EP regulation 72(6) states the implied BAT duty in the Pollution Prevention and Control Regulations 2000 is still relevant for PPC permits that transfer automatically into 2007 Regulations.

Section 3(1) of the Pollution Prevention and Control Regulations 2000 defines "BAT" as follows:

- a. 'available techniques' means those techniques which have been developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration cost and advantages, whether or not the techniques are used or produced inside the United Kingdom, as long as they are reasonably accessible to the operator;
- b. 'best' means, in relation to techniques, the most effective way of achieving a general high level of protection of the environment as a whole;
- c. 'techniques' includes both technology used and the way in which the installation is designed, managed, operated and decommissioned.

Brief Description of the Installation Regulated by the Permit

The installation involves the cleaning and painting of submarines/surface ships and associated equipment with solvent based products within enclosures in various locations around the ship yard. Shot-blasting may be carried out prior to painting in purpose built enclosures with no emission to external air. Adhesives coatings and coatings containing di-isocyanates are also used within the installation.

- 1) **Responsibility under Workplace Health and Safety Legislation** - This permit is given in relation to the requirements of Environmental Permitting Regulations 2007 and subordinate regulations. It must not be taken to replace any responsibilities you may have under workplace health and safety legislation.
- 2) **Other responsibilities** - This permit, in that it regulates only air pollution matters, does not absolve you of the responsibility of any other statutory requirement, such as any need to obtain planning permission, hazardous substances consent or Building Regulations approval from the Council. Discharge consents from the local sewerage undertaker or a waste disposal licence from the Environment Agency may still be required.
- 3) **Enforcement and Offences** - It is an offence to operate a prescribed activity without a current permit. The operator will be liable to enforcement action where;
 - a) a new activity (as defined within the Environmental Permitting (England & Wales) Regulations 2007) is carried on without a proper permit, and
 - b) any of the conditions of the permit are breached.
- 4) **Subsistence Charge** - An annual fee (subsistence charge) due on 1st April each year (currently chargeable per activity per annum but subject to change by statutory instrument) is payable to Barrow-in-Furness Borough Council.

- 5) **Confidentiality** - The Permit requires the Operator to provide information to Barrow-in-Furness Borough Council. The Council will place the information onto the public registers in accordance with the requirements of the 2007 Regulations. If the Operator considers that any information provided is commercially confidential, it may apply to the Council to have such information withheld from the register as provided in the 2007 Regulations. To enable Barrow Borough Council to determine whether the information is commercially confidential, the Operator should clearly identify the information in question and should specify clear and precise reasons.
- 6) **Variations to the permit** - This Permit may be varied in the future. If at any time the activity or any aspect of the activity regulated by the following conditions changes such that the conditions no longer reflect the activity and require alteration, the Regulator should be contacted.
- 7) **Surrender of the permit** - Where an Operator intends to cease the operation of an installation (in whole or in part) the regulator should be informed in writing, such notification must include the information specified in regulation 24 of the 2007 Regulations.
- 8) **Transfer of the permit or part of the permit** - Before the Permit can be wholly or partially transferred to another person, a joint application to transfer the Permit has to be made by both the existing and proposed holders, in accordance with Regulation 21 of the 2007 Regulations. A transfer will be allowed unless the Authority considers that the proposed holder will not be the person who will have control over the operation of the installation or will not ensure compliance with the conditions of the transferred Permit.
- 9) **Appeal against permit conditions** - Anyone who is aggrieved by the conditions attached to a Permit can appeal to the Secretary of State for the Environment, Food and Rural Affairs. Appeals must be made in accordance with the requirements of Regulation 31 and Schedule 6 of the 2007 Regulations.

Appeals should be sent to the Secretary of State for the Environment, Food and Rural Affairs.
The address is as follows:-

The Planning Inspectorate
Environmental Appeals Administration
Room 4/12 - Eagle Wing
Temple Quay House
2 the Square
Temple Quay
Bristol
BS1 6PN

Please Note - an appeal brought under Section 27 paragraph (1) (c), (d) or (e) in relation to the conditions in a permit will not suspend the effect of the conditions appealed against; the conditions must still be complied with.

In determining an appeal against one or more conditions, the Act allows the Secretary of State in addition to quash any of the other conditions not subject to the appeal and to direct the regulator either to vary any of these other conditions or to add new conditions.

- 10) **Contact Details** - If you are required to contact the Environmental Protection Section of the Environmental Health Department at Barrow-in-Furness Borough Council please telephone 01229 876386 or 876382 during office hours and ask for Anne Pearson (Environmental Protection – Team Leader) or Damon Pearson (Environmental Protection Officer).

End of Explanatory Note



Permit reference: PPC/B/05

Barrow-in-Furness Borough Council (the “regulator”) in exercise of its powers under Regulation 12 of the Environmental Permitting Regulations 2007, hereby permits

BAE Systems Submarines Ltd (“the operator”)

whose registered office is

**BAE Systems Submarines Ltd
Warwick House
PO Box 87
Farnborough Aerospace Centre
Farnborough
Hampshire
GU14 6YU**

to operate an installation undertaking the cleaning and painting of units of submarines/surface ships and associated equipment, the use of adhesive coatings and di-isocyanates in a coating activity, as defined in sections 6.4 and 4.1 Part B of Schedule 1 of the above Regulations, at

**BAE Systems Submarines Ltd
Barrow-in-Furness
Cumbria
LA14 1AF**

subject to the conditions of this Permit and within the boundary shown in red on the attached plan in Appendix A.

Signed:.....

Date:.....

Authorised to sign on behalf of
Barrow-in-Furness Borough Council

Emission Limits, Monitoring and Other Provisions

Non VOC Emission Limits

1. The following emission limits shall apply to releases from contained sources.

Substance	Source	Emission Limits/Provisions	Type of Monitoring	Monitoring Frequency
Particulate Matter	See condition 3	50mg/Nm ³ as 30 minute mean	Manual extractive testing to BS ISO 9096:2003 with averages taken over operating periods excluding start-up and shut-down	Annual
Isocyanates	Devonshire Dock Hall	0.1mg/Nm ³ as a 30 minute mean for excluding particulate and expressed as NCO	Manual extractive testing to MDHS 25/3 or draft EPA method 207-1	Annual

2. The reference conditions for the emission limits in condition 1 shall be 273.15K, 101.3kPa, without correction for water vapour content.

3. Emissions of particulate matter shall be tested according to the requirements in condition 1 at the following areas, when they are in operation:

- a. Devonshire Dock Complex Main Paint Shop/Store (vent from paint spraying area)
- b. Devonshire Dock Hall (DDH) (all vents connected to enclosures where shot blasting and paint spraying is taking place)
- c. Ex Reactor Installation Facility (RIF) (vent from paint spraying area)
- d. Boiler Shop (D25)
- e. Temporary enclosure external to DDH (adjacent to D22) (vent connected to DDH extraction system)
- f. Boiler Shop (temporary enclosure)
- g. NAS Annex (temporary enclosure or building to be sealed)
- h. X-ray facility (temporary enclosure)
- i. NAS (temporary enclosure)
- j. DDC Wet Dock (temporary enclosure)
- k. Old Paint Cell Facility (temporary enclosure).

4. Emissions of isocyanate shall be tested according to the requirements in condition 1 when the isocyanate process is operating inside DDH and a temporary enclosure within the NAS.

Reduction Scheme (No VOC abatement)

5. The operator shall adopt the Solvent Reduction Scheme described in paragraphs 5.5 to 5.8 of PG 6/23 (04).

6. The installation shall comply with the target emission values in the table below. The 'target emission' shall be determined in accordance with the 'reduction scheme', detailed in Appendix B to this Permit.

Target Emission Values for Coating (Painting) (Consumption below 15 tonnes)	
By 31 October 2005	By 31 October 2007
Total mass of solids x 0.9	Total mass of solids x 0.6

Target Emission Values for Adhesive Coating	
By 31 October 2005	By 31 October 2007
Total mass of solids x 1.2	Total mass of solids x 1.2

Solvent Management Plans

7. The Operator shall produce two separate Solvent Management Plans for Coating (Painting) processes and Adhesive Coating Processes. These shall be updated annually, starting on 31 October 2006. The Solvent Management Plans shall be produced using the definitions and calculations set out in clauses 5.10, 5.11 and 5.12 of PG 6/23 (04). These are reproduced in Appendix C to this permit.

Compliance with Reduction Scheme

8. The annual actual solvent emission determined from the Solvent Management Plans shall be less than or equal to the Target Emission.
9. In addition to complying with the target emission, future reduction options shall also be considered and included in the annual report to the regulator.
10. The flexibility inherent in this compliance route shall not be taken to encourage:
- The replacement of a low or no organic solvent coating system with a conventional high organic coating system.
 - The introduction of such a conventional high organic solvent coating system into a process/activity.
 - The introduction of such a conventional high organic solvent coating system onto a product where it was not in use before, or
 - The introduction of high solids formulations which have no beneficial effect on the product but increase the solids used, except where a reduction in the overall VOC emissions can be demonstrated.

Designated Risk Phrase Material – Methylene Chloride (R40)

11. Methylene chloride, used to remove residues of polyurethane, shall be controlled under contained conditions as specified in conditions 51 to 53, involving an enclosure and exhausting to a stack.
12. The sum of the mass flows of all the discharges of methylene chloride shall be calculated as part of the Solvent Management Plan. If this is greater or equal to 100g/h, a limit value of 20mg/Nm³ will apply and shall be included in the annual monitoring requirements.

Di-Isocyanate

13. The ratio of methyl di-isocyanate (MDI) to polyol shall be such that the available isocyanate content of MDI is fully utilised by the available hydroxyl content of the polyol. The efficiency of the MDI/polyol mix shall be checked in accordance with condition 14.

14. The ratio of MDI to polyol shall be determined at the start of every shift, when the diisocyanate activity is operating.

Other Provisions

Monitoring, Investigation and Recording

15. The operator shall keep records of inspections, tests and monitoring, including all non-continuous monitoring, inspections and visual assessments. In such cases:
 - a. Current records shall be kept on site and made available to the regulator to examine and
 - b. Records shall be kept by the operator for at least two years.
16. Key abatement plant - the water curtain in the paint shop, shall be kept in good working order and regularly maintained according to the operators Planned Maintenance Schedule.
17. The operator shall notify the regulator at least 7 days before any periodic monitoring exercise to determine compliance with emission limit values. The operator shall state the provisional time and date of monitoring, pollutants to be tested and the methods to be used.
18. The results of non-continuous emission testing shall be forwarded to the regulator within 8 weeks of the completion of the sampling.
19. Adverse monitoring results from **any** monitoring activity (both continuous and non-continuous) shall be investigated by the operator as soon as the monitoring data has been obtained/ received. The operator shall:
 - a. Identify the cause and take any corrective action
 - c. Records as much detail as possible regarding the cause and extent of the problem, and the action taken by the operator to rectify the situation
 - d. Re-test to demonstrate compliance as soon as possible
 - e. Notify the regulator.

Visible and Odorous Emissions

20. All releases to air other than condensed water vapour, shall be free from persistent visible emissions.
21. All emissions to air shall be free from droplets.
22. There shall be no offensive odour beyond the site boundary, as perceived by the regulator.

Abnormal Events

23. In the case of abnormal emissions, malfunction or breakdown leading to abnormal emissions, the operator must:
 - a. investigate immediately and take corrective action
 - b. adjust the process or activity to minimise those emissions; and
 - c. promptly record the events and actions taken.
24. The regulator shall be informed without delay:
 - a. if there is an emission that is likely to have an effect on the local community
 - b. in the event of the failure of key abatement plant.

25. In cases of non-compliance causing immediate danger to human health, the activity shall be suspended immediately. The following criteria shall be taken into account:
- a. The toxicity of the substances being released
 - b. The amount released
 - c. The location of the installation; and
 - d. The sensitivity of the receptors.

Start up and Shut down

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

Efficient Capture of Emissions

27. The introduction of dilution air to achieve emission limits is not permitted.

Calibration and Compliance Monitoring

28. No result shall exceed the emission concentration limits specified, except where either:
- a) data is obtained over at least 5 sampling hours in increments of 30 minutes or less; or
 - b) at least 20 results are obtained where sampling time increments of more than 30 minutes are involved; AND in the case of a) or b)
 - c) no daily mean of all 30 minute mean emission concentrations shall exceed the specified emission concentration limits during normal operation (excluding start-up and shut-down); and
 - d) no 30 minute mean emission concentration shall exceed twice the specified emission concentration limits during normal operation (excluding start-up and shut-down).

Sampling Provisions

29. The operator shall ensure that adequate facilities for sampling are provided on vents or ducts.
30. Sampling points on new plant shall be designed to comply with the British or equivalent standards.

Installations with Two or More SED Activities

31. As there are two SED activities within the installation, the operator shall:
- a. As regards designated risk phrase materials, meet the requirements specified in Conditions 11 and 12 for each activity individually;
 - b. As regards all other substances, either:
 - i) meet the requirements for each activity individually; or
 - ii) have total emissions not exceeding those that would have resulted had point (i) been applied.

NB When applying b) ii) above, the solvent management plan shall be calculated to determine total emissions from all activities concerned. That figure must then be compared

with the total emissions from the installation that would have resulted had the requirements of Annex II of SED been met for each activity separately.

CONTROL TECHNIQUES

VOC Control Techniques

32. All potentially odorous waste materials shall be stored in suitable closed containers.
33. Coatings containing VOCs shall be stored in closed storage containers.
34. All measures shall be taken to minimise VOC emissions during mixing, i.e. use of covered or closed mixing vessels.
35. Emissions from the emptying of mixing vessels and transfer of materials shall be adequately contained, preferably by the use of closed transfer systems, e.g. use of closed mobile containers, containers with close fitting lids or preferably closed containers with pipeline delivery.
36. Cleaning operations involving VOCs shall be periodically reviewed, at least once every two years, to identify opportunities for reducing VOC emissions (e.g. cleaning steps that can be eliminated or alternative cleaning methods). The regulator shall be provided with a report stating the conclusions of the review.
37. Application of cleaning solvents shall be from a contained device and dispensed by a piston type dispenser when used on wipes.
38. When organic solvent is used on wipes:
 - a. pre-impregnated wipes shall be held within an enclosed container prior to use
 - b. where practicable, cleaning fluids containing no or low organic solvent cleaning content shall be used (with or without the addition of mechanical, chemical or thermal enhancements).
39. Where practicable fixed equipment shall be cleaned in-situ, and such equipment shall where practicable be kept enclosed whilst cleaning is carried out.
40. Where equipment is cleaned off-line, cleaning shall be carried out using enclosed cleaning systems, wherever possible. Enclosed cleaning systems shall be sealed to prevent emissions whilst in operation, except during purging at the end of the cleaning cycle. If this is not practicable, emissions shall be contained and vented.
41. Residual coating materials contained in parts of the application equipment shall be removed, where practicable, prior to cleaning.

VOC Control Operational

42. Emissions from curing ovens may need end zone exhaust ventilation to capture emissions.

VOC Control Waste

43. All reasonably practicable efforts shall be made to minimise the amount of residual organic solvent bearing material left in drums and other containers after use. All organic solvent contaminated waste shall be stored in waste containers.

44. Waste paint in tins shall be emptied into drums and then sealed and labelled, so waste handlers are aware of their contents and hazardous properties. Tins with very small amounts of paint residue shall be dried in the open air to avoid the creation of hazardous waste.
45. Nominally empty drums or drums containing waste contaminated with VOC awaiting disposal shall be stored in accordance with the requirements for full or new containers.
46. Prior to disposal, used wipes and other items contaminated with organic solvent shall be placed in a suitably labelled metal bin.

General Control Techniques

47. Dusty wastes shall be stored in closed containers and handled in a manner that avoids emissions.
48. Dry sweeping of dusty materials shall not normally be permitted unless there are environmental or health and safety risks in using alternative techniques.
49. Suitable organic solvent containment and spillage equipment shall be readily available in all organic solvent handling areas
50. A high standard of housekeeping shall be maintained.

Air Quality

Dispersion and Dilution from the Stack

51. All emissions from:
 - a. Devonshire Dock Complex main Paint Shop/Store (all paint application, mixing and drying areas)
 - b. Devonshire Dock Hall (all enclosures used for coating activities, including di-isocyanates, inside the hall)
 - c. Ex Reactor Installation Facility (RIF)
 - d. Contractor's Self Contained Paint Mixing Facility at D00
 - e. Temporary enclosure external to DDH (adjacent to D22) (vent connected to DDH extraction system)
 - f. Boiler Shop (temporary enclosure)
 - g. NAS Annex (temporary enclosure)
 - h. X-Ray Facility (temporary enclosure)
 - i. NAS (temporary enclosure)
 - j. DDC Wet Dock (temporary enclosure)
 - k. Old Paint Cell Facility (temporary enclosure)

shall be exhausted to the external air via the stacks specified in condition 52. The extract ventilation systems shall operate continually during all phases of the process operation, except shot blasting as the Edcar Units used in this activity have no emission to external air.

52. The height and efflux velocity of stacks shall be as follows:
 - a. Devonshire Dock Complex Main Paint Shop/Store – one stack 9.1 metres above ground level, 2.9 metres above roof apex, with an efflux velocity of 18 metres/second (m/s)

- b. Devonshire Dock Hall – 64 stacks all 45 metres above ground level, 6 metres below the roof apex, with an efflux velocity of 4.5m/s
 - c. Ex Reactor Installation Facility (RIF) – 19.5 metres above ground level, 1 metre above roof apex, with an efflux velocity of at least 15m/s
 - d. Contractor's Self Contained Paint Mixing Facility at D00 – 5 metres above ground level (only storage and mixing of paints)
 - e. Temporary enclosure external to DDH (adjacent to D22) (vent connected to DDH extraction system – see b) above)
 - f. Boiler Shop (temporary enclosure) – 1 metre above apex of roof, efflux velocity of at least 15m/s
 - g. NAS Annex (temporary enclosure) - 1 metre above apex of roof, efflux velocity of at least 15m/s
 - h. X-ray facility (temporary enclosure) - 1 metre above apex of roof, efflux velocity of at least 15m/s
 - i. NAS (temporary enclosure) - 1 metre above apex of roof, efflux velocity of at least 15m/s
 - j. DDC Wet Dock (temporary enclosure) – 1 metre above deck of ship or bridge fin of a submarine, efflux velocity 2m/s
 - k. Old Paint Cell (temporary enclosure) - 1 metre above apex of roof, efflux velocity of at least 15m/s.
53. Stacks shall not be fitted with any restriction at the final opening, such as a plate, cap or cowl, with the exception of a cone which may be necessary to increase the exit velocity of the emissions.
54. Stacks shall discharge vertically upwards, except those on Devonshire Dock Hall which can discharge horizontally due to the height of the building.
55. Before any stacks detailed in condition 54 are upgraded, replaced or repaired; heights and efflux velocities shall be agreed with the regulator.
56. The application by brush/rollering of coatings containing VOCs using less than 1 kg of product/person/day can be carried out in areas without extraction to stacks. Log books shall be kept at all such areas to record the necessary calculations.
57. The regulator shall be informed in writing before a temporary enclosure is brought into use, and when it is dismantled.

Appropriate Management Systems

58. Spares and consumables – in particular, those subject to continual wear, shall be held on site, or shall be available at short notice from guaranteed suppliers, so that plant breakdowns can be rectified rapidly.
59. Staff at all levels shall receive necessary training and instruction in their duties relating to the control of the process emissions to air. Training shall include:-
- a. awareness of their responsibilities under the permit;
 - b. minimising emissions on start-up and shut-down; and
 - c. action to minimise emissions during abnormal conditions.
60. The operator shall maintain a statement of training requirements for each operational post and keep a record of the training received by each person whose actions may have an impact on the environment. These documents shall be made available to the regulator on request.

61. Effective preventative maintenance shall be employed on all plant and equipment concerned with the control of emissions to air.
62. Records of the written maintenance programme shall be made available for inspection to the regulator on request.

In this permit, the following expressions shall have the following meaning:

Authorised officer	An officer authorised to carry out duties under the 2007 Regulations and subordinate regulations.
Installation	Any reference to an installation shall be taken to include “mobile plant”, stockpiles and associated roadways unless otherwise stated.
Logbook	Includes any means of storage of the required information as agreed by the regulator.
Operator	The person who has control over the operation of the installation. The installation need not be in operation for there to be an operator. The operator must demonstrably have the authority and ability to ensure compliance with the permit.
Regulator	Barrow-in-Furness Borough Council. The Environmental Protection Section of the Environmental Health Department, Town Hall, Duke Street, Barrow-in-Furness, Cumbria, LA14 2LD of this Council has responsibility for pollution control regulation.

End of Permit

APPENDIX B

Reduction Scheme – No VOC Abatement (reproduced from PG6/23)

Solvent Reduction Scheme

5.5 An operator may choose to use the Reduction Scheme for an installation to achieve emission reductions to a “**Target Emission**” equivalent to those, which would have been achieved if the concentration emission limits, had been applied. 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. 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.

5.6 The Target Emission for an installation is calculated as follows;

(a) The Total Mass of Solids in the quantity of coating consumed in a year is determined.
– solids are all materials in coatings that become solid as a result of curing, polymerisation, or the evaporation of the water or solvent
– all ingredients other than water and organic solvents should be assumed to form part of the solid coating

(b) Table 6 Target Emission Values must then be used to determine the Target Emission.

The non-volatile content of the coating, as supplied, will usually be available from the supplier. This may be quoted in g/l or in % mass by weight. In cases of doubt, the reference standard for the determination of non-volatile % mass by weight is BS EN ISO 3251 (also numbered BS 3900: B18). The test conditions may need to be adjusted for the particular conditions of use or when assessing chemically or radiation cured coatings, where otherwise volatile components react to form part of the dry solid coating.

Compliance with Reduction Scheme

5.7 Compliance with Reduction Scheme is achieved if the annual actual solvent emission determined from the Solvent Management Plan is less than or equal to the Target Emission.

Where the annual actual solvent emission is:

**annual actual solvent emission = I1-O8-O7-O6 (-O5 if abatement has been used)
(see Definitions below)**

5.8 The flexibility inherent in this compliance route should not be taken to encourage

- the replacement of a low or no organic solvent coating system with a conventional high organic solvent coating system, or
- the introduction of such a conventional high organic solvent coating system into a process/activity or
- the introduction of such a conventional high organic solvent coating system onto a product where it was not in use before, or
- the introduction of high solids formulations which have no beneficial effect on the product but increase the solids used, except where a reduction in the overall VOC emissions can be demonstrated.

Regulators should seek prior notification of any proposal to introduce such systems, which should include reasons why lower organic solvent systems are not considered technically appropriate or practicable.

APPENDIX C

Determination of Solvent Consumption

5.9 Construction of inventories of materials consumed and disposed of may involve the identification of individual organic solvents, or solids. This may give rise to an issue of commercial confidentiality. Information supplied must be placed on the public register, unless exclusion has been granted on the grounds of commercial confidentiality or national security. (Further guidance can be found in chapter 8 of the General Guidance Manual on policy and procedures for A2 and B installations)

5.10 A determination of the organic solvent consumption, the total mass of organic solvent Inputs minus any solvents sent for reuse/recovery off-site, should be made and submitted to the regulator annually, preferably to coincide with the operators stocktaking requirements, in the form of a mass balance in order to determine the annual actual consumption of organic solvent (C):

Where: $C = I1 - O8$

I1 Total quantity of organic solvents, or their quantity in preparations purchased which are used as input into the process/activity. A calculation of the purchased organic solvent Input (I1) to the process/activity, is carried out by recording:

- (i) The mass of organic solvent contained in coatings, diluents and cleaners in the initial stock (IS) at the start of the accounting period; plus
- (ii) The mass of organic solvent contained in coatings, diluents and cleaners in the purchased stock (PS) during the accounting period.
- (iii) Minus the mass of organic solvent contained in coatings, diluents and cleaners in the final stock (FS) at the end of the accounting period.

Total Organic Solvent Input (I1) = IS + PS – FS

Solvent Management Plan

5.11 The Solvent Management Plan provides definitions and calculations to demonstrate compliance with the VOC requirements of this note. The use of the standard definitions and calculations also ensures consistency of VOC compliance across installations with an industrial sector.

5.12 The definitions provided must be used in all calculations relating to the Solvent Management Plan (SMP).

- for SED installations using the emission and fugitive limits, the SMP should be used for determining the fugitive emissions (SED Box 5). Once completed, it need not be done until the equipment is modified
- for process/activities using the reduction scheme, the SMP should be used to determine the actual emissions annually (paragraph 5.7)

Definitions:

The following definitions provide a framework for the mass balance calculations used in determining compliance.

Inputs of Organic Solvent in the time frame over which the mass balance is being calculated (I)

I1 The quantity of organic solvents, or their quantity in preparations purchased which are used as input into the process/activity (including organic solvents used in the cleaning of equipment, but not those used for the cleaning of the products).

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

Outputs of Organic Solvents in the time frame over which the mass balance is being calculated (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/activity.

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 thermal oxidation or other waste gas or waste water treatments, or captured, e.g. by adsorption, as long as they are not counted under O6, O7 or O8).

O6 Organic solvents contained in collected waste.

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

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