Part B Environmental Permit PPC/B/05

LAPPC Annual Report 2015

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Executive Summary

BAE Systems Maritime – Submarines (BAES) use a Solvent Reduction Scheme for preventing and minimising emissions of Volatile Organic Compounds (VOC) and are required to submit an annual report each year, accompanied by two Solvent Management Plans (SMP), in order to demonstrate compliance with the Part B Environmental Permit issued by the Local Authority.

For the period 1st November 2014 – 31st October 2015, the annual actual solvent emission determined from the SMP's are both less than the target emission, demonstrating compliance with the Solvent Reduction Scheme.

1. Introduction

BAE Systems Maritime – Submarines (BAES) is an installation regulated under the statutory Local Air Pollution Prevention and Control (LAPPC) Regime for Coating and Adhesive Processes. The annual solvent consumption of activities at the site is greater than 5 tonnes and therefore requires a Part B Environmental Permit, issued under the Environmental Permitting (England and Wales) Regulations 2010 (EPR10), by the Local Authority.

The activities covered by the Permit include the cleaning and painting of surfaces during the manufacture of submarines, and the use of adhesive coatings, as defined in Sections 6.4 Part B and Section 7 Part B (a) of Schedule 1 of EPR10. Surface preparation and shot blasting are directly associated activities and also regulated under the Permit.

BAES also operate a Di-iscocyanate process regulated under Section 4.1 Part B of Schedule 1 of EPR10; however an exemption was granted on the grounds of triviality as the process emits prescribed substances to air in such small quantities that they are incapable of causing harm. This activity is therefore not regulated by the Permit, although conditions on the judgement of the exemption are be complied with.

BAES are also responsible in the ensuring that the Integrated Outfit Package (IOP) arrangement (Redhall Marine) complies with the Permit.

2. Non VOC Emissions Limits

The annual monitoring of non-VOC emissions, namely Particulate Matter, was conducted between 20th and 24th July 2015. The report was issued to the Local Authority, within the specified period, on the 8th September 2015. All results were found to be within the specified limits.

3. Reduction Scheme

BAES complies with the LAPPC Regime and the EU Industrial Emissions Directive through the Solvent Reduction Scheme. This requires BAES to determine solvent consumption in the manufacturing process and to achieve emission reductions to a 'target emission' that is equivalent to those which would have been achieved if the concentration limits had been applied. The Solvent Management Plan (SMP) for 2015 contains data for the period 1st of November 2014 - 31st October 2015.

The SMP calculates a target emission for VOC by multiplying the total mass of solids in coatings, over a 12 month period, with the Target Emission Figure (0.6 – Paints / 1.2 - Adhesives) for solvent consumption between the 5 – 15 tonne threshold.

3.1. Coating of Metal and Plastic Processes (Painting)

The target emission for the reporting period for the coating of metal and plastic processes was 10,979 kilograms. The actual emission was 8,068 kilograms with a difference of 2,911 kilograms, demonstrating compliance with the reduction scheme.

3.2. Adhesive Processes

The target emission for the reporting period for the adhesive processes was 945.9 kilograms. The actual emission was 437.4 kilograms with a difference of 508.5 kilograms, demonstrating compliance with the reduction scheme.

4. Future Reduction Options

In addition to complying with the target emission, the Permit also requires that future reduction options are considered and included in the annual report. This includes mechanisms to decrease the average solvent content of the total input and/or systems to increase the efficiency in the use of solids to achieve a reduction of the total emissions from the installation.

BAES use coatings that are based on performance requirements, VOC and health and safety criteria of the Ministry of Defence (MOD).

The MOD makes it a requirement for low VOC materials, and paint manufacturers and suppliers are reminded that any formulation changes to their existing products must be advised. They will then be required on request, to provide the Institute of Naval Medicine (INM), with full product formulation data. Failure to do so will automatically result in the withdrawal of MOD acceptance.

For the benefit of New-Building Specifications, if a paint system can offer cost benefits but one part of it has a VOC level higher than the MOD target value, the actual VOC value must be equal to or less than the current stated value. Data will be required supporting the case, including a statement that the total VOCs' emitted to the atmosphere during application, will be equal to or less than when applying a paint scheme fully in accordance with the MOD target values.

Warpaint (MOD, 2015) is the main guidance document of acceptable paint coatings for in-service and new-build Royal Naval Vessels.

5. Control Techniques

BAES continue to monitor all aspects of Permit requirements for controlling and minimising VOC emissions through planned inspections and area checks.

6. Review of VOC Cleaning

BAES currently uses various solvents containing volatile organic compounds (VOCs) for the purpose of cleaning. This section looks at the processes and substances used, to identify ways for BAES to decrease its solvent emissions. The two processes under the permit that require the use of cleaning solvents are the coating of metal and plastic processes, and adhesive coatings.

BAES uses Methylene Chloride which is a designated risk phrase material (R40) as part of the cleaning process for the di-iscocyanate activity to remove residues of polyurethane from the casting machines only. Although the di-iscocyanate activity falls within the scope of the Environmental Permitting (England) Regulations 2010, this is exempt under triviality. Alternatives to Methylene Chloride have been explored in the past but BAES are bound by Ministry of Defence (MoD) technical specifications and, at present, no suitable alternative has been identified.

Dissolvit FD1000 is a citrus based degreasing agent that BAES continues to use. It has been brought into the degreasing process as a result to reduce the use of Bostik M501, which is both highly volatile and flammable, and therefore had benefits in terms of fire safety and environmental impact. It is not possible to use Dissolvit FD1000 for all applications as the citrus content leaves a residue that is not permitted in some quality aspects.

For the period 2014-2015, for both Painting and Adhesive processes, BAES are well within the Target Emission Factor set by the Reduction Scheme, although there has been an increase in solvent consumption related to the painting processes. The solvent consumption for cleaning of equipment however, has not increased. The vast majority of the thinners are used to clean spray guns.

7. Air Quality

All of the emission stacks on site continue to meet the requirements of the Permit.

8. Facility Upgrades

7.1. Paint Mixing Facility

BAES recently submitted a variation application for a proposed Paint Mixing Facility to be included within the Environmental Permit, which is to replace C00 known as the Contractors Compound; the new Permit was issued in December 2014. Although there is no requirement to use abatement, the new facility incorporates Carbon Filters within the Local Exhaust Ventilation System to reduce emission and is therefore considered as an improvement on current arrangements. The facility has been commissioned and is now operational.

7.2. Site Redevelopment Programme

Significant redevelopment of the submarine manufacturing site at Barrow is required to provide the facilities to manufacture the future Vanguard Successor submarines. The scope of the programme includes proposals for a new Paint Facility. BAES will liaise with the Local Authority throughout the design and build of the new facility to ensure that all Permit requirements are met, including the necessary Permit variations.

9. Appropriate Management Systems

BAES operate an Environmental Management System, accredited to the international standard, ISO 14001, in addition to both Health and Safety (18001) and Quality (9001) Management Systems. The EMS requires the Company to continually improve practises to remain certified. LRQA audit BAES on several occasions throughout the year and re-certify the EMS every 3 years; the Company EMS was recertified in October 2014.

References

MOD (2015) Warpaint (Issue 38). Defence Equipment and Support. Available: https://www.gov.uk/government/publications/warpaint