

VOLUNTARY EMISSIONS CONTROL ACTION PROGRAMME (VECAP): SOUND RESULTS FROM A PROACTIVE INDUSTRY

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Introduction

The essential use of chemicals in modern applications brought the spotlight on the responsible management of chemicals. While regulatory bodies around the world provide an indicative framework of the best ways to ensure responsible production processes, yet more and more industries are committed to invest in the environmentally sound management of chemicals as best fits their specific products.

Flame retardant chemicals are added to materials such as plastics and textiles in order to improve resistance to fires. As such, flame retardants form part of the supply chain for many sectors, notably electrical and electronics, automotive, textile and construction. The vast majority of current emissions of brominated flame retardants (BFRs) to the environment happen during their manufacture and the manufacturing processes of those materials that need BFRs to meet high levels of fire safety.

Ten years ago the member companies of the European Flame Retardants Associationⁱⁱ (EFRA) and the UK Textile Finishers Association (TFA) initiated a code of good practice for the responsible management of flame retardant Deca-BDE, calling on the UK textiles industry to audit their processes and take action to reduce emissions of the substance to the environment. This effort resulted in the launch of VECAP (Voluntary Emissions Control Action Programme), an excellence-driven way of managing chemicals aimed at reducing emissions of brominated flame retardants through the promotion of environmental and process best practices throughout the value chain, from producers to downstream users. The programme has focused on emissions from production and first line users, expansion of the programme has expanded to work with second line users, and the team is currently looking at the best ways to include the end of life of articles in the future.

On the basis of the initial progress of VECAP for Deca-BDE, the BFR industry, through the Bromine Science and Environmental Forum (BSEF) has expanded the programme to other major commercial BFR applications (TBBPA, HBCD and EBP) and has promoted the programme in North America, Europe and the Asia Pacific region.

This year's European progress reportⁱⁱⁱ shows that potential emissions of the three flame retardants surveyed over the course of many years have significantly declined and in most cases reached default values, meaning that potential emissions are showing the lowest readings achievable when applying the Best Available Techniques described in the VECAP tools. The report also showed zero emissions to land for one product, demonstrating that it is possible for the programme to help users reduce emissions to land completely.

2013 also marked the first time reporting of EBP which revealed that potential emissions of flame retardants to water and air are already at default values. Participation in the programme was already high among EBP users, covering 87.1% of the volume sold by EFRA member companies, and sets a good starting point for implementation and future reporting.

Materials and methods

The VECAP process is driven by the principle of continuous improvement, namely using the experience gained to adapt recommendations on best practice to better address any new issues that may arise during implementation each year. Users first commit to the programme by signing on to the Industry's Code of Good Practice and implementing these principles into their daily operations.

Through self-audits, companies identify production processes that involve BFRs and fill in a questionnaire developed by the VECAP product stewardship team together with downstream users considering every step of the user process in order to cover all potential emission points.

Based on the survey results, users receive recommendations on how to best achieve emission reductions. If these recommendations are implemented, an updated emission report is issued and sent to the user which, in some cases, can be followed by further recommendations, since continuous improvement is central to the success of the programme.

The questionnaire is first collated by each supplier, who highlights potential emissions identified, and enters them in a dedicated database. In Europe and Japan Cefic's Statistical Services, and MARSH^{iv} in North America, consolidate, compile and analyse the answers. Data are then treated to obtain estimated potential emissions in g/t sold in the specific region for each product.

The VECAP certification is the ultimate step in the continuous improvement process. Certification was officially recognised in 2009 when the scheme was first launched based on ISO 9000/14001 principles. The scheme was developed in association with Bureau Veritas, with environmental audits carried out by independent auditors. The certification process has been designed in a way that can be easily implemented as to encourage new users' participation. For SMEs it only applies to the process and use of best practices, while for larger companies it can be extended to include their management system, in line with other standards such as ISO 14001 or Responsible Care® management systems.

Results and discussion

To date the programme has been implemented only by producers and downstream users of brominated flame retardants; however in principle its methodology can be applied to encourage the reduction of emissions of any type of solid or liquid chemical substance.

Ten years later, VECAP remains an integral part of environmental best practices among those companies committed to the programme. Participation in the scheme continues to be high; reporting covers 93% of the total volume of the four common brominated flame retardants sold by EFRA member companies. The VECAP team makes continuous improvements to the programme which results in increased awareness of environmental management among users.

This year's progress report shows that potential emissions of the three flame retardants surveyed over the course of the years have significantly declined and in most cases reached default values, meaning that potential emissions are showing the lowest readings achievable when applying the Best Available Techniques described in the VECAP tools. The 2013 report also showed zero emissions to land for Hexabromocyclododecane (HBCD), demonstrating that it is possible for the programme to help users reduce emissions to land completely.

Testimony to the success of the scheme is the responsible disposal of the full volume of Tetrabromobisphenol-A's (TBBPA), Decabromodiphenyl ether (Deca-BDE) and HBCD, showing the industry commitment throughout the supply chain, from the production to the disposal phase.

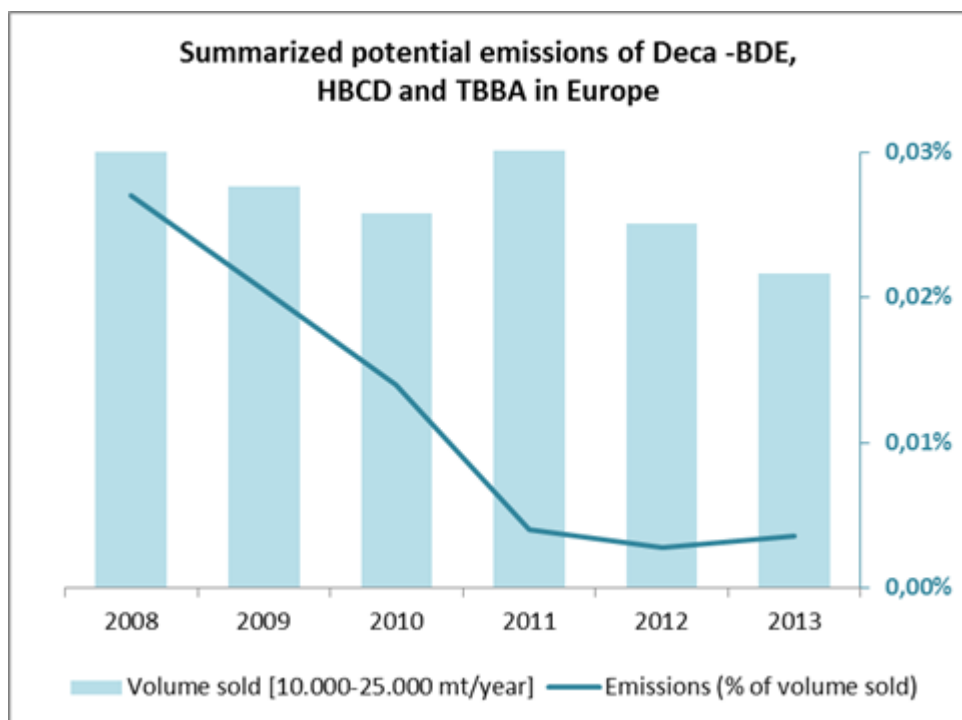


FIGURE 1: Summarized potential emissions of Deca-BDE, HBCD and TBBA in Europe^v

2013 also marked the first time reporting of EBP which revealed that potential emissions of brominated flame retardants to water and air are at default values obtained when VECAP best Practices are applied. Participation in the programme was already high among EBP users, covering 87.1% of the volume sold, and sets a good starting point for implementation and future reporting.

Over the years, the scheme has grown into a truly global product stewardship programme operating under the tenets of Responsible Care® to manage safely chemicals, above and beyond regulatory requirements. There are currently 11 VECAP certified manufacturing and users sites worldwide.

The positive results in the 2013 report confirm the high level achievements of the programme and encourage continuous improvement in the future. The VECAP team is committed to continue to focus on the distribution network to enhance collaboration with second-line users and on the expansion of the programme to involve new suppliers and cover more substances.

The VECAP team is committed to encourage a further increase in the volume covered, which this year stood at 93% of the overall volume of the reported substances sold by EFRA member companies.

This year's inclusion of EBP as a new reported substance is a success story that shows the industry's commitment to embrace the VECAP best practices. Yet the VECAP team is also encouraging users to apply the VECAP methodology to more substances by further simplifying and generalising its survey tools. In parallel, there will be a determined effort by the VECAP team to establish how to include the end-of-life process of flame retardant containing products in the scope of future VECAP surveys.

References:

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