

The Voluntary Emissions Control Action Programme

The 2016 European progress report of the bromine industry's stewardship programme.

VECAP IN A NUTSHELL

WHAT

The **Voluntary Emissions Control Action Programme** (VECAP) is a pioneering product stewardship scheme for the responsible management of chemicals throughout the value chain; run under the principles of Responsible Care®¹. Initially, VECAP only applied to the brominated flame retardant Deca-BDE. In 2004, the programme was expanded to include TBBPA and HBCD and in 2013 also EBP. Recognising the significant impact the VECAP programme had in helping producers and downstream users to manage chemicals responsibly and in an environmentally sound manner, in 2015 the programme took an additional step forward, and decided to extend its application to all powder brominated flame retardants produced by VECAP member companies. The programme ensures the environmentally responsible management of chemicals in all elements of the value chain, by reducing the potential for emissions of chemicals during the production and manufacturing process.

1. Responsible Care® is the global chemical industry's unique initiative to improve health, environmental performance, enhance security, and to communicate with stakeholders about products and processes www.cefic.org/Responsible-Care.

WHO

The bromine industry voluntarily developed VECAP to take responsibility for the management of flame retardants at the production and manufacturing stage. VECAP was established by three of the leading global producers of flame retardants - all members² of the International Bromine Council (BSEF)³ - together with the UK Textile Finishers association and run by the European Flame Retardants Association (EFRA)⁴. 2016 marked the first year Everkem⁵ joined the VECAP reporting.

2. Albemarle, Chemtura, ICL-IP www.albemarle.com, www.greatlakes.com, www.icl-ip.com. **3.** The Bromine Science and Environmental Forum (www.bsef.org) is the organisation representing the bromine industry, committed to investing in scientific research on bromine and brominated flame retardants (BFRs). **4.** EFRA is a sector group of the European Chemical Industry Council (CEFIC) www.flameretardants.eu **5.** www.everkem.com

WHERE

VECAP is a **globally recognised product stewardship scheme**, with more and more users in Europe and worldwide embracing the core values of the programme. Individual BSEF members have promoted and implemented VECAP in Europe, North America, Mexico, China, Japan, Singapore, Thailand, Indonesia, South Korea and Taiwan. In all these countries users show their commitment to the scheme by participating to the programme, responding to the survey questionnaire that underpins the progress reports, sharing experience and implementing the recommendations.

WHY

VECAP is founded on the commitment of the brominated flame retardant industry to sustainably manage solid polymers throughout the value chain. The programme has been tailored to provide support and guidelines to participating companies on how to control and reduce potential emissions of chemicals into the environment for the production phase of the value chain. **The simple-to-implement best practices**⁶ help producers and downstream users to control, reduce and continuously improve their potential emissions of flame retardants to the environment. Even though industry practices for processing all types of chemicals differ between applications, VECAP best practices can apply across the board.

6. For more information on VECAP best practices, please see the last chapter of this brochure, or visit the www.vecap.info.

VECAP REPORTING METHOD - HOW DOES IT WORK?

As part of the industry's commitment to track progress, participating users and producers receive an annual questionnaire to fill in and report back on the handling of the volume of the relevant brominated flame retardants treated throughout the year. Whilst from the first reporting period until 2014 the volume of substances handled according to VECAP best practices were reported based on a g/t potential emissions calculation, the reporting method has since evolved into a scorecard system.

Strengthening their commitment to the sustainable management of chemicals throughout the value chain, VECAP member companies extended the application of VECAP best practices to all powder brominated flame retardants produced - including proprietary and company specific substances. In line with this expansion in the remit of the programme, the VECAP reporting methodology has been adapted following competition and anti-trust rules, which require the maintenance of supplier anonymity. As such, reporting for the volume surveyed in 2016 also focused on the total percentage of volume sold that has been treated as per VECAP best practices.

THE VECAP SURVEY TOOL

In order to have an accurate understanding of the practices applied at every potential emission point, the VECAP survey tool covers every step of the user's manufacturing process. Users are required to carefully fill in the questionnaire in order for the VECAP team to be able to identify critical points, and to continuously develop best practices to successfully achieve zero or near-zero potential emissions while handling and treating chemicals. The assessment of the successful implementation of the VECAP best practices is then based on several parameters from the survey.

• **5** parameters cover those elements within the manufacturing process for which potential emissions to the environment have been calculated. These are the critical sources of potential emissions which VECAP aims to reduce; namely waste water and waste disposal.

• **7** parameters cover those elements within the manufacturing process for which potential emissions to the environment could occur but have not been calculated. Such best practices are

generally recognised as applicable to every plant, regardless of whether VECAP is in place.

• **3** questions cover points within the manufacturing process for which potential emissions to the environment could occur but have not been calculated. For example, the disposal of Personal Protective Equipment (PPE). These best practices are recommended by EFRA members, and have been added to VECAP as the programme evolved.

REWARDING COMMITMENT

Based on their performance with implementing the VECAP best practices across the different parameters, participating users and producers are assigned a status to recognise their commitment. Those that meet all parameters are granted Gold status. Silver status is given to those that meet all 5 parameters related to the critical sources for potential emissions and demonstrate awareness of the 7 parameters related to the generally recognised best practices. Finally, Bronze status is granted to participating companies who do not entirely comply with the 5 parameters related to the core critical sources for

potential emissions. The Bronze status reflects users and producers who have been introduced to VECAP best practices and are encouraged to accomplish greater compliance in the coming years. The VECAP team is committed to increasing participation and awareness among all existing and new users on a yearly basis. The team is also committed to the continuous improvement of the programme with the development of new best practice recommendations based on experience and evolution in manufacturing processes.

| |  |  |  |
|-------------------------------------|---|---|---|
| VECAP 5 parameters | ✓ | ✓ | ✗ |
| Generally recognised best practises | ✓ | ✗ | ✗ |



HOW WE DID THIS YEAR

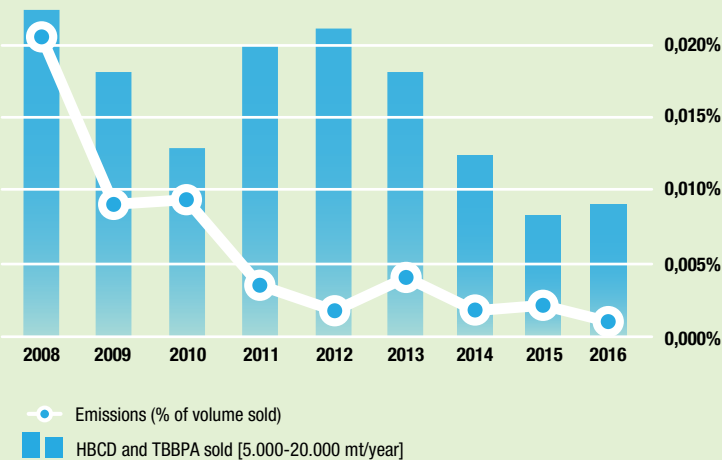
2016 EUROPEAN PROGRESS REPORT

Since its launch in 2004, the VECAP product stewardship programme has achieved impressive results for the four substances covered by the programme (Deca-BDE, HBCD, TBBA and EBP) in Europe. Potential emissions of HBCD and TBBPA have decreased significantly over the years (Figure 1). The 2016 survey results show that potential emissions to land, water and air of HBCD and TBBPA have decreased to less than 0.001% of volume sold since the launch of the programme. In 2016 EBP data was reported as part of the total BFRs covered by the programme due to anti-trust rules, together with Deca-BDE whose sales ceased among the EFRA member companies.

The 2016 European Progress Report shows the successful implementation of VECAP best practices across the region. The 2016 survey was marked by an increase in the volume of BFRs covered by programme, which reached 90% of total BFRs sold by the founding member companies in 2015. Everkem's contribution to the VECAP product stewardship programme in 2016 also contributed to the increase reported in 2016.

As a matter of fact, 69.5% of the total volume of BFRs commonly sold in 2015 was handled with all VECAP best practices and was assigned Gold status, marking a 40% increase in comparison to the previous reporting period. A further 17.4% of the total volume sold met the criteria for Silver status. Over 85% of the all BFRs commonly sold was handled correctly, with VECAP best practices implemented at the most crucial

Summary of potential emissions of HBCD and TBBA in Europe (2008 = index year)

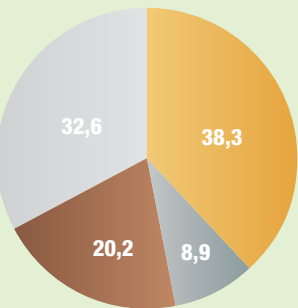


points to reduce potential emissions to the environment, an increase of 15% regarding the preceding year. 3.6% of the volume covered of all BFRs sold was assigned Bronze status, with only 9.6% of the volume sold in 2015 not being accounted for.

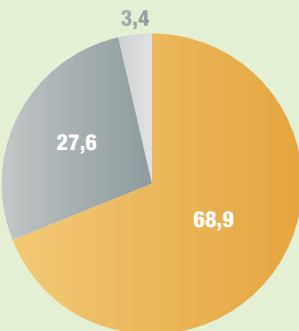
2016 was also marked by a 60% increase in the total volume of TBBPA covered by the programme compared to the previous year, which reflects an improvement in the access to data from new joiners. While HBCD is expected to be phased out in Europe in the near future, EFRA members remained committed to implementing VECAP best practices as long as sales continue. 38.3% of the total volume of HBCD was granted Gold status, 8.9% Silver, 20.2% Bronze leaving only 32.6% of the total volume sold unaccounted for. The survey results showed a decrease in the percentage of best practices for dust filters use applied when handling HBCD, reflecting the shift of some gold standard users to HBCD replacement.

The 2016 results showed that 88.2% of TBBPA and up to 63% of EBP sold in 2015 was handled to the Gold standard of implementing VECAP best practices. HBCD-replacement products, of which 97% of the total volume sold is covered by the programme, achieved 68.9% strong Gold standard in all fronts with a minor exception to the best practices applied to the cleaning of the working area. In this respect, the VECAP team is firmly committed to continue working closely with new users to provide support in the implementation of the VECAP best practices.

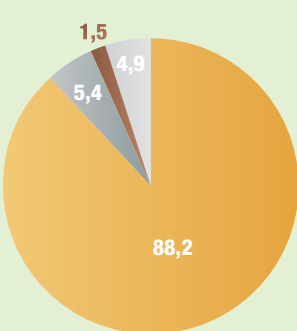
Status % of total volume sold in 2016 (HBCD)



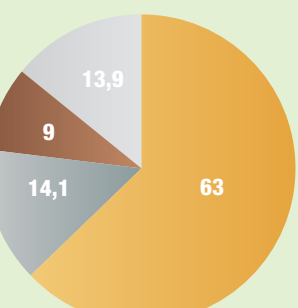
Status % of total volume sold in 2016 (HBCD replacement)



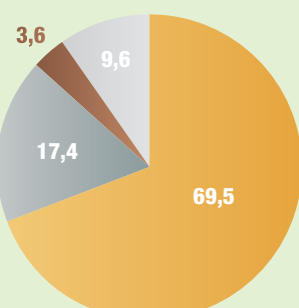
Status % of total volume sold in 2016 (TBBPA)



Status % of total volume sold in 2016 (EBP)

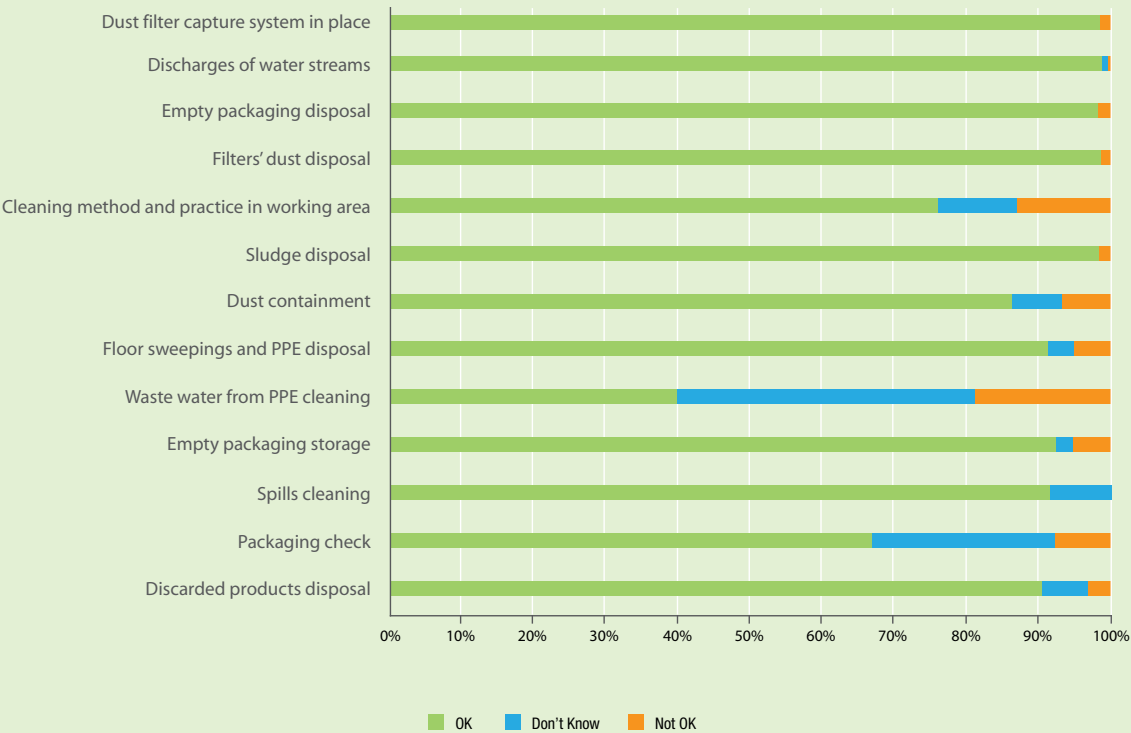


Status % of total volume sold in 2016 (all BFRWs)



Gold
Silver
Bronze
No information

All BFRs 2016



More informations at vecap.info