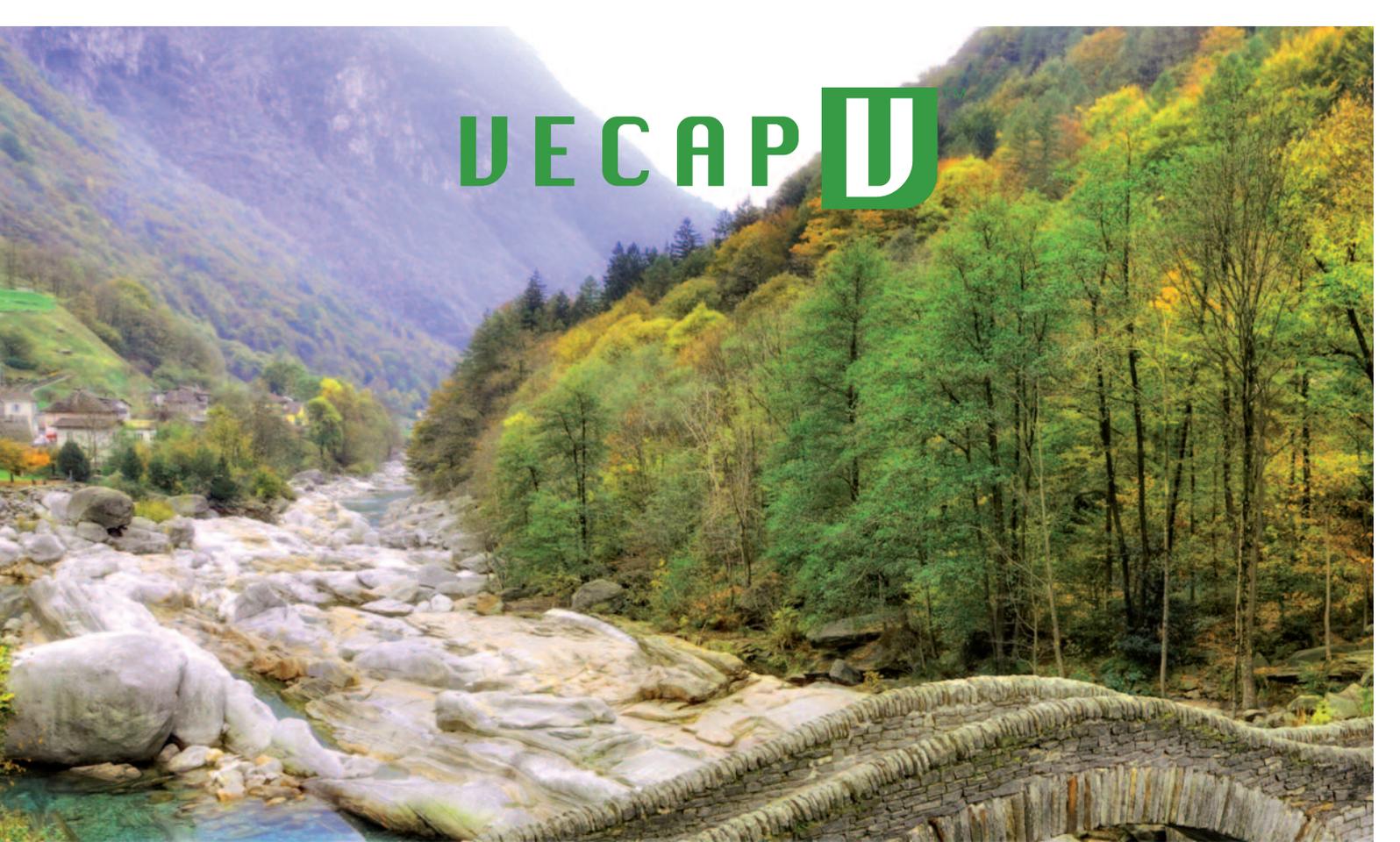


UECAP U



SUSTAINABLE IMPROVEMENT

EUROPEAN ANNUAL PROGRESS REPORT 2011

The Voluntary Emissions
Control Action Programme



CONTENTS

01 HIGHLIGHTS

01 FOREWORD

02 I. INTRODUCTION TO VECAP

03 Background and Evolution

03 A Global Programme

04 II. VECAP PROGRESS REPORT 2011

05 Overview of the 2011 Survey

06 Deca-BDE

08 HBCD

10 TBBPA

12 III. REAFFIRMING OUR VISION FOR THE FUTURE

14 IV. HOW DOES VECAP WORK?

This report is designed to provide transparent and concise information on the progress of the Voluntary Emissions Control Action Programme (VECAP) on an annual basis. Any feedback or comments are welcome and will be considered for future editions.

HIGHLIGHTS

- 1 Potential emissions to land of the flame retardant TBBPA reduced to zero, representing the highest achievement in the VECAP programme since its beginning
- 2 Potential air and water emissions for TBBPA have been reduced to the lowest achievable level, demonstrating strong progress in the implementation of Best Available Techniques by users
- 3 Significant reduction in total potential emissions for the three flame retardants, over the last four years
- 4 The identification that UK landfill sites are adequately controlled, resulting in a significant drop in estimated land emissions of Deca-BDE
- 5 Increase in VECAP certification from five to ten sites, which now includes all manufacturing sites for the three flame retardants, reflects a firm commitment to the programme's objectives

FOREWORD



Responsible Care®
OUR COMMITMENT TO SUSTAINABILITY



The chemical industry is committed to the safe and environmentally sound management of chemicals worldwide. Under the Responsible Care® initiative, the industry provides help and advice to foster this throughout the product chain.

The Voluntary Emissions Control Action Programme (VECAP) is an exemplary industry product stewardship scheme operating beneath the tenets of Responsible Care by the three main producers of flame retardants to reduce emissions. It is now widely recognised as one of the most successful global voluntary industry initiatives.

Bayer MaterialScience B.V. (BMSBV), a leading provider of rigid polyurethane foam systems in Europe incorporated under the global network of polyurethane systems houses of Bayer, is proud to be supporting VECAP in a year when survey results represent the highest achievements in the programme since its inception.

In 2011, the site in Foxhol received VECAP certification for implementing Best Available Techniques to improve health, safety and environmental performance in the workplace in all processes. Support and advice on how to handle empty packaging and waste water has been highly successful in providing us with guidance to operate in a safe and environmentally friendly way.

Participation in VECAP certification is part of BMSBV's general commitment to its environmental and social responsibility. The implementation of best practices at the Foxhol site has enabled BMSBV to comply with national legislation and in many cases voluntarily go beyond regulatory requirements.

Philipp Polenz

General Manager
Bayer MaterialScience BV
Foxhol, The Netherlands

I. INTRODUCTION TO VECAP



The Voluntary Emissions Control Action Programme (VECAP)¹ is an innovative environmental management tool for handling chemicals down through the supply chain. It demonstrates the proactive involvement of companies, many of whom are small and medium-sized enterprises (SMEs) to adopt practices both for reasons of environmental best practice and economic efficiency.

VECAP aims to reduce emissions of flame retardants through the promotion of environmental management and manufacturing process best practices throughout the value chain, from producers to downstream users. Although this programme does not deal with potential emissions during the service life of products or after their disposal, the flame retardant industry is actively involved in end-of-life issues management and has recently initiated a pilot project looking into the recycling of plastics from post-consumer flat panel displays.

VECAP was developed and first implemented in 2004 by three producers of flame retardants²

in partnership with user industries³. Operating under the European Flame Retardants Association (EFRA)⁴, a sector group of the European Chemical Industry Council (Cefic)⁵, VECAP aims to set new standards for chemicals management in the workplace, both at manufacturing sites and along the value chain. It offers all companies – small, medium and large – access to industry expertise on environmental best practices, whilst setting benchmarks for other industries to apply similar principles. The programme has been educating stakeholders by organising workshops to introduce VECAP to regulators, trade groups and others interested in chemicals management.

A similar voluntary programme⁶ run by users of Hexabromocyclododecane (HBCD) for polystyrene foams, which was set up to manage potential emissions of HBCD to the environment, has been integrated into VECAP.

Flame retardants are chemical substances that are incorporated into materials such as plastics and textiles. Flame retardants fulfill vital functions: they can either delay the start of a developing fire, slow down the combustion process or make the material self-extinguishing. The use of flame retardants is critical in providing people with more time to escape from fires and fire fighters with additional time to respond. They are commonly used in many domestic and industrial appliances such as computers, TVs, mobile phones, mattresses, upholstered furniture and insulation boards in order to comply with fire safety standards.

VECAP is a programme for reducing emissions to the environment by:

- Increasing an understanding of chemicals management in the value chain over and above existing legislation
- Promoting and facilitating open and constructive dialogue with industry, regulators and other stakeholders
- Raising awareness among all those involved in the process, from site personnel to company top management
- Implementing and disseminating best practices identified through the programme

BACKGROUND AND EVOLUTION

VECAP's origins lie with member companies of EFRA who, with the support of EU regulatory authorities, initiated a Code of Good Practice in 2004 calling on the UK textiles industry to take action to reduce emissions of the flame retardant Deca-BDE. Although Deca-BDE is a non classified product, the industry felt that there should be an active programme to encourage its users to minimise their emissions. Over the years, VECAP has extended its scope to include other flame retardants, namely HBCD and TBBPA.

During the early years of the programme, there was an exclusive focus on potential emissions to air and water. VECAP was extended to cover potential land emissions when surveys highlighted an issue with residues in packaging waste. These are now successfully handled through the implementation of VECAP best practices by the majority of users.

A GLOBAL PROGRAMME

The expansion of VECAP has also been geographical and the programme now works with many users of flame retardants in Europe and other regions in the world:

- A significant number of Deca-BDE, HBCD and TBBPA users in the United States and Canada have committed to implementing VECAP. At the time of writing, the 2010 North American Annual Progress Report was in its final stages before being published.
- The programme has also been actively promoted in the Asia Pacific region. In 2012, industry will be stepping up its efforts to extend the programme in this region, as significant opportunities for improvements have been identified there.

The programme enables global application with materials such as best practice guidelines and a Code of Good Practice for all applications in several languages, taking into account local differences.

More details on how the programme works are available in chapter IV.



¹ www.vecap.info

² Albemarle, Chemtura, ICL-IP

³ The Textile Finishers Association initiated a Code of Good Practice calling on the textile industry to audit their processes and take action to reduce Deca-BDE emissions

⁴ www.flameretardants.eu

⁵ www.cefic.org

⁶ Self Enforced Control of Use to Reduce Emissions (SECURE)

II. VECAP PROGRESS REPORT 2011



OVERVIEW OF 2011 PROGRAMME RESULTS

In 2011 participation in VECAP surveys remained high, covering 94% of total volume sold by EFRA member companies. A slight drop in participation compared to the previous year (95%) was due to an increase in total sales volumes in 2010 which resulted in new users joining the programme who were not yet familiar with the VECAP methodology. Going forward, the VECAP team will work closely with these participants to encourage the uptake of best practices and will also focus more on second line users (served through distribution channels).

This year, sales volumes are presented using tonnage bands. For the sake of comparison, volumes reported for the previous years were also adjusted.

It should be noted that participation figures relate to users and volumes supplied by EFRA member companies. While volumes supplied by non-EFRA members cannot be included, it is

reasonable to assume that users who procure their raw materials from different sources will handle both in exactly the same way. As such, we would expect those users to apply VECAP best practices to all their flame retardant supplies.

The number of VECAP certified sites has increased from five to ten worldwide (see chapter IV for further information on VECAP certification). Four sites are certified in Europe (one producer and three downstream users), three production sites in the US, two in the Middle East (Israel and Jordan) and one in China. In comparison to the 2010 report, three new manufacturing facilities and two new user sites have been certified. Looking ahead, we believe that increasing the number of certifications, including user sites, is important for the programme's long-term development and success. VECAP certification by an independent third party (Bureau Veritas) is the gold standard in terms of commitment to the programme's objectives.

Overall, the 2011 survey results are a significant achievement for the VECAP programme. The reduction in potential emissions across all three product streams confirms that the scheme successfully raises awareness among all users in the value chain to implement Best Available Techniques. The attainment of the lowest possible level of potential land emissions for TBBPA represents the highest achievement in the VECAP programme since its beginning.

The VECAP team is committed to continue updating and improving the programme in order to build on the success of these survey results and ensure that the momentum is maintained. In this respect, ideas and comments on how VECAP can be further improved are welcome from all stakeholders.

CASE STUDY: END-OF-LIFE: GOING BEYOND VECAP

Waste electrical and electronics equipment (WEEE) is becoming the fastest growing waste stream in the European Union and other parts of the world. In particular, the production of FPDs globally has increased considerably from a few thousand in 2005 to over 171 million FPDs being used today in TVs, laptops, cellular phones and digital cameras. The European Commission has decided to tackle the challenges that plastics bring to the WEEE stream by reviewing the existing directives on electrical and electronic equipment.

In response to EU legislative developments, and in order to contribute to the new reuse and recycling targets of the WEEE directive, EFRA has gone beyond the scope of VECAP and proactively initiated a pilot project in 2011 on mechanical recycling of plastics from post-consumer flat panel displays (FPDs), in partnership with the European Electronics Recyclers Association members, the WEEE Forum, plastics producers and original equipment manufacturers. The project shows how industry is taking responsibility in addressing flame retardants in electronic waste through the investment into research of recycling solutions for a more sustainable use of resources and the potential of recycling plastics containing brominated and phosphorus flame retardants originating from FPDs.

The objective is to reach the highest possible recycling rate through the separation of plastics by selective collection, dedicated shredding, separation and marketing of recovered plastics. However, the recycling of plastics poses particular challenges due to a lack of information on plastic and flame retardant characterisation, incomplete prior-to-recycling plastic sorting technologies and an undeveloped plastic mechanical recycling industry for WEEE. The EFRA initiative involves several sub-projects focusing on each step of the recycling process to be able to organise the selective collection of WEEE according to their composition, analyse the physical properties of the different types of plastics to determine their maximum recycling rate, choose the appropriate method to achieve a significant reduction of the amount of waste and set up a testing program to gather recyclability data of end-of-life plastics containing flame retardants.

Going forward, mechanical recycling of the plastic fraction from FPDs will be essential to meeting the re-casted WEEE directive targets. The conclusions of the project are expected before the end of 2012 and will provide clarity on methods to improve the recycling of plastics in FPDs.

DECA-BDE

Decabromodiphenyl ether (Deca-BDE) is a highly effective brominated flame retardant which increases resistance to fire and allows up to 15 times more time to escape in case of fire. It is used to prevent fires in textiles, in the transportation sector (e.g. automotive and aviation industries) and in construction and building (e.g. wires, cables, pipes).

2010 SURVEY RESULTS FOR DECA-BDE

Results from the survey carried out in 2011 are based on 90% coverage of the volume sold in 2010 by EFRA member companies. Overall, participation remained stable with a minor drop due to new users joining the VECAP programme.

Around 10% of the volume sold was to small volume second line users via distribution channels, 50% of which was surveyed and indicates that potential emissions from these sites are slightly

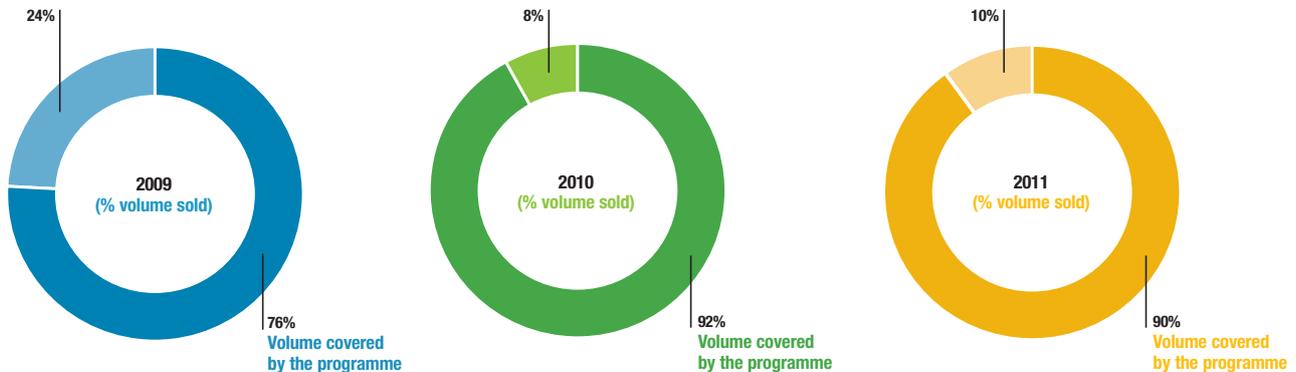
higher than what we observe with larger users. As a result, the VECAP team intends to focus more on these second line users in the future to further increase participation and reduce environmental emissions.

In 2011, while volume has increased, total potential emissions at participating sites were reported to be less than 0.5 metric tonnes per year representing a reduction to less than one third as shown in figure 1.

FIGURE 1: Deca-BDE 2011 survey results

Survey year	2008	2009	2010	2011
2010 Total Volume Sold (metric tonnes per year)	5000-7500	5000-7500	5000-7500	7500-10000
Total Potential Emissions (metric tonnes per year)	< 4	< 1.5	< 1.5	< 0.5

FIGURE 2: Percentage of volume covered by the programme



2011 POTENTIAL EMISSIONS TO AIR AND WATER

2011 findings show potential emissions to air at 11 g/t, representing a 39% reduction compared to the previous year. Over the last four years, potential emissions to air have been decreasing due to the implementation of VECAP BATs, which now covers the majority of the volume sold.

Potential water emissions remained stable at 18 g/t.

POTENTIAL LAND EMISSIONS AND DESTINATION OF DECA-BDE SPENT PACKAGING

Results in 2011 show an 84% reduction in potential land emissions compared to the previous year - from 199 g/t to 31 g/t. The large majority of potential land emissions identified in 2010 were due to packaging residues, as users claimed to be sending waste to uncontrolled landfill in the UK. This year, the VECAP team decided to enquire about UK landfill regulation and were pleased to discover that UK municipal landfill sites are in fact

controlled and users are complying with VECAP best practices. The significant reduction in potential land emissions in the 2011 survey is therefore mainly due to a different interpretation of the results, thanks to the better understanding of waste disposal practices in the UK.

Regarding the overall packaging waste disposal practices in Europe, 97.2% of the surveyed volume is handled following BATs, as it is either incinerated or disposed of in controlled landfill sites. This represents an improvement compared to last year.

FIGURE 3: Comparative Deca-BDE survey results (2008-2011) by emission type (g/t)

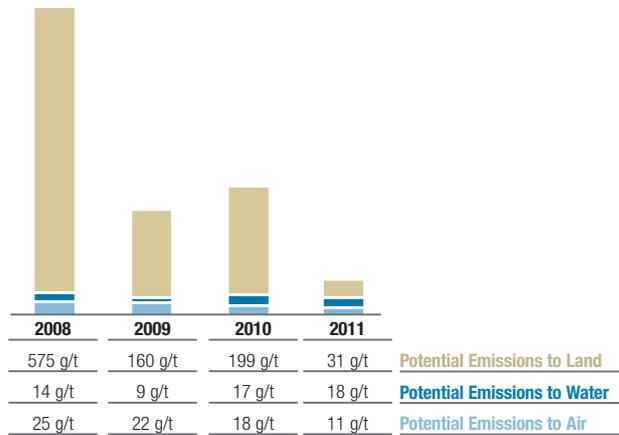


FIGURE 4: Deca-BDE potential land emissions from packaging waste residues

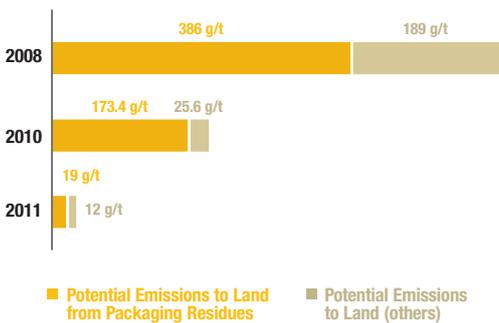
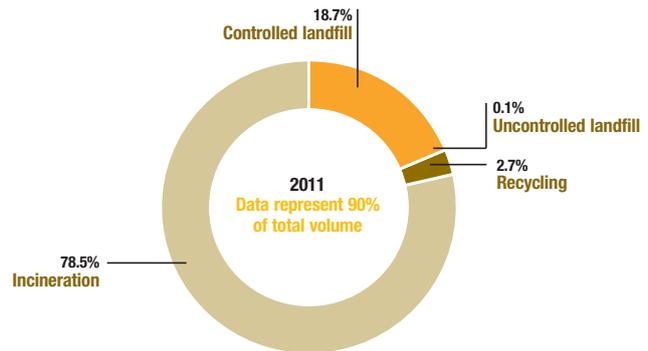


FIGURE 5: Deca-BDE survey 2011 (volume 2010): destination of Deca-BDE packaging



CASE STUDIES:

COMPLIANCE WITH WASTE WATER LEGISLATION THANKS TO VECAP BAT'S



In Europe, several countries have set waste water emission limits for the textile industry and VECAP has proven to be an excellent tool to achieve this. For instance, in Germany, TEGEWA (the German association of textile auxiliaries suppliers and member of the German chemical industry association), can confirm the waste ordinance regulating water emissions is fully respected applying Best Available Techniques promoted by the programme. In Belgium, VECAP has also been instrumental for downstream users of Deca-BDE for complying with existing waste water legislation.

WASTE TREATMENT IN THE UK

In 2010, surveys revealed that some users were not consistently applying best practices in waste treatment. Due to this, the VECAP team set out to address this as a priority in 2011 in order to achieve a better understanding of disposal practices and to actively encourage all users to ensure proper collection, treatment and discharge of flame retardant waste. As a result, the team discovered that UK municipal sites comply with VECAP best practices, whereas previously a worst case scenario was assumed reflecting a high level of potential emissions. The methodology was adjusted accordingly to reflect the actual situation. This discovery led to a reduction in the estimations of potential land emissions for Deca-BDE this year. Continuous improvements such as these enable the VECAP team to further develop the programme and support users to be more aware of the destination of their waste.

HBCD

Hexabromocyclododecane (HBCD) is a flame retardant used mainly in thermal insulation foams in order to protect property from fire. Its main application is in expanded and extruded polystyrene (EPS and XPS) insulation foam boards widely employed by the construction sector. HBCD has also a minor application in electrical boxes (HIPS). Finally, it is used in the back coating of textiles, mainly for upholstered furniture.

2010 SURVEY RESULTS FOR HBCD

The following results from the survey carried out in 2011 are based on 97% of the volumes sold in 2010 by EFRA member companies. Participation in the programme remained high, experiencing a

slight drop due to new users joining the scheme. Despite this, VECAP coverage of HBCD remains the highest of the three products.

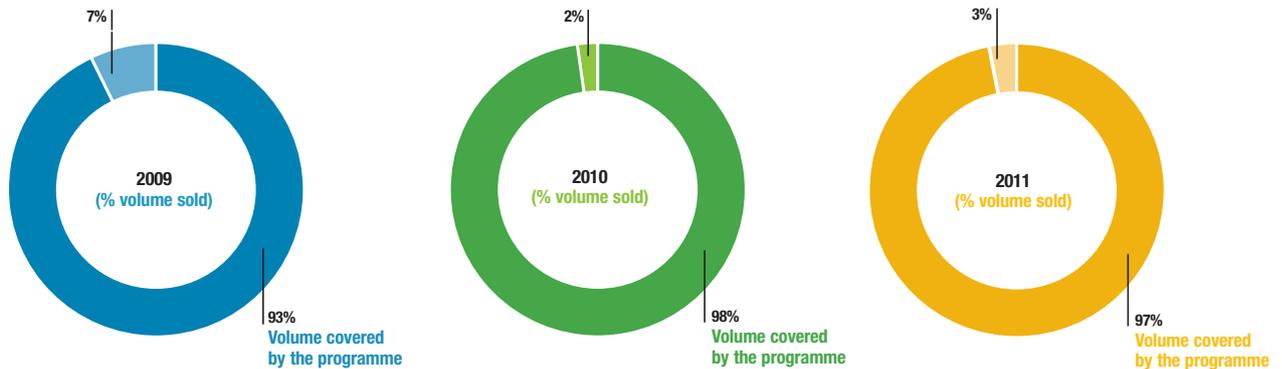
Total potential emissions are now estimated to be below 0.5 metric tonnes per year, representing

an 11% reduction compared to the previous year while total sales volume has increased for the volumes sold by the EFRA members. This demonstrates a good uptake of the VECAP principles and implementation of best practices.

FIGURE 6: HBCD 2011 survey results

Survey year	2008	2009	2010	2011
2010 Total Volume Sold (metric tonnes/year)	10000-12500	7500-10000	7500-10000	10000-12500
Total Potential Emissions (metric tonnes/year)	< 2.5	< 0.5	< 0.6	< 0.5

FIGURE 7: Percentage of volume covered by the programme



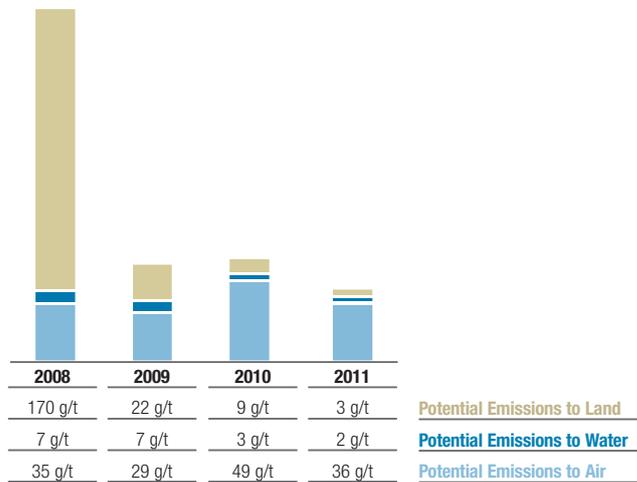
2011 POTENTIAL EMISSIONS TO AIR AND WATER

Potential air emissions are now estimated at 36 g/t, representing a 26% drop compared to last year's survey. This is mainly due to the fact that low-dust granular material is increasingly being

used. The VECAP team encourages the use of these low-dust granules to minimise potential air emissions.

Potential emissions to water in 2011 remained low and are estimated at 2 g/t.

FIGURE 8: Comparative HBCD survey results (2008-2011) by emission type (g/t)



POTENTIAL LAND EMISSIONS AND DESTINATION OF HBCD SPENT PACKAGING

Figures for potential land emissions have dropped to 3 g/t as shown in figure 8. Having been identified as an area of concern in previous surveys, this figure is welcomed and demonstrates that the programme continues to be implemented by a large majority of users.

For 98% of volume, packaging waste is now handled using VECAP best practices, either by incineration or through disposal to controlled landfill sites. As previous surveys identified packaging waste residues as the main source of potential emissions, these results are very encouraging and demonstrate implementation of best practices for the majority of the volume.

FIGURE 9: HBCD potential land emissions from packaging waste residues

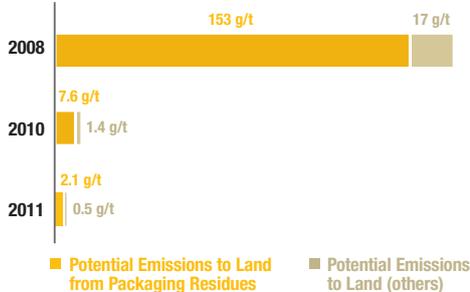
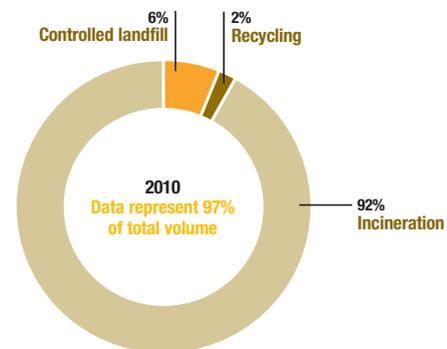


FIGURE 10: HBCD survey 2011 (volume 2010): destination of HBCD packaging



TBBPA

Tetrabromobisphenol-A (TBBPA) is applied to improve fire safety, mainly in the context of printed wiring boards in electrical and electronic equipment. It is used in more than 90% of flame retardant-4 printed circuit boards, the most commonly used board in electronic devices.

2011 SURVEY RESULTS FOR TBBPA

Results are from the survey conducted in 2011, based on volume sold in Europe by EFRA members from the previous year. The coverage remained high at 92% and substantial improvements in terms of emissions reductions were achieved. VECAP can now report the lowest possible level of land emissions for

the total volume surveyed and very little air and water emissions.

To build on this achievement, VECAP intends to focus on increasing the participation level going forward in order to cover total volume sold in Europe.

Overall, total potential emissions in 2011 are estimated to be less than 0.005 metric tonnes per year.

FIGURE 11: TBBPA 2011 survey results

Survey year	2008	2009	2010	2011
2010 Total Volume Sold (metric tonnes/year)	2500-5000	2500-5000	1000-2500	1000-2500
Total Potential Emissions (metric tonnes/year)	< 1	< 0.250	< 0.500	< 0.005

FIGURE 12: Percentage of volume covered by the programme

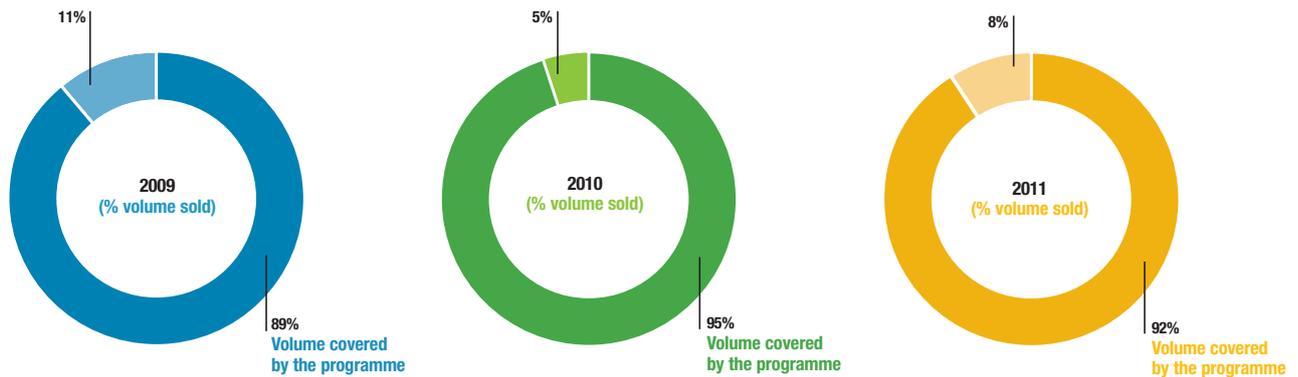
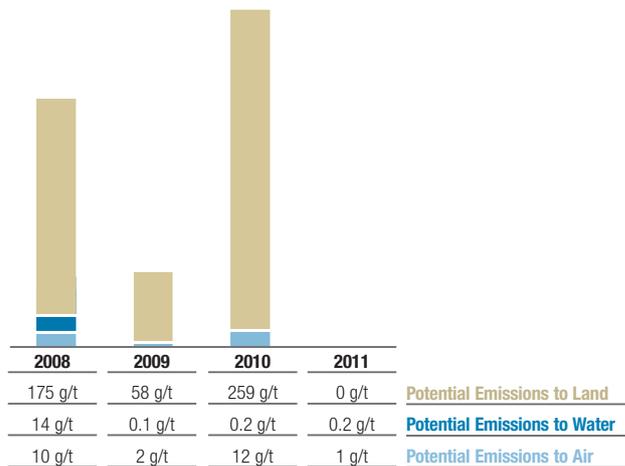


FIGURE 13: Comparative TBBPA survey results (2008-2011) by emission type (g/t)



2011 POTENTIAL EMISSIONS TO AIR AND WATER

In 2011 potential emissions to air of TBBPA were lowered to 1 g/t as a consequence of the implementation of VECAP BATs which were identified as a priority for the VECAP team in the 2010 progress report.

As shown in Figure 12, potential emissions to water remain very low at 0.2 g/t.

POTENTIAL LAND EMISSIONS AND DESTINATION OF TBBPA SPENT PACKAGING

In 2011 potential land emissions were reduced to zero, demonstrating a considerable achievement on the part of the programme to address the uptake of implementation of BATs by users.

The survey reports that 100% of packaging waste is now being disposed of via incineration

or controlled landfill, demonstrating a considerable achievement of the VECAP team to encourage users to comply with best practices.

FIGURE 14: TBBPA potential land emissions from packaging waste residues

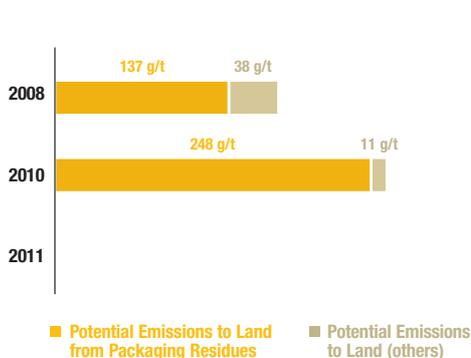
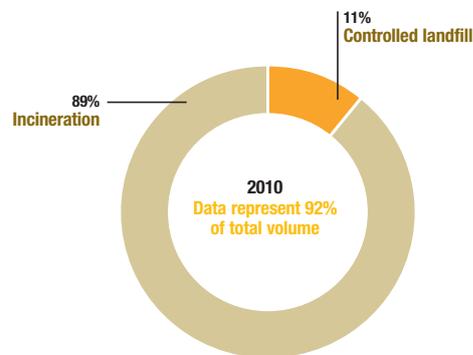


FIGURE 15: TBBPA survey 2011 (volume 2010): destination of TBBPA packaging



III. REAFFIRMING OUR VISION FOR THE FUTURE



The 2011 survey results are an outstanding accomplishment for the VECAP programme, especially for TBBPA. Indeed, the overall reduction in potential emissions across the three product streams proves that the VECAP scheme is truly successful in raising awareness of proper chemicals management among all users in the value chain, encouraging them to adopt recommended best practices. The consistent uptake of the VECAP Code of Good Practice and certification by users also demonstrates the willingness of the industry to actively participate in the programme, take responsibility for environmental concerns and implement Best Available Techniques placing the VECAP programme as an exemplary global industry product stewardship scheme.

The VECAP team will continue to build on the success of these survey results and actively promote the extension of the scheme to other regions worldwide in order to ensure that the momentum of the programme is maintained.

Further reduction in potential land emissions

The current survey reported no potential emissions to land for TBBPA, representing the highest achievement in the programme since its inception. This accomplishment demonstrates that full value chain cooperation with best practice is achievable with the right commitment and determination to reduce environmental emissions. The VECAP team is aware that this sets a high benchmark for the programme and is committed to maintaining this going forward for TBBPA and to reach the same result for the other two products.

Increasing VECAP coverage

The industry will remain focused on the participation of additional users of the three flame retardants and in particular on increasing volume coverage by encouraging second-line users, including distributors, to implement best practices under the programme. This includes extending the scheme to other flame retardants producers beyond EFRA. In addition to North

America, the programme is being actively promoted in the Asia Pacific region after opportunities to develop the programme were identified there.

Enhancing understanding of packaging waste recycling practices

As authorities in Italy and Spain recommend recycling or reuse as the preferred option for used packaging, the VECAP team intends to focus on improving the understanding of these practices to move beyond the current assumption that packaging residues will lead to emissions in these two countries. The team will focus on examining the practices of the waste treatment in these countries and, if needed, recommend best practices to recycling companies to avoid potential emissions.

Widening the scope to encompass other materials

The VECAP methodology is applicable to a wide range of substances beyond potential emissions control for flame retardants. Furthermore, the VECAP team is simplifying and generalising its survey tools in order to allow their application to any type of product. In this vein, the VECAP team intends to widen the scope of the programme to include other industries and additional products sold by the three producer companies. In addition, the programme is keen to focus on the entire textile supply chain in particular getting support from textile industry associations in the UK, Germany and Belgium.

Broadening the scope to address the ‘end of life’ of flame retardant containing products

For a few years now, EFRA members have been participating in an end-of-life working group focusing on recycling practices and possibilities for products containing flame retardants. As outlined previously, in 2011 EFRA initiated a pilot study on plastics recycling from post-consumer flat panel displays (FPDs). The project demonstrates how industry is taking responsibility to address electronic waste through the investment into the research of recycling solutions. While the focus is currently on electrical and electronic equipment, the VECAP team aims to broaden this scope to incorporate other applications.



IV. HOW DOES VECAP WORK?



The VECAP process is driven by the principle of continuous improvement, namely, taking advantage of experience gained by adapting the methodology to better address any new issues that may arise.

The VECAP programme focuses on the producers and downstream users of the three main flame retardants. However, in principle, the VECAP methodology can be applied to reduce emissions of any type of chemical.

VECAP does not physically measure emissions from chemical production processes, but rather calculates or estimates, based on practical experience and studies, potential emissions associated with user and producer processes and practices. This ensures that a precautionary worst case scenario is considered with regard to controlling emissions. Nonetheless, it is possible for users to insert their own values in the emissions calculation tool, whenever they have measured data available.

VECAP CERTIFICATION

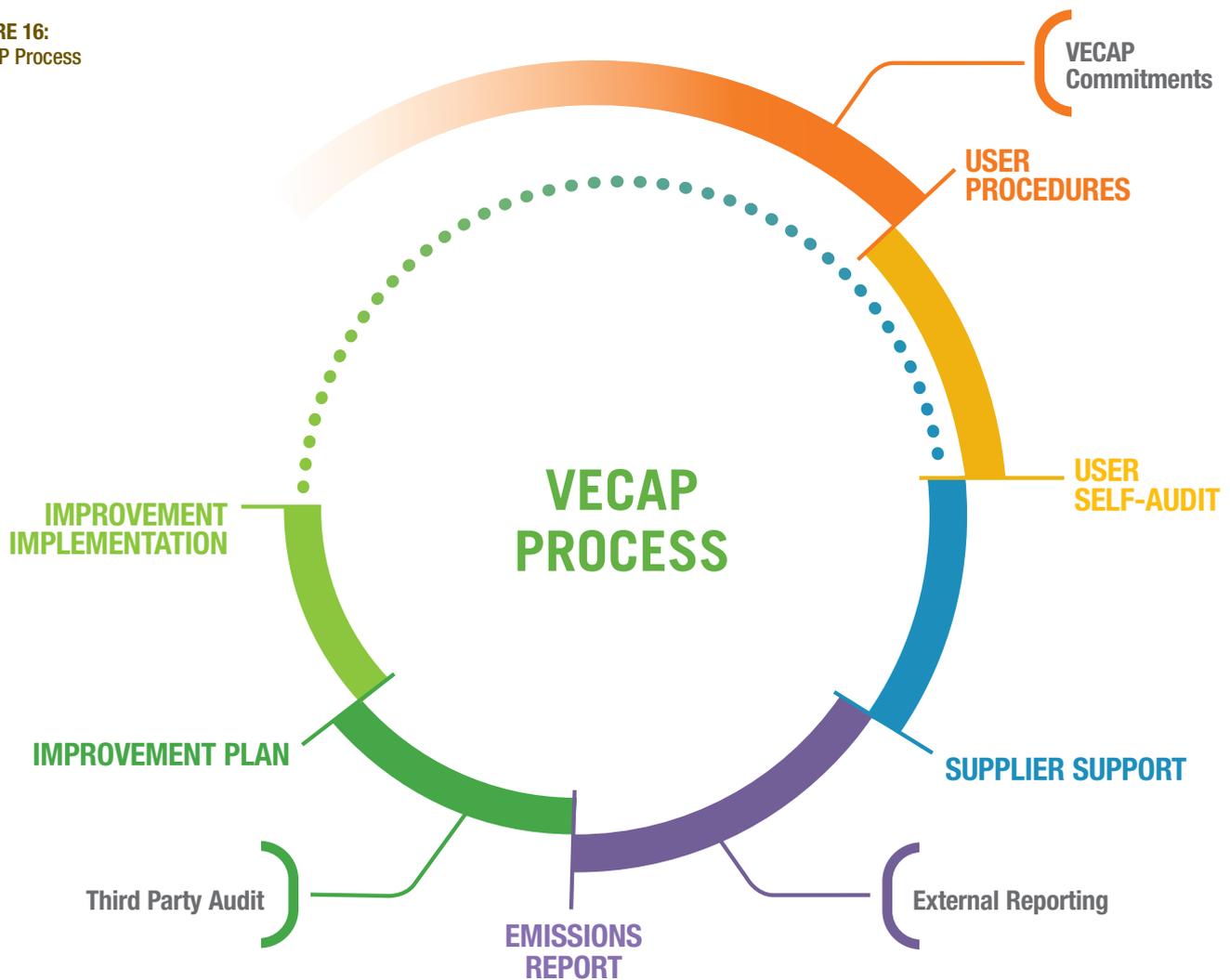
Since the programme's inception, independent certification has been the final step in the

continuous improvement process. In 2009, a certification scheme was launched based on ISO 9001/14001 principles. The scheme was developed in association with Bureau Veritas, with environmental audits carried out by independent auditors. For SMEs, it applies only to the process and use of best practices, while for larger companies it can be extended to their management system, in line with other standards like ISO 14001 or Responsible Care® management systems.

THE VECAP TEAM AND EMISSIONS SURVEY TOOL

VECAP's success is due to the combined efforts of a team of professionals with knowledge of

FIGURE 16:
VECAP Process



flame retardants production and application processes. Members of the Product Stewardship Team include a Product Steward, the three flame retardant suppliers within EFRA, Cefic representatives and members of the European Polystyrene Foams Producers Associations (Plastics Europe and EXIBA). The VECAP Product Steward, supported by the Product Stewardship Team, develops the tools needed for the methodology, including the questionnaires used for the estimation of potential environmental emissions.

For each of the two types of flame retardant applications - plastics and textiles - different questionnaires are developed in collaboration

with downstream users, considering every step in the user process in order to cover all potential emission points. Once the user has completed the questionnaire, a survey report is issued by the supplier highlighting potential emissions. Consequently, the user receives recommendations on how best to achieve emission reductions. If these recommendations are implemented, an updated emissions report is issued and sent to the user.

A full survey of every user is not undertaken each year, as the VECAP team focuses on 'new' participants and areas where the greatest emission reductions may be expected, based on analysis of the previous year's survey.

EMISSIONS DATA COLLECTION & REPORTING

Questionnaires are first collated by each supplier, who highlights potential emissions identified, and enters them in a dedicated database. The data of the three suppliers are then consolidated by Cefic's Statistical Services, and finally compiled and analysed by the VECAP Product Steward. Data are then treated to obtain estimated potential emissions in g/t sold in the EU. Cefic's Statistical Services and the Product Steward are the only parties with access to confidential individual potential emissions data of all participants.

IMPLEMENTING BEST PRACTICES

VECAP helps companies implement best practices and make continuous improvements by encouraging the user to adopt the Industry's Code of Good Practice⁷ which is regularly updated. As an annex to the code, best available technique (BAT)⁸ guidance documents have been developed for emptying bags and intermediate bulk containers (IBC) efficiently.

Listed below are examples of where flame retardant emissions can occur, highlighting critical points in the process of handling and treating chemicals. For more information, please refer to the 2010 European VECAP annual report.

HANDLING AND TREATING CHEMICALS

Listed below are examples of where flame retardant emissions can occur, highlighting critical points in the process of handling and treating chemicals:

MANUFACTURING

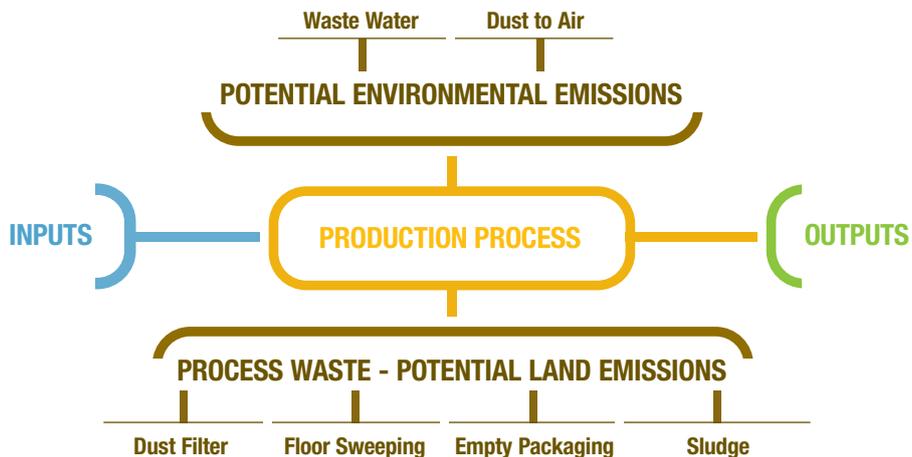
- 1 Production
- 2 Packaging
- 3 Shipping

PROCESSING

- 1 Dust from unloading and feed operations
- 2 Leaks in feed equipment on production lines
- 3 Inadequate or missing air filters
- 4 Improper clean-up of spills

WASTE DISPOSAL

- 1 Residues in packaging
- 2 Poorly treated wastewater from system wash-outs
- 3 Waste not reprocessed
- 4 Use of uncontrolled landfills



⁷ To be found at <http://www.vecap.info/europe/user-documentation>

⁸ Ibid.

ABBREVIATIONS

BAT	Best Available Technique
FR	Flame Retardants
BSEF	Bromine Science and Environmental Forum
Cefic	European Chemical Industry Council
Deca-BDE	Decabromodiphenyl ether
EFRA	European Flame Retardants Association
HBCD	Hexabromocyclododecane
HIPS	High Impact Polystyrene
TBBPA	Tetrabromobisphenol-A
VECAP	Voluntary Emissions Control Action Programme

FOR FURTHER INFORMATION:

www.vecap.info

VECAP Product Steward

info@vecap.info

The European Flame Retardants Association (EFRA) brings together the leading companies which manufacture or market flame retardants in Europe. EFRA covers all types of flame retardants: chemicals based on bromine, chlorine, phosphorus, nitrogen and inorganic compounds. EFRA is a sector group of Cefic, the European Chemical Industry Council.

www.flameretardants.eu

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The Bromine Science and Environmental Forum (BSEF) is the international organisation of the bromine chemical industry, whose remit is to inform stakeholders and commission science on brominated chemicals such as flame retardants.

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VECAP™

VECAP is a voluntary initiative of member companies of the European Flame Retardants Association (EFRA) together with the industry's global organisation, the Bromine Science and Environmental Forum (BSEF).

