VECAP™

Controlling Emissions
Protecting the Environment
Continuous Improvement

VECAP is the Voluntary Emissions Control Action Programme for brominated flame retardants

ebfrip
European Brominated Flame Retardant Industry Panel

BSEF
Bromine Science and Environmental Forum

THE VECAP CODE OF GOOD PRACTICE

Brominated flame retardant industry (BFR) producers and BFR user industries down the supply chain are working together to control and minimize industrial site emissions of these substances to the environment (air, water and waste treatment).

VECAP puts in place a code of good manufacturing practice, outlining practical housekeeping rules and best practices and has been specifically built to enable full participation of small-and-medium sized enterprises (SMES).

The Code of Good Practice makes health, safety and the protection of the environment an integral part of all day-to-day activities of manufacturing processes involving BFRs, from design and production to recycling and disposal.

Managing Emissions of Persistent Chemicals
Good Practice Guides for the Textile & Plastic sectors
available at: www.vecap.info

With VECAP, the BFR value chain enters into a cooperative dialogue focusing on continuous process improvement and on elimination of emissions to the environment.

The VECAP continuous improvement cycle allows users to reduce their process emissions and in addition to realise cost savings.

THE BROMINE INDUSTRY'S PRODUCT STEWARDSHIP COMMITMENT

With VECAP, the Brominated Flame Retardant (BFR) Industry has taken a voluntary initiative to work with BFR user industries to:

- Monitor and minimize the emissions into the environment of HPV (High Production Volume) BFRs*
- Ensure continuous improvement in emissions control and reduction
- Provide transparent, open reporting of VECAP's progress and implementation
- Strive to extend VECAP worldwide
- Ensure that BFRs remain an effective and sustainable means of protection from the risk of fire

An independent, third party VECAP audit procedure, using ISO 9001/14001 principles, will be available during 2009.

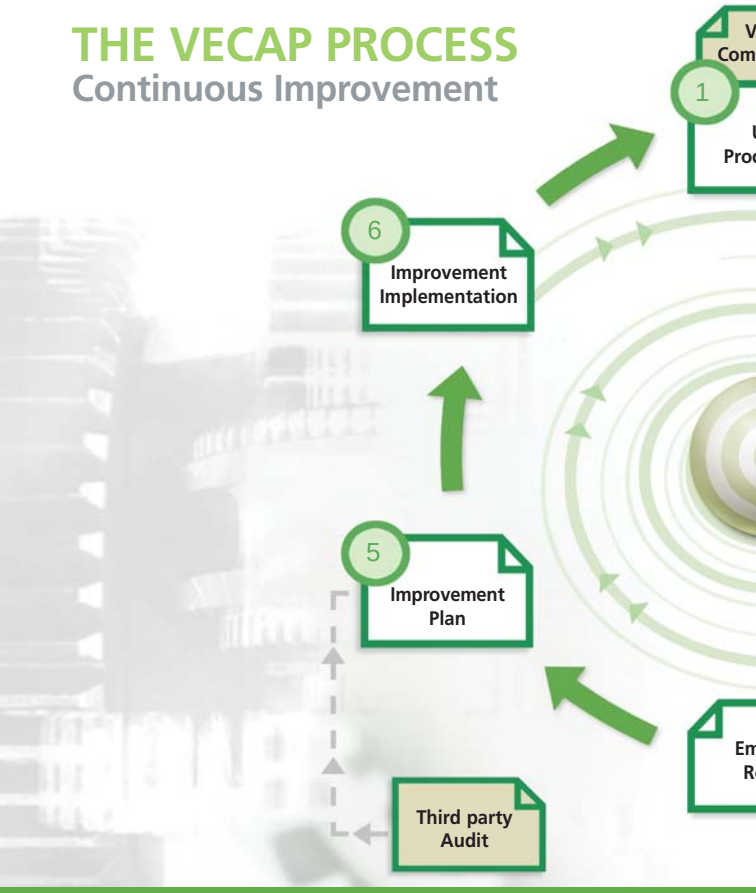
* Deca-BDE, TBBPA and HBCD for textile applications. For the insulation foam applications of HBCD a similar programme entitled "SECURE" has been developed

VECAP IN PRACTICE - EXAMPLES

TEXTILES: Implementation of the VECAP Code of Good Practice at a UK textile company has resulted in low cost adaptations of the production process. An example is scraping out barrels, instead of just rinsing them out, which reduces the Deca-BDE loss per barrel by 90%, reducing correspondingly the water emissions as well as increasing manufacturing process efficiency: an example of "Good ecology" = "Good economy".

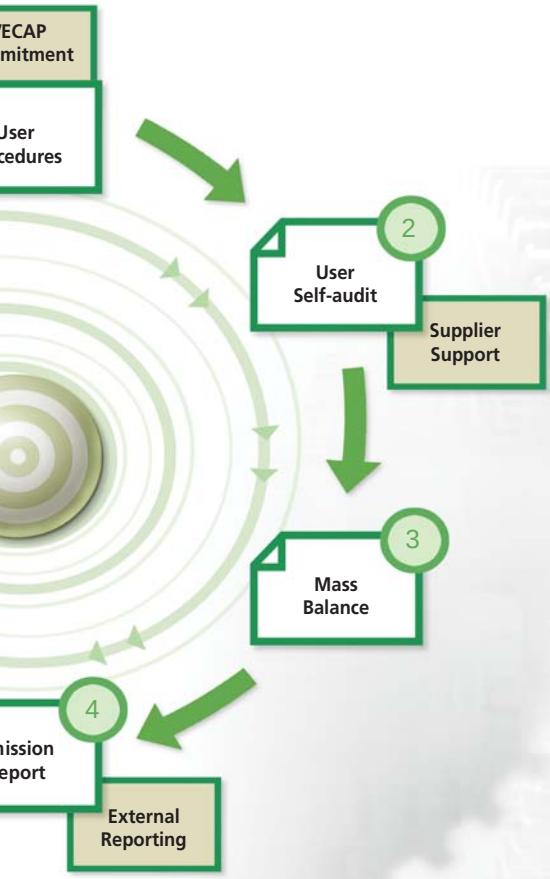
PLASTICS: The mass balance indicates that air emissions during emptying of the Deca-BDE packaging is a potential emission source in plastic applications. Mass balance emission calculations from a plastics manufacturer using Deca-BDE indicates that installating ventilation equipment with filters as part of their commitment to VECAP has resulted in at least 95% reduction of air emissions for that operation.

THE VECAP PROCESS
Continuous Improvement



THE SIX STEPS TO THE VECAP PROC

1. → **Commitment to the VECAP Code of Good Practice:** The VECAP system s Code of Good Practice and implementing it in its daily operations.
2. → **Self-Audit:** With the self-audit, the company identifies the production flow
3. → **Mass Balance:** The company completes and closes the BFR mass production process).
4. → **Baseline Emissions Survey:** The company uses the obtained resu emission reduction priorities.
5. → **Emissions improvement plan:** An emission improvement plan is determi
6. → **Implementation and continuous improvement:** Once the plan is imple opportunities, ensuring effective continuous improvement.



CESS

tarts with the user's commitment to the programme, signing on to the Industry's

y sheet of its operations.

balance (signaling the gap in the amount of BFR entering and leaving the

lts as a baseline to demonstrate actual performance and to detect future

ned in accordance with the company's own objectives and policies.

mented, results are evaluated looking for further potential emission reduction

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VECAP is a voluntary initiative of the European Brominated Flame Retardant Industry Panel - EBFRIP together with the industry's global organisation, the Bromine Science and Environmental Forum - BSEF.

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