PVC Products: Promoting Social Responsibility in Procurement Decision Making

Wednesday 3rd October 2013

Session Name,
Speaker name, Company name
Factors influencing PVC formulation costs under REACH

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Overview

• Short reminder of what REACH is
  – Where are we in the progress of this complex legislation?

• Effect of REACH on PVC formulations
  – PVC resin as registration example

• Conclusions
REACH: Volumes I - IV
Is REACH improving things?
REACH…

- Registration
- Evaluation
- Authorisation…and...
- Restriction
- …of Chemicals
  - (not the only strange acronym...)
REACH

• Registration
  – Bands in 2010 and 2013 have passed
    • 2013 registrations saw €45 Million of income to the agency
    • Costs of compliance to industry – ca. €2.5 Billion – had already exceeded the anticipated 2018 cost before the 2013 registration band
      – Why?

• Is this a case of a hurdle overcome and a return to business as usual?
  • Perhaps not
REACH: Evaluation

• Taking place now
  – Several formulation ingredients effected
  – But numerous others from other industries are too

• Substances subject to Community Rolling Action plan (CoRAP)
  – Can lead to restriction, authorisation or no further action
  – Restriction can refer to a particular use, with all others being safe
## Evaluation/CoRAP substances

<table>
<thead>
<tr>
<th>YEAR</th>
<th>SUBSTANCE</th>
<th>COUNTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>Ethylene Oxide</td>
<td>Austria</td>
</tr>
<tr>
<td>2012</td>
<td>Bisphenol A</td>
<td>Germany</td>
</tr>
<tr>
<td>2012</td>
<td>2-(4-tert-butylbenzyl)propionaldehyde (antioxidant)</td>
<td>Sweden</td>
</tr>
<tr>
<td>2012</td>
<td>4-methylanisole (antioxidant)</td>
<td>Ireland</td>
</tr>
<tr>
<td>2012</td>
<td>Decanol (precursor of many additives)</td>
<td>Italy</td>
</tr>
<tr>
<td>2012</td>
<td>Hydroquinonone</td>
<td>Italy</td>
</tr>
<tr>
<td>2012</td>
<td>2-Ethylhexanoic acid</td>
<td>Spain</td>
</tr>
</tbody>
</table>
## Evaluation/CoRAP substances

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</tr>
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<tbody>
<tr>
<td>2012</td>
<td>Tri-octyl trimellitate</td>
<td>Austria</td>
</tr>
<tr>
<td>2012</td>
<td>Medium chain chlorinated paraffins</td>
<td>UK</td>
</tr>
<tr>
<td>2013</td>
<td>Di-allyl phthalate (chain extender)</td>
<td>Spain</td>
</tr>
<tr>
<td>2013</td>
<td>Silver (!)</td>
<td>Netherlands</td>
</tr>
<tr>
<td>2013</td>
<td>[1,3 (04 1,4)-phenylenebis (1-Methylethylidine)]bis[tert-buyl] peroxide (initiator)</td>
<td>Netherlands</td>
</tr>
<tr>
<td>2013</td>
<td>Di-isotridecyl adipate</td>
<td>Spain</td>
</tr>
</tbody>
</table>
# Evaluation/CoRAPAP substances

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<tbody>
<tr>
<td>2013</td>
<td>Maleic anhydride</td>
<td>Austria</td>
</tr>
<tr>
<td>2013</td>
<td>Benzophenone</td>
<td>Denmark</td>
</tr>
<tr>
<td>2013</td>
<td>4,4’-propane-2,2’-diyldiphenol, polymer with 2-methyloxirane</td>
<td>Denmark</td>
</tr>
<tr>
<td>2013</td>
<td>4,4’-methylene diphenyl diisocyanate</td>
<td>Estonia</td>
</tr>
<tr>
<td>2013</td>
<td>Formaldehyde</td>
<td>France</td>
</tr>
<tr>
<td>2013</td>
<td>Benzo-thiazole</td>
<td>Germany</td>
</tr>
<tr>
<td>2013</td>
<td>Butyl acrylate</td>
<td>Sweden</td>
</tr>
<tr>
<td>2014</td>
<td>Di-undecyl phthalate</td>
<td>Denmark</td>
</tr>
<tr>
<td>2014</td>
<td>Titanium dioxide</td>
<td>France</td>
</tr>
<tr>
<td>2014</td>
<td>Di-isoundecyl azelate</td>
<td>Italy</td>
</tr>
<tr>
<td>2014</td>
<td>Higher phthalates, 7-9 and 9-11</td>
<td>Denmark</td>
</tr>
</tbody>
</table>
REACH: Authorisation

- Starting to reach full speed
  - Seen as all uses forbidden, apart from those authorised
  - First DEHP authorisation applications received
  - Candidates for authorisation first appear on a candidate list

- Restriction
  - A possible result of evaluation/CoRAP but several restrictions were transferred to REACH from previous legislation

- Political pressures
  - Drive to a “large” candidate list
  - Concern that substances placed under authorisation when restriction would be a better tool for management

- ADCA foaming agents an example
REACH: costs of the four parts

- **Registration**
  - Applies to all substances manufactured/imported > 1 te per year
  - Registration cost (to agency) is €24,901 for high volume substance
  - Dossier costs range from a few thousand €s to several hundred thousand €s per registrant
    - Precise cost depends on substance properties, costs of studies and the number of registrants
- **Authorisation**
  - Few substances involved but well publicised
  - Preceded by appearance on candidate list
  - Authorisation cost is €53,300 per use...and subject to time limit
- **Evaluation and Restrictions (CoRAP process):**
  - Follows from evaluation
  - Cost depends on additional testing level but can be several 100,000s of €s
REACH Registrations

• Registration of monomer is required for all PVC resin suppliers

• Suppliers should confirm registration but registrant names can be checked on the European Chemicals Agency website:

  – A supplier not listed or not linked to those listed is open to question
REACH Costs

- Resins: exempt from REACH registration providing the monomer – vinyl chloride – has been registered
- Costs met by VCM consortium (ECVM members plus other parties)
  - Dossier cost: €223,000; Chemical Safety Report Cost: €160,000
- Access to dossier granted to other applicants with a registration obligation
  - Basic dossier access cost is €5219
    - + optional €5818 for Chemical Safety Report
    - Refunds given to original registrants
  - Non-EU importers can be covered by an “Only representative”
    - EU-based legal entity representing a non EU manufacturer
# VCM Dossier: access costs

<table>
<thead>
<tr>
<th>Type of dossier access</th>
<th>Cost of access (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 1000 tes/yr</td>
<td>5219.74</td>
</tr>
<tr>
<td>100 – 1000 tes/yr</td>
<td>4437.28</td>
</tr>
<tr>
<td>10 – 100 tes/yr</td>
<td>2481.14</td>
</tr>
<tr>
<td>1 – 10 tes/yr</td>
<td>2481.14</td>
</tr>
<tr>
<td>1000 tes/yr + CSR</td>
<td>11038.28</td>
</tr>
<tr>
<td>100 – 1000 tes/yr + CSR</td>
<td>10255.83</td>
</tr>
<tr>
<td>10 – 100 tes/yr + CSR</td>
<td>8299.69</td>
</tr>
</tbody>
</table>

Access available from REACH Centrum LoA Shop: LoA@reachcentrum.eu.
REACH Evaluations

- Some Ethylene dichloride (EDC, precursor to vinyl chloride) dossiers were subject to evaluation and were found to be compliant
  - Enquiry was related to non-intermediate uses of EDC and whether intermediate use of EDC satisfied the *Strictly Controlled Conditions* aspect that is linked to such use
  - A lot of administration costs
Authorisation

- Candidate List of substances of very high concern (SVHCs)
  - Legal obligation to pass on identity if SVHCs down the supply chain if present at > 0.1% w/w
  - Flagged up by Candidate List
  - Candidate List now at 144 substances
    - Spread across numerous industries, so spreading of costs of compliance
Authorisation

• Some products caught in this
  – Low MW phthalates
    • Recent applications for DEHP
  – EDC
    • Only non-intermediate – and thus non PVC – uses are subject to authorisation
  – Azodicarbonamide
    • Currently under consideration for inclusion in authorisation
      – Industry task force
Authorisation

- Use of substances subject to authorisation will become illegal beyond a specified subset date unless a successful authorisation dossier has been submitted to the agency.

- Dossier must consist of:
  - Description of uses
  - Description of less hazardous alternatives and why they cannot be used to replace the substance in question
  - Description of how exposure can be controlled to safe levels (for threshold CMRs)
  - Socio-economic reasons for continued use if the above two factors are not satisfactory
Authorisation

• The need to include evaluation of alternatives opens the authorisation process to companies offering such alternatives

• Each alternative has its own cost, but this also needs to be assessed alongside its efficacy in the formulation and its density

• For phthalate alternatives, simple evaluation at the same levels as DEHP may be misleading
  – Need to compare performance at equal plasticising efficiency (which is different from equal % or PHR) and also account for density differences
  – Google search on phthalate alternatives reveals 358,000 hits
  – Plasticiser reference text lists some 700 substances evaluated as plasticisers for PVC
Authorisation: two viewpoints

- Using a substance subject to authorisation implies the use of a substance of very high concern and one of a particular hazard.
- Using a substance that has been granted an authorisation for your specific use can be seen as something of a gold standard in that it would mean it has met the huge obligations associated with such an authorisation.
Conclusions

- A great deal of cost has been added to the supply chain of any chemical using industry by the REACH regulation
- A huge amount of data on chemicals has been submitted to the new agency and much of this is publicly available
- Many hazardous substances were not registered and hence have been removed from the market
- Registration costs have been incurred by all industry sectors
- Evaluation and authorisation also add costs for specific substances and industry sectors
  - But so will the switching to alternatives to avoid using these substances
Conclusions

• PVC resins are REACH compliant
• PVC formulation ingredients are REACH compliant
• There are authorisation and CoRAP challenges for some substances in the PVC chain
Addendum

- Members of the STREAC:
- Communities Rolling Action Plan: CoRAP
- REACH Implementation Project in Plastics Europe: RIPPLE
- Plastics Exposure Scenario Team: PEST