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As promised I am sending this email in order to provide our best guess regarding the market in the EU for MCCPs. You will remember from our telephone conversation that the EuroChlor chlorinated paraffin sector group does not have sufficient members to allow the collection of market statistics. The estimates I am providing are therefore our INEOS ChlorVinyls best estimates of the EU market for MCCPs. We are the largest producer of MCCPs in the EU.

We estimate that the total EU market for MCCPs is about 40,000 tonnes

The main applications are:

Adhesives and sealants c. 1000 tonnes

Lubricants and metal working fluids, including mineral oils c. 3,000 tonnes

Paints c. 1000 tonnes

Polyurethane foam c. 8,000 tonnes

Flame retardant in rubber c.1000 tonnes

Plasticiser/flame retardant in PVC formulations c. 25,000 tonnes

In terms of quantities used for electrical and electronic applications we estimate that this is predominantly MCCP used as plasticiser/fire retardant in PVC cable insulation formulations. We think this is probably more than half of the MCCP used in PVC formulations (about 15,000 tonnes used in PVC cable formulations). We think the next largest applications in terms of PVC formulations is for vinyl flooring.

We think that the vast majority of the PVC formulations containing MCCPs are recycled at the end of life. MCCPs are very compatible with a wide range of PVC formulation additives so the MCCPs do not impede the recycling of flexible PVC. In the response from ECVM I am sure they will have made reference to the VinylPlus sustainable development programme. Each year VinylPlus issues an independently audited Progress Report. In the 2013 report it was shown that across the EU some 88,477 tonnes of PVC cable insulation was recycled - we therefore believe that most of the MCCPs are being recycled within this cable insulation recycle. The PVC industry record on Vinyl flooring recycling is also good so much of the remainder of the MCCPs will also be recycled.

There was a study¹ by RPA (for UK Government) on substitutes for MCCPs:

In my view the information in this RPA study is still largely valid. As far as I am aware there has not been any development of new alternatives to MCCPs - in fact the choice of possible substitutes for MCCPs has declined - for example, DEHP now requires REACH authorisation and DEHP use is

¹ Report submitted with contribution. Reference: RPA (2002), **Information on Substitutes for Medium Chain Chlorinated Paraffins, Task 2 Final Report**, prepared by Risk & Policy Analysts Limited, for Department for Environment, Food and Rural Affairs

declining rapidly in the market.

There is a cost penalty for using alternatives (this can be significant e.g. phosphate ester plasticiser/flame retardants are about 4 times the price of MCCPs). There are penalties in terms of recyclability. As I said previously MCCPs are very compatible with a wide range of PVC additives so do not complicate flexible PVC recycling.

Manchester University has recently conducted a life cycle assessment on MCCPs used in PVC formulations (in accordance with ISO 1400/14040 standards). Compared to possible substitutes in PVC formulations there is a very significant carbon footprint saving by using MCCPs.

With regards to occupational exposures to MCCPs in the workplace there was a lot of work done in PVC compounding and product manufacturing operations by the Institute of Occupational Medicine (IOM). Workplace exposures are extremely low and within safe limits by very wide margins.

Hope this information helps.

Best regards

Roger

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