

Pressure continues as HFCs come under European regulators' spotlight

By Mike Jeffs, secretary general ISOPA

Foam makers in Europe are not out of the woods yet, not as far as legislation on the blowing agents they are allowed to use is concerned: European regulators are still working on legislation to control emissions of hydrofluorocarbons (HFCs). These represent the very latest generation of materials designed to replace the ozone-damaging chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) (see box on p33 for the history of the development of the issues).

This is despite the fact that these materials help reduce the emissions of carbon dioxide, which is by far the most important global warming gas, and despite the fact that their emissions account for less than 1 percent of the region's total greenhouse gas emissions. In addition, the foam industry itself is predicted to account for less than 10 percent of the total HFC emissions, while the high level of thermal insulation offered by the use of HFCs in rigid polyurethane foams offers major savings in CO₂ emissions.

Perhaps more importantly, there are no proposals to control HFCs anywhere outside of Europe.

This time the concerns of the regulators come as a result of the Kyoto Protocol with its focus on cutting greenhouse gas emissions. These concerns have resulted in the Proposal for a European Union Regulation, which focuses on "certain fluorinated greenhouse gases" and is commonly—and perhaps appropriately—called "The F-Gas Regulation."

The proposal for legislation, COM (2003) 492 was published by the European Commission in August 2003 and is currently threading its way through the EU's as perfluorinated carbons) and SF₆ (sulphur hexafluoride).

Impact on footwear, OCF

As proposed, the legislation would mostly affect the use of HFCs in refrigeration circuits and the impact on foams is confined to a ban on the placing on the market (Article 8, Annex II) of one-component foams (OCF) and of footwear containing HFCs. For OCF there is a proviso allowing the use of HFCs when "required by national safety standards."

Importantly, the F-Gas proposal is under Article 95 of the EC Treaty, which requires its uniform applications across

the EU. Subsequent political pressure resulted in the provisions for car air-conditioning being placed in a separate sister proposal for a Directive.

In an attempt to ensure that the proposed regulation passes relatively smoothly through the EU's legislative process, and on behalf of the foam industry, ISOPA has been lobbying MEPs (members of the European Parliament—the body which can ultimately determine the nature of the legislation in Europe), and the Council. We have been drawing their attention to the damage the legislation could cause both to Europe's foam makers and, more importantly, to the region's efforts to reduce carbon dioxide emissions.

In addition to the insulation benefits resulting from the continued use of HFCs, we have emphasised that there are four main areas where their use will be essential:

- Where the optimum flammability of the foam is required and cannot be obtained with pentane-blown foams;
- For processes, such as spray foam, when it is unsafe to use a flammable blowing agent;
- For small and medium-sized enterprises, such as the manufacturers of block foams, discontinuously-produced panels, and integral skin foams, who cannot afford to re-engineer to use pentane; and
- For applications which are space-limited where the ultimate insulation value is needed.

These same points have been used during advocacy actions both to obtain a reasonable phase-out date for HCFCs and, more recently, to convince MEPs and Member State officials that the continued use of HFCs is justified, even in environmental terms.

Round 1: Greens defeated ...

In the European Parliament a large number of amendments was proposed, mostly from the Greens and Socialist groupings, calling for early and total bans of the use of HFCs in all foams.

During our lobbying, a large number of MEPs of all political complexions were seen, and the views of industry were explained. Two further strong points were made:

- HFCs allow the use of rigid insulating foams in a wider range of building ap-

about the author

Mike Jeffs is secretary general of ISOPA, the European Diisocyanate and Polyol Producers Association, which represents the producers of MDI (methylene diphenyl diisocyanate), TDI (toluene diisocyanate), and the associated polyols. Its members are Bayer, Elastogran (BASF), Dow, Huntsman, Repsol and Shell.

On blowing agent issues, ISOPA works closely with the producers of fluorinated gases and the downstream polyurethane associations BING and EPPF, as well as with other users such as the Extruded Polystyrene Association, and EXIBA. **UT**

plications, resulting in more saving of CO₂, the main greenhouse gas; and

- Industry will use cheaper alternatives to HFCs, such as the pentanes, wherever possible.

Our representations resulted in all the ban amendments being defeated in the plenary session at the end of March 2004. Amendments to change the legal status of the regulation to Article 175 (Environment) were also voted down.

In the council there has been much pressure, primarily from Austria and Denmark, to ban all foam uses, in line with their new national ordinances, and to change the legal basis from Article 95 to Article 175. This latter point would have allowed some countries to have had stronger measures against HFC use.

Again, ISOPA's position was explained to many countries, including representatives of the new accession countries such as Poland, and close liaison was maintained with the Dutch representatives who currently hold the presidency of the EU.

As a result, in October 2004, political agreement was reached, although not all countries were happy. Amendments to ban uses in foams were not adopted and, in addition, the legal basis of Article 95 was retained for several important articles, including Article 8. If this position prevails through subsequent legislative steps, the national legislation of Austria and Denmark may have to be revised.

... but the battle is not over

The process is far from over, however. Several legislative steps are due to follow including the second reading in the European Parliament with a plenary vote likely in June 2005. A conciliation phase may then be needed to allow the commission to arbitrate between differing views be-

fore the regulation enters into force, which could be early 2007.

ISOPA will be following the process very closely and trying to ensure that the long-held industry strategy of keeping all options open prevails. We will also be participating in the global debate on the impact of the use of F-Gases to replace ozone-depleting substances¹.

At the same time, ISOPA will be arguing—with others—for broader adoption of better building insulation as the prime route to combat climate change by reducing CO₂ emissions.

Looking even further ahead, we already know that the effectiveness of the regulation will be assessed within four years of its entry-into-force, and that the commission has indicated that both rigid and flexible foams will be among the applications likely to receive particular attention.

From an industry standpoint it is important to realise that no new blowing agents, F-gases or not, are likely to be found or

developed for the future. Hence it is important that all blowing agent users are well prepared for these debates.

Energy saving cuts CO₂

We will need more examples of the benefits of the continued use of HFCs, such as the case worked through for their use in spray foam in Spain, to help convince legislators and green groups that there is a place for HFC-blown foam in the medium and long term. The energy savings they produce when used in rigid polyurethane foams cut carbon dioxide emissions far in excess of that needed to counter the tiny amount of global warming they impose, a clear benefit to the environment. **UT**

Reference

1 – A special report is to be published in mid-2005 by the United Nations Environmental Programme (UNEP) and the Intergovernmental Panel on Climate Change (IPCC) which is run by the World Meteorological Organisation.

The CFC story so far

Serious concerns about blowing agents started in the 1980s when it was first confirmed that CFCs played a key role in the destruction of ozone in the stratosphere.

This posed a massive threat to the polyurethane foam industry. CFC-11 had been the lynch pin for foaming processes and the industry's technology had grown up and evolved around the material. It was used for rigid and flexible foams and for all types of expanded elastomers.

In rigid foams it proved to yield products with very high thermal insulation properties, and in rigid and flexible foams and elastomers the non-toxic, non-flammable material offered safe working conditions as well as yielding products with highly desirable physical properties. Furthermore, in addition to creating the foam, the low-boiling liquid aided flow of the foaming mixture, a major advantage in injection and moulding operations.

Perhaps not surprisingly, the material's imminent demise under the Montreal Protocol was greeted with disbelief and trepidation but, thanks to great ingenuity by scientists and technologists—coupled with massive investment from the industry—technologies evolved and the foam industry has continued to prosper despite losing the use of such a key component.

During the early development of alternatives, the holy grail of the 'drop-in' molecule was sought, and the specification for replacement materials was set in a very narrow band of boiling point close to that of CFC-11's 24°C—and the use of flammable blowing agents was initially ruled out.

Times have certainly changed and now

around 70 percent of the polyurethane rigid foam used to make foams for building applications and domestic refrigerators and freezers in the EU, is expanded with pentane, while the flexible foam industry has mostly transitioned to the use of water-blowing (using CO₂ generated by the isocyanate-water reaction), or by the direct use of liquid carbon dioxide.

The nearest to a 'drop-in' blowing agent for the technically demanding rigid insulation foams has been HCFC-141b and this served the industry well from its introduction in 1992 until the EU's Regulation EC2037/2000 phased it out at the beginning of 2004.

The final stage of this process, the phase-out of HCFCs, was timed for when the 'replacement' HFCs would become available in the EU. This was achieved by industry working closely with the commission.

Although HFC-134a, originally developed for refrigeration circuits, has also been used for foam blowing, the specially developed molecules HFC-245fa and HFC-365mfc were targeted for the replacement of HCFCs in several applications.

They offer two key benefits: they are not as flammable as pentane, although HFC-365mfc has a relatively low flash-point; and they give foams with a high level of thermal insulation.

These points are exactly those used during ISOPA's advocacy actions, as detailed in the main article.

The next step, as also detailed in the main article, concerns possible controls on these HFCs—a move which, the article argues, would be counter-productive in terms of protection of the environment. **UT**

Pros and cons of blowing agents

CFC: High ozone depletion potential (ODP) and high global warming potential (GWP);

HCFC: Low but not zero ODP, and medium GWP

HFC: Zero ODP and medium GWP

Pentane: Zero ODP and very low GWP