F-Gas Regulation Briefing Note – Foams and Aerosols

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HFC-free foams and aerosols are possible by 2015

This fact sheet provides information on phasing out hydrofluorocarbons (HFCs) in foams and aerosols in the European Union. It is intended to inform revisions to the F-Gas Regulation, which are currently under consideration. The term "foams" refers to extruded polystyrene (XPS) and polyurethane (PU) foams, and "aerosols" refers to technical aerosols except metered dose inhalers (MDI).

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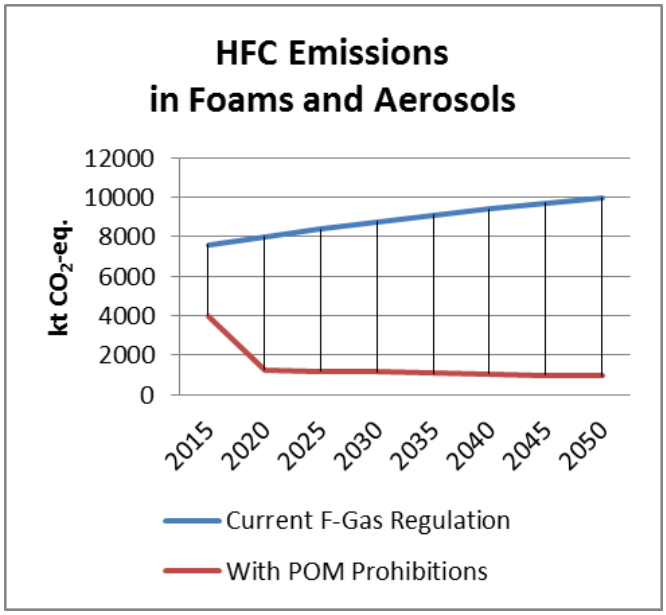
Emission trends and alternatives

HFC emissions from foams and aerosols will continue to undermine climate objectives unless action is taken soon. Assuming full implementation of the F-Gas Regulation, HFC emissions from this sector will rise steadily over time without additional measures.[1] Foams, in particular, should be addressed as a matter of priority because they are used in homes and equipment with very long lifetimes, resulting in significant accumulation over time and requiring expensive recovery measures at end of life.



Several recent studies have identified technically feasible and safe alternatives already in use in the European Union.[2] Alternatives mostly rely on natural refrigerants such as pentane, isobutane, organic solvents, water, and carbon dioxide.[3] A recent European Commission-funded study analyzed the market penetration of alternatives and determined that HFC-based foams and aerosols can be banned by 2015 with minimal derogations, if any.[4] These additional measures would prevent over 271 Mt/CO_2-eq. emissions through 2050, resulting in significant reductions of HFC emissions on a timescale responsive to climate science.[5]

Cost effectiveness

On a CO_2-equivalent basis, alternatives are very cost-effective. Conservative estimates of the abatement costs of switching to alternatives are negative to low in most applications, as demonstrated in Table 1.[6] By comparison, the Stern Review suggests that the social cost of carbon today is around approximately €64.5/t CO_2-eq., a figure well above the abatement costs in these sectors. Switching to alternatives is sound public policy.

From an end-use perspective, when the choice between alternatives is available, consumers actually save more money by

Table 1: Abatement Costs of Alternatives

Subsector	Cost of Alternative (tCO_2-eq)
Aerosols (except MDI)	€ 10.03
XPS with HFC-134a	€ 1
XPS with HFC-152a	- € 1.6
PU Spray Foam	€ 61.63
Other PU	€ 3.52

* The Environmental Investigation Agency (EIA) is an independent campaigning organisation committed to bringing about change that protects the natural world from environmental crime and abuse. For more information, contact ukinfo@eia-international.org.

using natural refrigerants instead of saturated or unsaturated HFCs – with PU Spray Foam and aerosols being the lone exceptions although costs are still competitive.[7] Nevertheless, to overcome barriers to adoption due to increased costs in those subsectors, especially for small-and medium-sized enterprises (SMEs), Member States can design support schemes to offset any additional costs and promote taxes on HFC use.

Policy recommendations

Policymakers should revise Annex II of the F-Gas Regulation to include placing on the market (POM) prohibitions on HFCs in foams and aerosols starting in 2015:[8]

Fluorinated Greenhouse Gases	Products and Equipment	Date of Prohibition
Fluorinated GHG gases GWP >15	Aerosols (sans MDI)	1 January 2015
Fluorinated GHG gases	XPS with HFC-134a	1 January 2015
Fluorinated GHG gases	XPS with HFC-152a	1 January 2015
Fluorinated GHG gases	PU Spray Foam	1 January 2015
Fluorinated GHG gases	Other PU	1 January 2015

This would ensure reductions in HFC emissions and provided certainty of investment to manufacturers of HFC-free alternatives.

Environmental Investigation Agency
May 2012

[1] Öko-Recherche *et al.*, *Preparatory Study for a Review of Regulation (EC) No 842/2006 on Certain Fluorinated Greenhouse Gases, Final Report* (September 2011)[hereinafter "Öko-Recherche Study"], Annex VI, pp. 339-356, 364-367 (chart produced from data provided by Öko-Recherche).
[2] *See e.g.* Öko-Recherche Study; Umweltbundesamt, *Avoiding Fluorinated Greenhouse Gases: Prospects for Phasing Out* (June 2011, English Version); European Commission, *Report from the Commission on the Application, Effects and Adequacy of the Regulation on Certain Fluorinated Greenhouse Gases (Regulation (EC) No 842/2006)* (September 2011).
[3] Öko-Recherche, Study, Annex VI, pp. 339-356, 364-367.
[4] Öko-Recherche, Study, pp. 259-261 and Annex V, 265-269 (market penetration of alternatives is close to or at 100%).
[5] *See generally* Öko-Recherche Study, Annex V, pp. 265-269 and Annex VI, pp. 339-356 and 364-367 (figure derived from data provided by Öko-Recherche).
[6] Öko-Recherche, Study, Annex V, pp. 265-269 (chart produced from Öko-Recherche data).
[7] Öko-Recherche, Study, Annex V, pp. 265-269.
[8] To meet the 2015 POM prohibition, it is possible that aerosols will need to rely on unsaturated HFCs – also referred to as hydrofluoro-olefins (HFOs) with a GWP less than 15. The European Commission should periodically review whether a full POM prohibition on all HFCs is appropriate for aerosols given current uncertainties in lifecycle HFC emissions and toxicity of their breakdown chemicals in the environment.