

## References

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- 3 See UK Government, Department for Environment, Food & Rural Affairs and Environment Agency, *Requirements of the 2014 EU Fluorinated Greenhouse Gas (F-Gas) Regulation, Including the Phasing Out of HFCs and Product Bans*, available at <https://www.gov.uk/government/collections/eu-f-gas-regulation-guidance-for-users-producers-and-traders> (last visited 31 May 2015).
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- 5 Regulation (EU) No 517/2014, Article 15 and Annex V.
- 6 Regulation (EU) No 517/2014, Article 15(1).
- 7 Regulation (EU) No 517/2014, Annex V.
- 8 Regulation (EU) No 517/2014, Annex V.
- 9 See Regulation (EU) No 517/2014, Annex V; see also SKM Enviros, *Review of EU HFC Phase-Down Profiles: Evaluation of Future EU HFC Requirements under F-Gas Regulation Proposals* (undated), pp. 12-13.
- 10 European Commission, *Climate Action – Fluorinated Greenhouse Gases*, available at [http://ec.europa.eu/clima/policies/f-gas/index\\_en.htm](http://ec.europa.eu/clima/policies/f-gas/index_en.htm) (last visited 23 May 2015).
- 11 European Commission, *Impact Assessment: Review of Regulation (EC) No 842/2006 on certain fluorinated greenhouse gases* (Commission Staff Working Paper), SWD(2012)0364 (hereinafter "Impact Assessment"), p. 159.
- 12 Compare Regulation (EU) No 517/2014, Article 2(1) and (2) with Regulation (EU) No 517/2014, Annex I and II.
- 13 Regulation (EU) No 517/2014, Article 15(2).
- 14 Regulation (EU) No 517/2014, Article 15(2).
- 15 Regulation (EU) No 517/2014m Article 15(2)(f).
- 16 Regulation (EU) No 517/2014, Article 15(2)(c); see also *Impact Assessment*, p. 155 ("exporters of EU-produced products or equipment containing HFCs face a certain competitive disadvantage since the HFC needed for their products is included in the scope of a phasedown scheme").
- 17 Regulation (EU) No 517/2014, Article 16(4).
- 18 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 "Preparatory Study"), Annex III; *Impact Assessment*, pp. 156-162.
- 19 *Preparatory Study*, pp. 17-20.
- 20 *Preparatory Study*, Annexes III and V; see also *Impact Assessment*, pp. 156-162.
- 21 See *Preparatory Study*, Annexes III and V.
- 22 SKM Enviros, *Phase Down of HFC Consumption in the EU – Assessment of Implications for the RAC Sector Final Report* (Version 11, September 2012) (hereinafter "SKM Enviros Report"), pp. 81-82.
- 23 *Preparatory Study*, Annex V, p. 247. **Note:** Maximum penetration rates were assigned for various low-GWP technologies for the years 2015, 2020 and 2030. These include cascade systems relying on a combination of hydrocarbons, CO<sub>2</sub> or HFC-1234yf as well as transcritical CO<sub>2</sub> systems. Together, those low-GWP technologies were projected to be able to satisfy 45% of demand for new installations in the EU in 2015, and 125% and 310% of demand for new installations in the EU in 2020 and 2030, respectively. Assuming linear growth in the market penetration of low-GWP technologies between 2015 and 2020, the earliest date for which a ban could have been adopted in this sector is 2019 and, for this reason, the *Preparatory Study* therefore recommended banning all new systems with a GWP of 150 or more from 2020 onwards. See *Impact Assessment*, p. 115.
- 24 *Preparatory Study*, Annex V, pp. 247 (linear market penetration assumed).
- 25 *Impact Assessment*, p. 115.
- 26 See European Parliament, *Report of 27 June 2013 on the Proposal for a Regulation of the European Parliament and of the Council on Fluorinated Greenhouse Gases* (COM(2012)0643 – C7-0370/2012 – 2012/0305(COD)), Amendment 84.
- 27 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), p. 6.

- 28 See *Preparatory Study*, Annexes III and V.
- 29 Report from the Commission on the Application, Effects and Adequacy of the Regulation on Certain Fluorinated Greenhouse Gases (Regulation (EC) No 842/2006), p. 4.
- 30 *Impact Assessment*, p. 159
- 31 *Preparatory Study*, pp. 120-123; *Impact Assessment*, p. 208.
- 32 See *Preparatory Study*, pp. 50-58.
- 33 Regulation (EU) No 517/2014, Article 14; see also *European Commission, Non-Paper on F-Gas Regulation Review: Covering HFCs Imported in Equipment in the Context of the HFC Phase-Down* (undated) (11% in 2013 increasing to 18% in 2030); *European Commission, Update of Non-Paper: Covering HFCs Imported in Equipment in the Context of an HFC Phase-Down* (undated).
- 34 Regulation (EU) No 517/2014, Annex V and Article 15(2).
- 35 Regulation (EU) No 517/2014, Annex V.
- 36 Winfried Schwartz, *Extra Note on HFCs with Very High-GWP in the Current F-Gas Legislation* (6 May 2013), p. 3 (this can be mitigated by the use of recycled and reclaimed HFC-404A, depending on the actual development of a recycling and reclamation market).
- 37 Regulation (EU) No 517/2014, Annex V.
- 38 *European Commission, Decision of the Secretary General pursuant to Article 4 of the Implementing Rules to Regulation (EC) No 1049/2001*, Ref. Ares(2015)1383239 (30 March 2015), p. 2.
- 39 *Umweltbundesamt (Federal German Environment Agency), Maßnahmen zur Verbesserung der Marktdurchdringung klimafreundlicher Technologien ohne halogenierte Stoffe vor dem Hintergrund der Revision der Verordnung (EG) Nr. 842/2006* (May 2015), p. 111 (underlying data provided).
- 40 See *European Parliament, Report of 27 June 2013 on the Proposal for a Regulation of the European Parliament and of the Council on Fluorinated Greenhouse Gases* (COM(2012)0643 – C7-0370/2012 – 2012/0305(COD)), Amendment 68 (allocation fee was set at €30 per CO<sub>2</sub>e tonne).
- 41 *Preparatory Study*, pp.154-155.
- 42 Regulation (EU) No 517/2014, Article 21(5).
- 43 See *Umweltbundesamt (Federal German Environment Agency), Maßnahmen zur Verbesserung der Marktdurchdringung klimafreundlicher Technologien ohne halogenierte Stoffe vor dem Hintergrund der Revision der Verordnung (EG) Nr. 842/2006* (May 2015), pp. 122-166; see also *United Nations Environment Programme, Submissions by Parties on the Implementation of Decision XIX/6* (26th Meeting of the Parties to the Montreal Protocol), UNEP/OzL.Pro/26/INF/4 (30 September 2014).
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- 45 Regulation (EU) No 517/2014, Annex III.
- 46 SKM *Enviros*, pp. 98-101.
- 47 SKM *Enviros*, pp. 98-101.
- 48 Regulation (EU) No 517/2014, Article 16(5).
- 49 Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).
- 50 Regulation (EU) No 517/2014, Article 16(1).
- 51 Regulation (EU) No 517/2014, Article 16(2).
- 52 Regulation (EU) No 517/2014, Article 16(4).
- 53 Regulation (EU) No 517/2014, Article 15(1).
- 54 Regulation (EU) No 517/2014, Article 25(2).
- 55 Regulation (EU) No 517/2014, Annex VI.
- 56 *Commission Implementing Decision of 31 October 2014 determining, pursuant to Regulation (EU) No 517/2014 of the European Parliament and of the Council on fluorinated greenhouse gases, reference values for the period 1 January 2015 to 31 December 2017 for each producer or importer who has reported placing on the market hydrofluorocarbons under Regulation (EC) No 842/2006 of the European Parliament and of the Council (notified under document C(2014) 7920).*

- 57 Regulation (EU) No 517/2014, Articles 16(5).
- 58 Regulation (EU) No 517/2014, Article 16(2).
- 59 Regulation (EU) No 517/2014, Articles 16(2) and 17.
- 60 Regulation (EU) No 517/2014, Annex VI.
- 61 See e.g. Gluckman Consulting, *EU F-Gas Regulation Guidance Information Sheet 17: F-Gas Producers, Importers and Exporters* (December 2014).
- 62 Regulation (EU) No 517/2014, Article 18(1).
- 63 Regulation (EU) No 517/2014, Article 18(2).
- 64 Regulation (EU) No 517/2014, Article 18(2).
- 65 Regulation (EU) No 517/2014, Article 18(2).
- 66 Regulation (EU) No 517/2014, Article 17.
- 67 Regulation (EU) No 517/2014, Article 12(7).
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- 69 Regulation (EU) No 517/2014, Article 12(9).
- 70 Regulation (EU) No 517/2014, Article 12(10).
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- 72 Regulation (EU) No 517/2014, Article 12(12).
- 73 Regulation (EU) No 517/2014, Article 12(6).
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- 75 Regulation (EU) No 517/2014, Article 7(1).
- 76 Regulation (EU) No 517/2014, Article 7(2).
- 77 Regulation (EU) No 517/2014, Article 7(2).
- 78 Regulation (EU) No 517/2014, Article 12(1).
- 79 Regulation (EU) No 517/2014, Article 12(4).
- 80 Regulation (EU) No 517/2014, Article 12(4).
- 81 Regulation (EU) No 517/2014, Article 12(3).
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- 87 Regulation (EU) No 517/2014, Article 12(13).
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- 89 Regulation (EU) No 517/2014, Article 19(4).
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- 92 Regulation (EU) No 517/2014, Article 14(2).
- 93 Regulation (EU) No 517/2014, Article 14(2).
- 94 Regulation (EU) No 517/2014, Article 11(2).
- 95 *Impact Assessment*, pp. 112-121.
- 96 Regulation (EU) No 517/2014, Article 3(4).
- 97 Regulation (EU) No 517/2014, Article 3(4).
- 98 Regulation (EU) No 517/2014, Article 3(1)-(2).
- 99 Regulation (EU) No 517/2014, Article 3(1)(general prohibition on intentional releases); Regulation (EU) No 517/2014, Article 3(4).
- 100 Regulation (EU) No 517/2014, Article 4(2).
- 101 *Compare Regulation* (EC) No 842/2006, Article 3 with Regulation (ECU) No 517/2014, Article 4.
- 102 Regulation (EU) No 517/2014, Article 4(2); see also Regulation (EU) No 517/2014, Article 2(11) (“Hermetically sealed equipment” is defined as “equipment in which all fluorinated greenhouse gas containing parts are made tight by welding, brazing or a similar permanent connection, which may include capped valves or capped service ports that allow proper repair or disposal, and which have a tested leakage rate of less than 3 grams per year under a pressure of at least a quarter of the maximum allowable pressure”).
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- 105 Regulation (EU) No 517/2014, Article 5.
- 106 Regulation (EU) No 517/2014, Article 13(3).
- 107 Regulation (EU) No 517/2014, Article 13(3).
- 108 Regulation (EU) No 517/2014, Article 13(3) ; *see also* Regulation (EU) No 517/2014, Article 12(6).
- 109 Regulation (EU) No 517/2014, Article 13(3).
- 110 Regulation (EU) No 517/2014, Article 13(3) ; *see also* Article 11(3).
- 111 SKM Enviro, p. 61.
- 112 SKM Enviro, p. 61.
- 113 Winfried Schwartz, *Extra Note on HFCs with Very High-GWP in the Current F-Gas Legislation* (6 May 2013), p. 3.
- 114 Regulation (EU) No 517/2014, Article 8(1).
- 115 Regulation (EU) No 517/2014, Article 8(1); *see also* Regulation (EU) No 517/2014, Article 10.
- 116 Regulation (EU) No 517/2014, Article 10(7).
- 117 Regulation (EU) No 517/2014, Article 10(11).
- 118 Regulation (EU) No 517/2014, Article 8(3).
- 119 Regulation (EU) No 517/2014, Article 8(3).
- 120 Regulation (EU) No 517/2014, Articles 8(3) and 10(5); *see also* Commission Regulation (EC) No 307/2008.
- 121 Regulation (EU) No 517/2014, Article 8(2).
- 122 Regulation (EU) No 517/2014, Article 6(1)
- 123 Regulation (EU) No 517/2014, Article 6(2).
- 124 Regulation (EU) No 517/2014, Article 3(4).
- 125 Regulation (EU) No 517/2014, Article 3(1)(general prohibition on intentional releases).
- 126 Regulation (EU) No 517/2014, Article 8(2).
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- 133 Regulation (EU) No 517/2014.
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- 136 United Nations Environment Programme, *OzonAction Fact Sheet: Safe Use of HCFC Alternatives in Refrigeration and Air-Conditioning: Flammable Refrigerants* (July 2015) available at [http://www.unep.fr/ozonaction/information/mmcfiles/7746-e-Factsheet\\_SafeUseofHCFCAlternativesRefrigerationandAir-conditioning-FlammableRefrigerants\\_2015.pdf](http://www.unep.fr/ozonaction/information/mmcfiles/7746-e-Factsheet_SafeUseofHCFCAlternativesRefrigerationandAir-conditioning-FlammableRefrigerants_2015.pdf).
- 137 United Nations Environment Programme, *OzonAction Fact Sheet: Safe Use of HCFC Alternatives in Refrigeration and Air-Conditioning: Higher Pressure Refrigerants* (July 2015), available at [http://www.unep.fr/ozonaction/information/mmcfiles/7747-e-Factsheet\\_SafeUseofHCFCAlternativesRefrigerationandAir-conditioning-HigherPressureRefrigerants\\_2015.pdf](http://www.unep.fr/ozonaction/information/mmcfiles/7747-e-Factsheet_SafeUseofHCFCAlternativesRefrigerationandAir-conditioning-HigherPressureRefrigerants_2015.pdf).
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- 140 Regulation (EU) No 517/2014, Article 10(1) and (4).
- 141 Regulation (EU) No 517/2014, Article 10(5).
- 142 Commission Regulation (EC) No 303/2008 of 2 April 2008 Establishing, pursuant to Regulation (EC) No 842/2006 of the European Parliament and of the Council, Minimum Requirements and the Conditions for Mutual Recognition for the Certification of Companies and Personnel as regards Stationary Refrigeration, Air Conditioning and Heat Pump Equipment Containing Certain Fluorinated Greenhouse Gases available at <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008R0303>.

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- 144 Commission Regulation (EC) No 305/2008 of 2 April 2008 establishing, pursuant to Regulation (EC) No 842/2006 of the European Parliament and of the Council, Minimum Requirements and the Conditions for Mutual Recognition for the Certification of Personnel Recovering Certain Fluorinated Greenhouse Gases from High-Voltage Switchgear, *available at* <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008R0305>.
- 145 Commission Regulation (EC) No 306/2008 of 2 April 2008 establishing, pursuant to Regulation (EC) No 842/2006 of the European Parliament and of the Council, Minimum Requirements and the Conditions for Mutual Recognition for the Certification of Personnel Recovering Certain Fluorinated Greenhouse Gas-Based Solvents from Equipment, *available at* <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008R0306>.
- 146 Regulation (EU) No 517/2014, Article 10(2).
- 147 Commission Regulation (EC) No 307/2008 of 2 April 2008 establishing, pursuant to Regulation (EC) No 842/2006 of the European Parliament and of the Council, Minimum Requirements for Training Programmes and the Conditions for Mutual Recognition of Training Attestations for Personnel as regards Air-Conditioning Systems in Certain Motor Vehicles Containing Certain Fluorinated Greenhouse Gases, *available at* <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008R0307>.
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- 153 Regulation (EU) No 517/2014, Article 20.