EXPLANATORY MEMORANDUM TO

THE OZONE DEPLETIG SUBSTANCES (QUALIFICATIONS) REGULATIONS 2006

2006 No. 1510

1. This Explanatory Memorandum has been prepared by the Department for Environment, Food and Rural Affairs and is laid before Parliament by Command of Her Majesty.

2. Description

2.1 These Regulations specify the qualifications which a person needs in order to be competent for the purposes of carrying out work which involves-

(a) recovering, recycling, reclaiming and destroying controlled substances, and

(b) preventing and minimising the leakage of controlled substances.

2.2 The term "controlled substances" is defined in Council Regulation (EC) 2037/2000 of the European Parliament and the Council on substances that deplete the ozone layer, as amended.

2.3 The Regulations make it an offence to carry out the work referred to in paragraph 2.1 without the requisite qualifications.

3. Matters of special interest to the Joint Committee on Statutory Instruments

3.1 None

4. Legislative Background

4.1 These Regulations give effect to provisions of Articles 16.5 and 17.1, first paragraph, of Council Regulation (EC) 2037/2000 requiring member States to lay down minimum qualifications for the personnel involved in the work described in paragraph 2.1.

4.2 The Environmental Protection (Controls on Ozone-Depleting Substances) Regulations 2002 give effect to the other provisions of the Council Regulation.

4.3 The Department had considered that other non-legislative measures would enable the UK to comply with its Treaty obligations to give effect to Articles 16.5 and 17.1 of the Council Regulation but the European

Commission disagreed. Consequently, the Department have decided to make this Statutory Instrument.

4.4 The proposals for the Council Regulation were the subject of EM 5999/99, which was considered by the by the House of Commons European Scrutiny Committee on 24th March 1999 and by the House of Lords Select Committee on European Communities on 23rd March 1999. Both Committees considered the EM to have no political or legal importance and cleared it. Amendments to the proposals were the subject of supplementary EM 6777/00.

5. Extent

5.1 This instrument applies to Great Britain.

6. European Convention on Human Rights

6.1 As the instrument is subject to negative resolution procedure and does not amend primary legislation, no statement is required.

7. Policy background

7.1 The Council Regulation contains measures to protect the stratospheric ozone layer from emissions of ozone depleting substances. The use of qualified personnel to handle controlled substances is intended to ensure that while work with controlled substances is being carried out, emissions are prevented and minimised through an appropriate technical understanding of the equipment/operations/installations where controlled substances are being used/recovered. These Regulations specify the minimum qualifications that will apply in Great Britain.

7.2 In line with the requirements of the Council Regulation, UK industry has developed minimum qualifications for handlers of controlled substances, which have been operating on a voluntary basis. In practice therefore, most personnel who need qualifications already hold them. The policy impact of the Regulations is limited therefore and of interest primarily to handlers of controlled substances (such as refrigeration/air conditioning personnel, fumigators, personnel involved with recovery/destruction of controlled substances) and those who employ them.

7.3 34 responses were received to a joint Defra/Scottish Executive/National Assembly for Wales consultation document. The consultation ran from November 2005 to February 2006. There was overall support for the proposed Regulations but some concerns were raised about the length of the transitional period allowing those who were carrying out relevant work before the regulations come into force to continue working, allowing them time to become formally qualified. The concern was that training facilities might not be able to cope with demand. In regulation 6, the transitional period has now been extended from 6 to 9 months. There was also some concern that there was a need for more detail on what constitutes a

”course of training” in relation to an “in-house qualification” in regulation 2. A new regulation 7 has been included to address this concern. Schedule 1 to the regulations has been amended to make it clear that it also covers portable equipment as well as clarifying the meaning of “fixed equipment” (a term used in the consultation draft Regulations). A summary of responses received, and the Government’s response to them, has been published on the Defra website at http://www.defra.gov.uk/corporate/consult/ozone-depleting/index.htm.

8. Impact

A Regulatory Impact Assessment is attached to this memorandum

9. Contact

Stephen Reeves at the Department for Environment, Food and Rural Affairs Tel: 020 7082 8168 or e-mail: stephen.reeves@defra.gsi.gov.uk can answer any queries regarding the instrument.

FINAL REGULATORY IMPACT ASSESSMENT

1. Minimum qualification requirements

The European Commission has issued an Article 226 Reasoned Opinion to the UK for failing to comply with the obligation under EC Regulation 2037/2000 on Ozone Depleting Substances Regulation to define minimum qualification requirements for personnel involved with recovery, recycling, reclamation, destruction (Article 16) and leakages of controlled substances (Article 17).

The UK has well established and extensive qualification requirements which apply on a voluntary basis and the Government's view is that they have been adequate to meet the EC Regulation's requirements. The European Commission has however disagreed, taking the view that the qualification requirements need to be given statutory force.

2. Purpose and intended effect of the proposed legislation

2.1. Objective

The purpose of the proposed regulations is to specify minimum qualification requirements so that the infraction proceedings against the UK Government are closed.

This RIA applies to England, Wales and Scotland. Regulations covering Northern Ireland and Gibraltar will be issued by the Department of Environment (for Northern Ireland) and Gibraltar authorities.

2.2. Background

The proposed Regulations specify minimum qualification requirements for personnel handling ozone-depleting substances as required by Articles 16 and 17 of EC Regulation 2037/2000 on substances that deplete the ozone layer.

Articles 16 and 17 of EC Regulation 2037/2000 require Member States to define minimum qualifications for:-

- Personnel involved with recovery, recycling, reclamation and destruction of controlled substances (ozone depleting substances) (Article 16(5)).

- Personnel involved with prevention and minimisation of leakages of controlled substances (Article 17(1)).

- Personnel involved with the prevention and minimisation of leakages of methyl bromide from fumigation installations and operations in which methyl bromide is used (Article 17(2)).

In line with the requirements of the EC Regulation, UK industry has developed minimum qualifications for handlers of ozone depleting substances, which have been operating on a voluntary basis. The Government regrets the Commission's view that existing voluntary arrangements are not sufficient to demonstrate compliance with the minimum qualification requirements of the EC ODS Regulation, but is proposing these regulations in order to close the infractions case.

2.3. Scope of the proposed regulations

These regulations will make the existing minimum qualifications a statutory requirement. The draft regulations are at Annex A.

Under the proposed regulations no person will be able to carry out "relevant work" or "work with methyl bromide" unless competent to do so.

2.4. Risk assessment

Unless existing minimum qualification requirements are given statutory force, the case against the UK is likely to be referred to the European Court of Justice, and in the longer term, could result in an unfavourable ruling and significant daily fines. It is Government policy to avoid referral wherever possible.

A possible consequence of personnel handling controlled substances not being properly qualified is that unnecessary leakages of ozone-depleting substances may occur.

3. Proposed minimum qualifications

3.1. Personnel involved with the servicing and maintenance of fixed refrigeration, air-conditioning and heat pump equipment, and the dismantling of fixed refrigeration and air-conditioning equipment that can only be dismantled at the place at which they are used

3.1.1. Identification of options

Only one alternative option is presented because it covers the qualifications that industry already use and which meet the requirements of the EC ODS Regulation.

Option 1: Business as usual

The first option is to do nothing. This means that existing minimum qualification requirements would continue to be available on a voluntary basis. This option would not however address the issues raised in the infractions case and it is likely that the case would be referred to the

European Court. In the longer term this could result in significant daily fines.

Option 2: Regulations that specify minimum qualification requirements

Under this option, minimum qualification requirements (see pps 5.8-5.49 of consultation paper) would be placed on a statutory basis so that no person can carry out "relevant work" and "work with methyl bromide" unless competent to do so. The proposed EC Regulation on certain fluorinated greenhouse gases has a similar requirement for minimum qualifications for handlers of f gases. On current information, these obligations are likely to come into force in Member States in late 2008.

3.1.2. Benefits

Option 1: Business as usual

Option 1 would not have any *additional* benefits because it would preserve the status quo. In practice, handlers of ozone depleting substances could acquire qualifications to work in the relevant industry sector but there would be no statutory requirement to do so.

Option 2: Regulations that specify minimum qualification requirements

Under this option, existing minimum qualification requirements would be given statutory force.

In the refrigeration/air conditioning sector the proposal is likely to have an impact. A best estimate of 6,500 (in the range of 5,000-8,000) ODS refrigerant handlers would need to obtain a qualification, from a total population of 15,000-20,000. Qualification of those refrigerant handlers would bring benefits in terms of HCFC and HFC emission reductions given that refrigerant handlers service both HCFC and HFC systems. It is estimated that 60%-70% are already qualified and that a qualified handler would release between **9% and 15%** less gas while servicing, thus reducing emissions if 100% qualification rates are attained.

Benefits in terms of HCFCs and HFCs emissions reduction are:

- HCFCs: 22 - 36 ODP tonnes plus ~1 million GWP (global warming potential) tonnes
- HFCs: ~1.5 – 2 million GWP tonnes

Moreover, benefits in terms of monetary savings to business from HCFCs and HFCs not emitted (i.e. reduced purchases due to lower leakage while servicing) are equal to:

- HCFCs: ~ £1 - £1.5 million
- HFCs: ~ £5 - £8.5 million

There are also side benefits of preparing for implementation of the proposed EC f gas Regulation's minimum qualification requirements, likely to come into force in Member States in late 2008, as f gas handlers who also handle ODS would be trained appropriately sooner in order to comply with these draft regulations.

3.1.3. Costs

Option 1: Business as usual

This option would not imply any *additional* costs or additional burden on industry, given that it preserves the status quo.

However, this option would be unlikely to resolve the infraction case and is likely to lead to an unfavourable ruling against the UK Government by the European Court of Justice. In the longer term, daily fines could be imposed by the European Court of Justice and cause political embarrassment over failure to implement the regulation.

Option 2: Regulations that specify minimum qualification requirements

For personnel holding the proposed prescribed minimum qualification requirements, there would be no additional costs. Personnel operating in the relevant industry sectors, but without necessary minimum qualifications, would incur costs relating to training and/or obtaining the necessary qualification.

In the refrigeration/air conditioning sector a best estimate of 6,500 (in the range of 5,000-8,000) ODS refrigerant handlers would need to go through training to obtain a qualification.

The cost of basic training assessment leading to the qualification is estimated to be £225, and the potential working time lost while undergoing qualification is estimated at £250. However if training is done during a quiet period then the latter cost of lost working time is zero. This leads to a range of costs to business now of £1,125,000 – £3,800,000.

However, the proposed EC Regulation on fluorinated greenhouse gases has similar provisions on minimum qualifications to the EC ODS Regulation The additional costs to business of these proposed minimum qualifications regulations are therefore calculated as the costs associated with bringing the f gas training and certification requirements forward by two years. This is because the relevant provisions of the EC fluorinated gas regulation are due to come into force in 2008 and would make the same qualification (the one being proposed in relation to "relevant work" with ODS) mandatory . Therefore the additional costs of these proposed

regulations are calculated as the difference between the costs borne in two years discounted to now at 3.5%[1], and the same costs borne now.

Therefore the additional costs of the proposal for this sector are estimated to be in the range of **£78,000 - £262,000**.

3.2. Personnel involved with recovery of controlled substances from equipment at a licensed waste management site

3.2.1. Identification of options

Personnel who recover waste ozone depleting substances from equipment such as refrigeration equipment, at a licensed waste management site, use highly automated processes and undertake a limited number of low-skilled tasks.

For these personnel there are a number of options for consideration:

Option 1: Business as usual

All the companies interviewed already have in-house training programmes to ensure that handling of ozone depleting substances is being carried out safely and effectively. Sites are regulated under waste management licensing regulations and are subject to regular inspections from the Environment Agency or SEPA. Under the 'do nothing' scenario minimum qualifications would not be made mandatory and the infractions case would not be closed.

Option 2: In-House Training developed by the host company to suit their needs

Option 2 is the similar to Option 1, as the in-house training is already in place and operating, having been developed by each company and tailored individually. However, Option 2 involves making the in-house training mandatory and requires employers to issue a certificate of competence or other written confirmation to those employees that have completed the course of training. This would be consistent with the definition of "in-house qualification" in regulation 2 of the proposed regulations.

Option 3: In-House Training with external accreditation

Under this option, in-house training is mandatory as in Option 2. However, the training for each site would be externally accredited on a voluntary basis. This could be done by an external body such as the Waste Management Industry Training and Advisory Board (WAMITAB) or the Chartered Institute of Waste Management (CIWM).

[1] A social discount rate of 3.5% follows HM Treasury guidance

Option 4: Development and delivery of new external course

As described in the consultation paper (pps 5.35), WAMITAB offer a range of vocational qualifications, including in waste management operations, and it is understood that it would be possible to select particular units as a minimum qualification e.g. WAMITAB level 2, WT125: (run waste management operation) and WT113 (advise and inform colleagues on facility environmental protection matters). Although these do not relate specifically to ODS, they could be modified to do so. Option 4 would be a compulsory minimum qualification based on specific WAMITAB modules, but would be in addition to current site-specific in-house training which is required for health and safety reasons.

Option 5: External Training and Qualification

The Chartered Institute of Waste Management Waste Awareness Certificate has been designed for employees who have responsibilities for dealing with waste in bodies that produce waste. CIWM have suggested that the Certificate requirements could be modified to suit the needs to those recovering ODS on metal recycling/demanufacturing sites. This qualification would be compulsory for all relevant waste controlled substances handlers, and the current in-house training would also continue.

3.2.2. Benefits

Option 1: Business as usual

There would be no additional benefits because it would preserve the status quo. In practice, handlers of ozone depleting substances would continue to be trained in-house by their employers.

Option 2: In-House Training developed by the host company to suit their needs

Under this option, the in-house training becomes mandatory, however there are no additional benefits in terms of emissions reductions. In practice the personnel involved already undergo induction training, and exercise little influence over the levels of emissions (which are a function of plant design and operations management). This option is intended to close the infractions proceedings and avoid fines imposed by the European Court of Justice.

Option 3: In-House Training with external certification

Similar to Option 2, this option carries no additional benefits other than providing the basis for closing the infractions proceedings though would help to standardise in-house training schemes.

Option 4: Development and delivery of new external course

Similar to the other options, this option carries no additional benefits other than providing the basis for closing the infractions proceedings.

Option 5: External Training and Qualification

Similar to the other options, this option carries no additional benefits other than providing the basis for closing the infractions proceedings.

3.2.3. Costs

Option 1: Business as usual

There would be no additional costs to business under this option, however the UK is likely to be required to pay significant fines for non-compliance with EC law.

Option 2: In-House Training developed by the host company to suit their needs

There would be no additional costs to business under this option, except record-keeping (which the majority do already), the costs of which are negligible.

Option 3: In-House Training with external certification

There are an estimated 20 relevant sites in the UK, each of which would need to spend £1,000 - £1,500 for external accreditation if it chose to do so. This leads to a maximum of cost to UK industry of **£20,000 - £30,000**.

Option 4: Development and delivery of new external course

A course of this type would have to be developed by a central training body and then undertaken by each operative, so would incur external costs of between £250 - £300 per operative, depending on the number being trained[2]. The population is estimated at 300 handlers, making the total cost to industry between **£75,000 - £90,000.**

Option 5: External Training and Qualification

The CIWM course costs between £100 and £200 and lasts one day, costing up to **£30,000 - £60,000** for all 300 handlers in the industry to be trained.[3]

[2] This cost does not include opportunity cost of work foregone
[3] See footnote 3

3.3. Personnel involved with the recycling, reclamation and destruction of controlled substances

3.3.1. Identification of options

Recovered ODS is handled at a specialist refrigerant reclaim plant (for recycling or reclamation) or handled at appropriate destruction facilities (this includes both waste refrigerants and halons used for fire protection purposes). As at specialist fridge demanufacturing plants/metal recycling plants, personnel carry out a very limited range of highly automated tasks at a single site under management supervision, and there are a limited number of sites in operation. Destruction sites are regulated through the domestic Pollution Prevention and Control regime.

The only option relevant and applicable here is to make in-house training mandatory and require employers to produce a certificate of training and keep records.

3.3.2. Benefits

There are no additional benefits to the companies or the environment of making the current in-house training mandatory.

3.3.3. Costs

There are no additional costs to making the current system mandatory, except negligible extra duties of record-keeping.

3.4. Personnel involved in work with methyl bromide (prevention and minimisation of leakages of methyl bromide from fumigation installations and operations in which methyl bromide is used)

The proposal will have no impact on the personnel carrying out fumigations with methyl bromide as all personnel already have the necessary qualifications.

3.5. Personnel involved in servicing and/or decommissioning of halon fire protection systems

In the fire protection sector it is difficult to quantify the impact of the requirements, but the cost and benefit impact is likely to be negligible.

4. Small Firms Impact Test

4.1. Personnel involved with the servicing and maintenance of fixed refrigeration, air-conditioning and heat pump equipment and the

dismantling of fixed refrigeration and air-conditioning equipment that can only be dismantled at the place at which they are used

Among the sectors potentially affected by the proposal, refrigeration and air conditioning is the only one that will face a significant impact. The sector is composed of a large number of small businesses and a relatively smaller number of medium-to-large businesses. In general, the proposals treat small businesses in the same way as other larger businesses in the same sector. This is because all unqualified ODS handlers would be required to undergo training and/or obtain a qualification. In these circumstances, the cost of doing so is irrespective of the size of business.

Consultation with relevant trade bodies (the British Refrigeration Association and the Air Conditioning and Refrigeration Industry Board), small businesses and experts in the sector have shown that larger businesses, in particular firms servicing supermarkets, are more likely to be able to benefit from savings on gases purchased (see benefits section 3.12). This is because big servicing companies are more likely to work under fixed price contracts, and will benefit from savings in gas purchased. In contrast, smaller companies tend to be sub-contractors or work on small projects. In these types of contract, the costs of the refrigerant purchased would form part of the final invoice, and the servicing company would not be able to benefit from the savings on gas purchases, as these would be passed on to the customer.

On the other hand, it is considered that the overall costs of the proposed regulations for a single company are relatively low. The small firms consulted did not see the proposed regulations as excessive or unfair. Indeed, from a mailed questionnaire of small businesses in the sector, to which 59 firms responded, the majority were fully supportive of the proposed requirement to make the qualification mandatory.

The consultation was done through a combination of telephone, mail, email and face-to-face meetings.

The proposal is unlikely therefore to have a disproportionate impact on small businesses. Further information on the likely costs and benefits in relation to small business stakeholders is invited during the public consultation period though, and if any further significant impact is identified then the issues will be explored with relevant trade bodies and small firms.

4.2. Personnel involved with recovery of controlled substances at a licensed waste management site

Discussion with two small-to-medium enterprise sites and with the Environment Agency have concluded that there is no concern that SME's would be treated unfairly by making the current in-house training mandatory (Option 2) or by introducing external certification requirements

(Option 3) or a new external course (Option 4). The EA pointed out that all the sites require a Waste Management Licence and that the SME's pay the same licence fee as sites belonging to larger organisations. At the site level, most of the waste ozone depleting substances facilities are of the same size, and the majority (whether SME's or not) only employ 20 to 50 staff.

4.3. Recycling, reclamation and destruction of controlled substances

There is no adverse impact on small businesses in this sector.

5. Competition Assessment

For the refrigeration and air conditioning sector (the only one affected by the proposal) all answers to the RIA guidance Competition Filter Test are negative.

Therefore, whilst there might be potential higher benefits in terms of savings on gas purchases for bigger companies, it is not thought likely that the proposal would have significant adverse competition effects

Competitiveness in different sectors would not be adversely affected either, as the proposed regulations would apply uniformly to all UK businesses in the relevant sectors, that only compete with each other.

However, further information is invited from stakeholders regarding potential impacts on competition.

6. Enforcement and sanctions

The proposed regulations create a range of relevant offences. These include carrying out relevant work or work with methyl bromide, without being competent to do so, or without complying with the requirements for trainees; allowing employees to carry out relevant work or work with methyl bromide, when they are not competent to do so; and carrying out relevant work after the transitional period where they are not competent to do so.

Penalties are set out in regulation 12. A person guilty of an offence will be liable on summary conviction to a fine not exceeding the statutory maximum, and on conviction on indictment to a fine.

Regulation 9 sets out the powers of an authorised person in relation to administering and enforcing the regulations. The regulations include powers for an authorised person to enter premises; to carry out such inquiries and make such an examination as may be necessary; to require the production of any records which it is necessary for him to

see for the purpose of any examination or investigation. The Miscellaneous offences set out in regulation 10, include that it shall be an offence to intentionally obstruct an authorised person in the exercise or performance of their powers; furnish to an authorised person any information which he knows to be false or misleading; or fail to produce a record when required to do so by an authorised person.

7. Monitoring and review

The effect of the regulations will be kept under review as part of the process of preparing for and consulting on a similar regime of minimum qualifications that will be required under the proposed EC Regulation on fluorinated greenhouse gases.

8. Consultation

The RIA has been drawn up in consultation with relevant Divisions within Defra, the Small Business service, Cabinet Office Regulatory Impact Unit and the Devolved Administrations. Key stakeholder groups have also been consulted about the overall approach proposed and the nature of existing minimum qualifications.

34 responses were received to the joint Defra/Scottish Executive/National Assembly for Wales consultation document, which included the partial RIA. The consultation ran from November 2005 to February 2006. There was overall support for the proposed Regulations but some concerns were raised about the length of the transitional period allowing those who were carrying out relevant work before the regulations come into force to continue working, allowing them time to become formally qualified. The concern was that training facilities might not be able to cope with demand. In regulation 6, the transitional period has now been extended from 6 to 9 months. There was also some concern that there was a need for more detail on what constitutes a ”course of training” in relation to an “in-house qualification” in regulation 2. A new regulation 7 has been included to address this concern. Schedule 1 to the regulations has been amended to make it clear that it also covers portable equipment as well as clarifying the meaning of “fixed equipment” (a term used in the consultation draft Regulations). A summary of responses received, and the Government’s response to them, has been published on the Defra website at http://www.defra.gov.uk/corporate/consult/ozone-depleting/index.htm

The changes to the final Regulations do not affect the analysis of costs and benefits in the partial RIA published with the consultation paper.

9. Summary

Summary of costs and benefits

	Option	Additional Benefits	Additional Cost
Personnel involved with the servicing and maintenance of fixed refrigeration, air-conditioning and heat pump equipment and the dismantling of fixed refrigeration and air-conditioning equipment that can only be dismantled at the place at which they are used	*1: Business as usual*	Zero	Zero, but fines likely to be imposed on UK by European Court of Justice (ECJ)
	2: Regulations that specify minimum qualification requirements	HCFCs: 22-36 ODP tonnes plus ~1 million GWP tonnes HFCs: ~1.5–2 million GWP tonnes HCFCs: ~£1-1.5 million HFCs: ~ £5 - £8.5 million	£78,000 - £262,000
Personnel involved with recovery of controlled substances from equipment at a licensed waste management site	*1: Business as usual*	Zero	Zero - but cost of fines from ECJ
	2: Mandatory in-house training	Zero	Zero
	3: External certification of in-house training	Zero	Zero - £30,000
	4: Development and delivery of an external course	Zero	£75,000 - £90,000

	5: External course	Zero	£30,000 - £60,000
Personnel involved with the recycling, reclamation and destruction of controlled substances	*1. Business as usual*	Zero	Zero – but cost of fines from ECJ
	2. Mandatory In-House training	Zero	Zero
Personnel involved in the prevention and minimisation of leakages of methyl bromide from fumigation installations and operations in which methyl bromide is used	*1. Business as usual*	Zero	Zero – but cost of fines from ECJ
	2. Regulations that specify minimum qualifications	Zero	Zero
Personnel involved in servicing and/or decommissioning of halon fire protection systems	*1. Business as usual*	Zero	Zero – but cost of fines from ECJ
	2. Regulations that specify minimum qualifications	Zero	Zero

10. Recommendation

With regard to the issues, costs and benefits discussed in this RIA, the Government recommends that Option 2 of each part should be pursued, as they are necessary to address the terms of the infractions case. That is to say, the Government recommends the minimum qualifications as specified in the draft regulations, which make compulsory in-house training for personnel handling ozone depleting substances who work under supervised, repetitive conditions at waste ODS recovery/disposal sites; and making mandatory the voluntary minimum qualifications for refrigerant

handlers. Personnel working with methyl bromide should have their current voluntary qualifications made mandatory, as this is intended to close the infractions case, though there will be little change to current practice.

On the basis of the evidence available, the Government considers that the benefits of the proposed regulations are likely to outweigh the additional costs.

- **I have read the Regulatory Impact Assessment and I am satisfied that the benefits justify the costs.**

…Ian Pearson……

(Minister of State, Climate Change and the Environment)

Date …8th June 2006……

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Defra
June 2006

Technical annex to Regulatory Impact Assessment – costs and benefits calculations

A. Time horizon considered

1. Negotiations on the proposed Regulation of the European Parliament and of the Council on certain fluorinated greenhouse gases have been concluded [4]. The final text includes requirements for relevant personnel to have obtained the necessary minimum training and certification, based on requirements established or adapted by Member States by two years after the date of entry into force of the Regulation. These requirements must in turn be based on minimum requirements previously established by the European Commission in conjunction with the Committee comprising Member States to deal with f gas issues at EU level. The relevant equipment types containing f gases for which training and certification in relation to containment and recovery are likely to be needed will cover several of the sectors also covered by the ODS Regulation – i.e. refrigeration, air conditioning and fire protection systems which contain fluorinated gases.

2. The f gases Regulation qualification requirements are included in the part (ii) BAU scenario, by assuming that Member States must establish or adapt requirements by 2008. It is also assumed that f gases regulation will require the same qualifications as the ODS Regulation for relevant sectors and that the people handling HFCs are the same people who are handling HCFCs. Given those realistic assumptions, this proposal would simply have the side-effect of early preparation for some of the f gas Regulation's likely minimum qualification requirements for those who will need a qualification but would not otherwise hold one.

3. Therefore costs and benefits calculations for part (ii) are done over a time window from July 2006 (date of implementation of this proposal) to October 2008 (assumed latest date of coming into force of f gases regulation qualification requirements) in Member States.

4. In terms of part (ii) benefits, this means that this proposal would bring about additional savings in terms of reduced emissions of HCFCs (and HFCs as well) limited to the period 2006-2008. In terms of costs, it means that the only additional costs of the ODS regulation are the side effects discussed in paragraph 2 above.

B. Estimation of number of handlers needing qualification

Personnel involved with the servicing and maintenance of fixed refrigeration, air-conditioning and heat pump equipment and the dismantling of fixed refrigeration and air-conditioning equipment that can only be dismantled at the place at which they are used

[4] Further information on the f-gas regulation can be found at http://defraweb/environment/climatechange/02.htm - eu

5. Total number of engineers handling ODS refrigerants, including those involved with recovery of refrigerants when servicing and maintaining equipment or dismantling equipment that can only be dismantled in the place in which it is used is estimated to be in the range of 15,000-20,000.

6. Total number of people needing qualification is estimated to be in the **range 5,000-8,000**, with a mid point **best estimate** of **6,500** (this is equivalent to say that the 60%-70% of the 15,000-20,000 population is already qualified)

Personnel involved with recovery of controlled substances from equipment at a licensed waste management site

7. It is estimated there are **300** operating staff requiring relevant training at 20 specialist demanufacturing plants/metal recycling plants where ODS is recovered from refrigeration equipment.

Personnel involved with the recycling, reclamation and destruction of waste controlled substances

8. There are around **30** staff needing suitable training at three ODS destruction facilities in the UK, and five plants employing an estimated 100 operating staff who receive waste refrigerant and reprocess it.

C. Benefits calculations

Personnel involved with the servicing and maintenance of fixed refrigeration, air-conditioning and heat pump equipment and the dismantling of fixed refrigeration and air-conditioning equipment that can only be dismantled at the place at which they are used

9. An **emissions reduction of between 9% and 15% of BAU emissions** from handlers being formally qualified has been estimated. This is based on a survey of refrigerant handling companies, who were asked for equivalent emissions from an unqualified handler (both experienced and inexperienced) in comparison to a qualified handler[5]. Due to the subjective nature of the question and the possibility of a small number of responses skewing results, significant outliers were removed. Interviews with sector experts and considerations of some refrigerant emissions not being affected by quality of maintenance were also taken into account.

10. The overall survey results suggest that mandatory qualification requirements would led to the following benefits:

[5] The exact question was: 'If the total amount of refrigerant lost from the RAC equipment serviced by an engineer with a refrigerant handling qualification is 100 "units" what, in your opinion, would be the typical annual loss from equipment serviced by a) an unqualified engineer without significant field experience b) an unqualified engineer with at least 5 years field experience'

- 60% - 70% of engineers, no change
- ~20% will emit 100 instead of 120[6] (unqualified but experienced)
- ~15% will emit 100 instead of 175 (unqualified and inexperienced)
- saving of 9% - 17% of BAU emissions when compared with 100% qualified engineers
- taking asymmetries into account a more realistic estimate of reduced BAU emissions is **between 9% and 15%.**[7]

11. BAU future emissions of ODS were calculated for UK RAC market using discussions with suppliers and the British Refrigeration Association. It is assumed that HCFC sales are equal to emissions as there have not been HCFCs in new equipment since 2002. Two forward projections were made for ODS emissions, using the average rate of market decline during the last four years (P1: 8% per year for R22; 15% per year HCFC blends) and using a slightly slower rate of decline to give zero consumption in 2015 (P2: 7% per year all fluids). These projections were considered reasonable by fluid suppliers.

    Emissions forecasts:

    ODS emissions forecast with a two year time window 2006.5 – 2008.5:
    - P1: 4,900 tonnes 240 ODP tonnes[8]
    - P2: 5,100 tonnes 260 ODP tonnes

    ODS emissions forecast from 2006.5 to phase out in 2014 or 2015:
    - P1: 10,800 tonnes 540 ODP tonnes
    - P2: 13,800 tonnes 690 ODP tonnes

    HFC sales and emissions with two year time window 2006.5 – 2008.5:
    - HFC sales: 12,500 tonnes (23m GWP tonnes)
    - HFC emissions: 8,000 tonnes (15m GWP tonnes)

    HFP sales and emissions to phase out in 2015:
    - HFC sales: 70,000 tonnes (133m GWP tonnes)
    - HFC emissions: 60,000 tonnes (114m GWP tonnes)

Benefits in terms of emissions reduction:

12. Applying the 9 - 15% range to the BAU emissions[9] of HCFCs and HFCs leads to overall savings of:

    - **HCFCs**: 450 - 750 tonnes – equivalent to ~ **22 - 36 ODP** tonnes plus ~**1 million GWP** tonnes[10]

[6] To take uncertainty into account sensitivity analysis was performed on both the population of qualified engineers, and the assumed level of pre-training emissions, by +/-5%.
[7] This assumes that training and qualification lowers both experienced and inexperienced handlers' emissions to the index level of 100.
[8] Ozone Depleting Potential (ODP) of HCFC 22 is 0.05 and ODP of HFCs is zero. Global Warming Potential (GWP) of HFCs used in RAC varies between 1300 and 3500 but the weighted average, used here, is 1900. ODP tonnes is actual tonnes*ODP.
[9] The average of Projections 1 and 2 under the two year time horizon are used in assumptions because they are considered valid by industry experts, and the small time horizon does not justify the amount of uncertainty associated with ranges.

- **HFCs**: 700 - 1200 tonnes – equivalent to ~ **1.5 - 2 million GWP** tonnes

Other benefits:

13. Lower HCFC leakages from fridges due to better trained handlers mean lower bills for replacing the leaked refrigerants, thus lower servicing costs to commercial consumers, so the value of HCFCs not emitted over the two year time window is calculated by multiplying emission reductions times unit cost of gases purchased:

    - **HCFCs**: ~ **£1 - £1.5 million** (tonnes saved * £2,200 per tonne)
    - **HFCs**: ~ **£5 - £8.5 million** (tonnes saved * £7,000 per tonne)

14. Less quantifiable benefits include energy related savings as reduced leakage will improve energy efficiency of some refrigeration and air-conditioning equipment, so would result in savings in both greenhouse gases and money from saved electricity.

D. Cost calculations

Personnel involved with the servicing and maintenance of fixed refrigeration, air-conditioning and heat pump equipment and the dismantling of fixed refrigeration and air-conditioning equipment that can only be dismantled at the place at which they are used

15. Unit cost of qualification is estimated at £225. This is derived from the variable costs of obtaining the qualification ranging from £150-200 for self-study, £200-250 for a one day course or £300 for a two day course. Sensitivity analysis is done by including or excluding costs in terms of working time loss (equal to ~£250 per day) while recognising these costs are zero if training is undertaken during a quiet period[11]. The table below shows the range of total costs to business:

Number to train	Cost of Training £/person	Value of Lost Time £/person	Total Cost £k	Discounted cost £k (2 years @ 3.5%)	Net Cost £k (total – discounted)
5,000	225	0	1125	1047	78
6,500	225	0	1463	1362	101
8,000	225	0	1800	1676	124
5,000	225	250	2375	2211	164
6,500	225	250	3088	2874	213
8,000	225	250	3800	3538	262

[10] HCFCs not in Kyoto "basket" but are powerful greenhouse gases; R22 has a GWP of 1500, so reduced emissions equivalent to ~1 million GWP tonnes

[11] £250 covers the full opportunity cost of labour for a day, including non-wage costs, when the worker is "busy". If it is a quiet period a zero opportunity cost of undergoing training is assumed as the worker is assumed not to take leisure instead.

16. However the additional costs to business of the regulation are the costs associated with bringing the training and certification scheme by two years, as the requirements of the f gas regulations relating to minimum qualifications, due to come into force in 2008, would make the qualification for refrigeration engineers mandatory. Therefore the additional costs of the regulation are calculated as the difference between the costs borne in two years discounted to now at 3.5%, and the same costs borne now. This leads to a range of **additional costs to business of £78,000 to £262,000**.

Personnel involved with recovery of controlled substances from equipment at a licensed waste management site

17. The training costs were estimated on the basis of discussions with relevant industry bodies, businesses and sector experts.

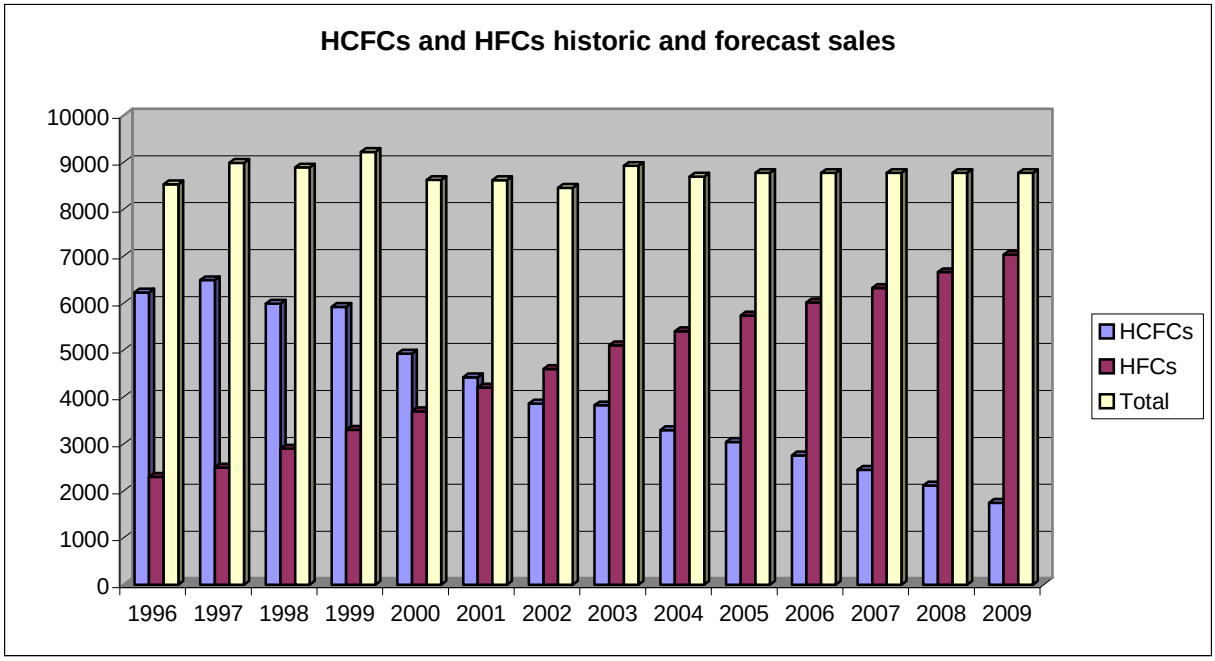
E. Transitional period

Personnel involved with the servicing and maintenance of fixed refrigeration, air-conditioning and heat pump equipment and the dismantling of fixed refrigeration and air-conditioning equipment that can only be dismantled at the place at which they are used

18. There are approximately 30 training organisations offering City & Guilds or CITB assessments, with a peak capacity of about 500 assessments per week, so 10,000 assessments could be done in 20 weeks, assuming full capacity.

19. A transitional period of 6 months is assumed, with a strong publicity message to stakeholders when the consultation on these draft regulations begins, along with the consultation outcomes. It is therefore assumed that the lower costs and benefits in the 6 months transition period would then be compensated by the step increase of costs and benefits from late 2005 up to June/July 2006 (date of proposal coming into force).

F. HCFCs and HFCs historic and forecast sales



20. Note that for HCFCs emissions coincide with sales figures, because from 2004 no new HCFCs systems can be installed, therefore all sales are relate to the refilling of existing system's leakages. For HFCs, emissions do not coincide with sales, because new equipment can still be installed with HFCs. Benefits calculations are therefore based on estimated emissions figures (which are lower than sales figures).