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The Swedish Environmental Protection Agency's administrative provisions on refrigeration, air conditioning and heat pump equipment containing fluorinated greenhouse gases, CFCs, other CFCs and HCFCs

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By virtue of section X of the Order (2007:XX) on fluorinated greenhouse gases, sections 17, 18 and 20 of the Order (2002:187) on substances that deplete the ozone layer and section 26 of the Order (1998:941) on chemical products and biotechnical organisms, the Swedish Environmental Protection Agency lays down the following.¹

Scope and definitions

Section 1 These administrative provisions shall apply to refrigerants that consist of fluorinated greenhouse gases, CFCs, other CFCs and HCFCs as well as refrigeration, air conditioning and heat pump equipment containing such refrigerants.

The administrative provisions supplement the provisions of Regulation (EC) No 842/2006 of the European Parliament and of the Council of 17 May 2006 on certain fluorinated greenhouse gases² and Regulation (EC) No 2037/2000 of the European Parliament and of the Council of 29 June 2000 on substances that deplete the ozone layer³.

Section 2 Refrigeration, air conditioning and heat pump equipment for non-commercial use shall be covered by sections 1, 3 and 12 only.

¹ Notification has been carried out in accordance with Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services (OJ L 204, 21/7/1998, p. 37, Celex 31998L0034), amended by Directive 98/48/EC of the European Parliament and of the Council (OJ L 217, 5/8/1998, p. 18, Celex 31998L0048)

² OJ L 161, 14/6/2006, p. 1 (Celex 32006R0842)

³ OJ L 244, 29/9/2000, p. 1 (Celex 32000R2037)

Mobile refrigeration, air conditioning and heat pump equipment registered abroad shall be covered by sections 1, 3 and 12 only.

Refrigerants that consist of fluorinated greenhouse gases and refrigeration, air conditioning and heat pump equipment containing such refrigerants that are used only for research, training and development within the refrigeration and heating sector shall be covered by sections 6 – 7 only.

Definitions

Section 3 The terms defined in article 2 of Regulation (EC) No 842/2006 of the European Parliament and of the Council on certain fluorinated greenhouse gases and section 1 of the Order (2002:187) on substances that deplete the ozone layer have the same meaning when used in these administrative provisions.

For the purposes of these administrative provisions, the following terms are also used with the meaning indicated here.

Accredited certifying body A body which, via accreditation in accordance with the Act (1992:1119) on technical inspection has been deemed to meet the requirements of standard SS-EN ISO/IEC 17024:2003 *Conformity Assessment – General requirements for bodies operating certification of persons (ISO/IEC 17024:2003)*.

Tasks which, under these administrative provisions, must be performed by an accredited certifying body may also be performed by a certifying body from another country within the European Union, Turkey or the European Economic Area if the certifying body meets the requirements in ISO/IEC 17024:2003 and has been accredited for the task by an accreditation body that meets the requirements in standard ISO/IEC 17011:2004.

Where the tasks concern those required to first place a product on the market, for example inspection on installation, they may also be performed by a certifying body from another country within the European Union, Turkey or the European Economic Area if the certifying body in some other way offers equivalent guarantees in terms of technical and professional competence and guarantees of independence.

Accredited supervisory body A body which, via accreditation in accordance with the Act (1992:1119) on technical inspection, has been deemed to meet the requirements of standard SS-EN ISO/IEC 17020:2005 *General criteria for the operation of various types of bodies performing inspection (ISO/IEC 17020:1998)*.

Tasks which, under these administrative provisions, must be performed by an accredited supervisory body may also be performed by a supervisory body from another country within the European Union, Turkey or the European Economic Area if the supervisory body meets the requirements in ISO/IEC 17020:2005 and has been accredited for the task by an accreditation body that meets the requirements in standard

ISO/IEC 17011:2004.

Where the tasks concern those required to first place a product on the market, for example inspection on installation, they may also be performed by a supervisory body from another country within the European Union, Turkey or the European Economic Area if the supervisory body in some other way offers equivalent guarantees in terms of technical and professional competence and guarantees of independence.

<i>Installation</i>	One or more pieces of refrigeration, air conditioning or heat pump equipment within the same activity and with the same operator
<i>Standard unit</i>	Factory-built refrigeration, air conditioning or heat pump equipment with a complete refrigerant system that is installed without interfering with the refrigerant system
<i>F gases</i>	Fluorinated greenhouse gases in accordance with the definition in article 2 of Regulation (EC) No 842/2006 of the European Parliament and of the Council of 17 May 2006 on certain fluorinated greenhouse gases
<i>The F Gas Regulation</i>	Regulation (EC) No 842/2006 of the European Parliament and of the Council of 17 May 2006 on certain fluorinated greenhouse gases
<i>Intervention in refrigerant systems</i>	Action entailing the opening of some part of the refrigerant system, regardless of whether the system is pressurised, or action on peripheral equipment that affects the system's integrity to refrigerant leakage
<i>Conversion</i>	Measure entailing the replacement of the refrigerant in refrigeration, air conditioning or heat pump equipment by another type of refrigerant
<i>Refrigerant</i>	Medium in a refrigerant system that absorbs thermal energy at a certain temperature and a certain pressure and gives off thermal energy at a higher temperature and higher pressure, which usually entails a modified state of aggregation
<i>Refrigerant system</i>	Connected parts containing refrigerant that form a closed circuit, in which refrigerant circulates to absorb and give off thermal energy
<i>Mobile equipment</i>	Equipment not defined as stationary pursuant to article 2 of the F Gas Regulation

Prevention of discharges and record-keeping

Operating and servicing instructions

Section 4 Refrigeration, air conditioning and heat pump equipment shall be accompanied by precise, easily understood servicing instructions in Swedish with the instructions required to prevent discharges of refrigerant. The provision shall not cover stationary standard units containing less than 3 kg refrigerant or mobile equipment containing less than 3 kg refrigerant.

Responsibility shall be incumbent on the manufacturer in the case of new standard units, the importer in the case of equipment manufactured abroad, and the operator and the party who installs the equipment in the case of other new equipment.

Inspection for leakage and record-keeping

Section 5 What is stated about the limitation of discharges, inspection for leakage and record-keeping in articles 3.1 - 3.6 of the F Gas Regulation shall apply to all stationary and mobile refrigeration, air conditioning and heat pump equipment containing an equivalent quantity of F gases or HCFCs.

Inspections for leakage shall also be conducted in connection with installation, conversion and other interference in the refrigerant system in refrigeration, air conditioning and heat pump equipment. This does not apply in the case of installation of and interference in stationary standard units containing less than 3 kg F gases.

Inspection for leakage pursuant to the first and second paragraphs shall be conducted by an accredited supervisory body.

Responsibility pursuant to the first and third paragraphs shall be incumbent on the operator. Responsibility pursuant to the second paragraph shall also be incumbent on the party who performs the measure.

Supply and taking-back of refrigerant

Supply

Section 6 Refrigerant consisting of F gases may only be supplied to one of the following categories:

1. Enterprises with certified personnel who, under these administrative provisions, may refill refrigeration, air conditioning and heat pump equipment with F gases
2. Manufacturers of refrigeration, air conditioning and heat pump equipment containing F gases
3. Enterprises for research, training and development of refrigeration, air conditioning and heat pump equipment if the F gases are intended for such equipment
4. The Swedish Defence Logistics Administration and the Swedish Defence Materiel Administration, where the F gases are intended for the defence forces
5. Installation/activities concerning purification or disposal of F gases

Refrigerants consisting of CFCs, other CFCs or HCFCs may only be supplied to installations/operations for the disposal of such refrigerants. HCFCs may also be supplied to the Swedish Defence Logistics Administration and the Swedish Defence Materiel Administration.

Responsibility shall be incumbent on the party who supplies the refrigerant.

Taking-back

Section 7 Whosoever imports or distributes refrigerants shall be liable to take back free of charge any refrigerants supplied that have been taken care of and to supply containers for this purpose.

Reporting and provision of information to the supervisory authority

Information on installation and conversion

Section 8 The supervisory authority shall be informed prior to the installation of stationary refrigeration, air conditioning and heat pump equipment containing 10 kg F gases or more. The information shall be provided during the planning stage, before a decision has been taken on which refrigerants and what equipment are to be used.

The first paragraph also applies to the conversion of refrigeration, air conditioning and heat pump equipment where it is refilled with 10 kg F gases or more.

The first and second paragraphs shall not apply if installation or conversion takes place as a result of an unforeseen breakdown of existing equipment that requires immediate action with a view to preventing adverse effects on human health and the environment or significant financial loss. Nor shall the first and second paragraphs apply if the choice of equipment and refrigerant is dealt with within the context of a licence application or notification pursuant to Chapter 9 of the Environmental Code (1998:808).

Responsibility shall be incumbent on the operator.

Reporting

Section 9 In the case of stationary installations and installations on vessels, the outcome of inspections for leakage pursuant to section 5 (1) that have been conducted during one and the same calendar year shall be reported to the supervisory authority no later than 31 March of the following year.

This provision shall apply to installations with a total quantity of refrigerant of 10 kg or more. The total quantity includes only equipment covered by requirements concerning inspection for leakage pursuant to section 5 (1). The reporting shall comprise information pursuant to Annex 1.

Responsibility shall be incumbent on the operator.

Information on scrapping

Section 10 Where refrigeration, air conditioning and heat pump equipment has been scrapped, the supervisory authority shall be notified of this no later than 31 March of the following year. This provision shall not apply to equipment for which annual reporting has previously taken place. Responsibility shall be incumbent on the operator.

Requirements concerning enterprises and personnel

Competence requirements for personnel in connection with installation

Section 11 Personnel who take care of the installation shall have knowledge and experience of the function, operation and servicing of the refrigeration, air conditioning or heat pump equipment. Responsibility shall be incumbent on the operator.

Requirements concerning installation, repair and other interventions in refrigerant systems

Section 12 Installation and other measures that require intervention in the refrigerant system or in devices that affect the function of the refrigerant system may only be performed by accredited supervisory bodies for the class in question pursuant to sections 14 and 16 unless otherwise indicated below.

The draining of refrigerant from stationary standard units or the draining of mobile equipment with no more than 3 kg refrigerant at vehicle breaking plants may be performed by, or under the guidance of, individuals in supervisory positions with certified competence in accordance with section 14, class 2.1.

On stationary standard units with no more than 3 kg refrigerants, measures requiring intervention in the refrigerant system or in devices that affect the function of the circuit may be performed by, or under the guidance of, individuals in supervisory positions with certified competence in accordance with section 14, class 2.2.

Intervention in empty mobile equipment for no more than 3 kg refrigerant may be performed by, or under the guidance of, individuals in supervisory positions with certified competence in accordance with section 14, class 2.3.

On refrigerating installations installed on vessels, or that are temporarily carried on vessels, measures that require intervention in the refrigerant system or in devices that affect the function of the system may be performed by, or under the guidance of, individuals on board with certified competence for the class in question in accordance with what is apparent from section 14.

On refrigerating installations installed in fishing vessels and refrigerating installations in other vessels with a total quantity of refrigerant of no more than 10 kg, measures at sea that require intervention in the refrigerant circuit may be performed by, or under the guidance of, individuals with certified competence class 1.

Measures as referred to in the fifth paragraph that are performed on installations in the armed forces' vessels may also be performed by maintenance organisations linked to vessel units if the maintenance organisation comprises individuals with certified competence for the class in question in accordance with what is apparent from section 14.

In relation to installations or equipment containing CFCs, other CFCs or HCFCs, the first to seventh paragraphs shall apply only to the party who performs the measure professionally.

Responsibility pursuant to the first to seventh paragraphs shall be incumbent on whosoever performs the measure and the operator.

Section 13 In relation to the recovery of F gases, the requirements pursuant to article 4 of the F Gas Regulation shall apply in addition to what is stated in section 12.

Competence of individuals and examination centres

Section 14 An individual's competence may be certified by an accredited certifying body after a test has been conducted at an approved examination centre.

Examination centres shall be approved by accredited certifying bodies. To be approved, an examination centre must have the necessary equipment and adequate personnel resources.

Certificates shall be issued for the following classes of accredited certifying bodies in accordance with what is stated in the Swedish Refrigeration Code in its version of February 2007.

Class	Knowledge requirements	Intended for work with
1	Knowledge of regulations, standards and implementation of self-inspections	Self-inspection
2.1	Knowledge of regulations, standards and refrigerant handling	Draining from stationary standard units or mobile equipment with < 3 kg refrigerant
2.2	Knowledge of regulations, standards and refrigerant handling and knowledge of basic refrigerating technology	Installation, servicing of and intervention in stationary standard units with < 3 kg refrigerant
2.3	Knowledge of regulations, standards, refrigerant handling and knowledge of basic refrigerating technology and knowledge of inspection of equipment/installations	Installation, servicing of and intervention in mobile equipment with < 3 kg refrigerant and performance of inspections of installations with such equipment
3.1	Knowledge of regulations, standards, refrigerant handling, more qualified knowledge of refrigerating technology, knowledge of energy enhancement and knowledge of the performance of inspections of refrigeration, air conditioning or heat pump equipment/installations	Installation, servicing of and intervention in refrigeration, air conditioning and heat pump equipment with < 50 kg refrigerant and performance of inspections of installations with such equipment
3.2	Knowledge of regulations, standards, refrigerant handling, more qualified knowledge of refrigerating technology geared to major refrigeration, air	Installation, servicing of and intervention in other refrigeration, air conditioning and heat pump equipment and performance of inspections of

conditioning and heat pump installations with such equipment, knowledge of equipment energy enhancement and knowledge of the performance of inspections of refrigeration, air conditioning and heat pump equipment/installations

Renewal of certification

Section 15 The accredited certifying body may renew certification in accordance with procedures set out in the Swedish Refrigeration Code in its version of February 2007.

Accredited supervisory body for installation, servicing and/or inspection

Section 16 Accreditation shall take place in accordance with the accreditation body's regulations for accredited supervisory bodies for installation, servicing and/or inspection of refrigerating and heat pump installations. The following additionally applies.

At accredited supervisory bodies, at least one individual shall be employed in a supervisory position with certified competence corresponding to the class pursuant to section 14 and the Swedish Refrigeration Code in its version of February 2007.

Individuals with certified competence in a supervisory position shall be responsible for ensuring that whoever performs work under his management has the knowledge and skills required for the work and complies with the provisions of this statute.

The accredited supervisory body shall have necessary and adequate equipment, employ methods and issue inspection reports in accordance with the accreditation body's applicable regulations and the provisions of this statute and of the Swedish Refrigeration Code in its version of February 2007.

The accredited supervisory body shall draw up a quarterly schedule of refrigerants purchased, consumed and returned. The information shall be capable of being reported to the supervisory authority.

Certification issued in other countries

Section 17 The requirements pursuant to section 12 and sections 14 – 16 shall not apply to personnel and enterprises with certification in accordance with article 5.2 of the F Gas Regulation issued in other Member States of the European Union.

Special rules for vessels and vehicles

Vessels

Section 18 In the case of vessels in international traffic, the operating and servicing instructions pursuant to section 4 may be issued in English instead of Swedish.

Section 19 On vessels in which installation, conversion, repair and other interventions in the refrigerant system is performed at sea on refrigeration, air

conditioning and heat pump equipment, employed personnel shall be present on board with certified competence in accordance with what is apparent from section 14 and servicing equipment required for the measures to be capable of being performed in such a way as to afford adequate protection against discharges into the atmosphere.

Section 20 What is stated in relation to inspections for leakage pursuant to section 5, first paragraph shall not apply to vessels which do not call at a Swedish port throughout the calendar year.

Vehicles

Section 21 In accordance with the Swedish National Road Administration's administrative provisions (VVFS 2006:64) on inspection testing and flying inspections, a report from the inspection for leakage shall be presented in connection with inspection testing of vehicles pursuant to Chapter 9 of The Vehicles Order (2002:925).

In accordance with Chapter 9, sections 14 and 15 of the Vehicles Order, a vehicle that has been failed at the inspection test in relation to requirements pursuant to these administrative provisions shall be repaired and tested by an accredited garage. In accordance with Chapter 9, section 16 of the Vehicles Order, the Swedish National Road Administration shall check whether the certificate issued by the garage is acceptable proof of the vehicle's approval.

The accredited garage shall meet the requirements concerning an accredited supervisory body in these administrative provisions.

Provisions of other legislation

Self-inspection

Section 22 Provisions concerning self-inspection are set out in Chapter 26 of the Environmental Code and the Order (1998:901) on operator self-inspections.

Waste

Section 23 Provisions concerning waste are set out in Chapter 15 of the Environmental Code and the Waste Order (2001:1063).

Provisions concerning the export of waste are contained in Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste¹ and the Order (1995:701) on cross-border shipments of waste.

Supervision

Section 24 Provisions concerning supervision are contained in Chapter 26 of the Environmental Code and the Order (1998:900) on supervision in accordance with the Environmental Code.

Liability

¹ OJ L 190, 12/7/2006, p. 1 (Celex 32006R1013)

Section 25 Provisions concerning liability and forfeiture by virtue of infringements of these administrative provisions are set out in Chapter 29 of the Environmental Code.

These administrative provisions shall enter into force on 4 July 2007, when the Swedish Environmental Protection Agency's Decree (SNFS 1992:16) with provisions concerning refrigeration and heat pump installations containing CFCs, other CFCs, halons, HCFCs and HFCs ("the Refrigerants Proclamation") ceases to apply.

The Swedish Environmental Protection Agency

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Annex 1

Reporting to supervisory authorities in accordance with section 9

Reporting to supervisory authorities shall at least contain

- Results of inspections conducted
- Date of inspections conducted
- Names and contact details for the personnel and enterprises who have conducted the inspections
- Total quantity of refrigerant at the installation
- Total quantity of F gases replenished as a result of leakage over the past calendar year
- Total quantity of refrigerant taken care of over the past calendar year
- List of existing refrigeration, air conditioning and heat pump equipment at the installation
- Address and property designation where the equipment is located (stationary equipment)
- The vessel's name, code letters or similar (equipment on board vessels)
- The operator's organisation number, postal address and invoicing address
- The operator's written signature or electronic signature

Background to, and description of the consequences of, proposed administrative provisions concerning refrigeration, air conditioning and heat pump equipment containing fluorinated greenhouse gases, CFCs, other CFCs and HCFCs

Summary

During the 1980s, the effect of refrigerants on the ozone layer was identified and work to reduce their leakage was initiated in Sweden. The Swedish Environmental Protection Agency adopted administrative provisions (the Refrigerants Decree) containing, among other things, extensive inspection and competence requirements. The administrative provisions have been, and continue to be, very important in cutting emissions.

From the outset, CFCs used as refrigerant were involved. CFCs have a very marked effect on the ozone layer and the climate. Gradually, an installation ban was introduced, and now CFCs are to be found as refrigerant only in old refrigerators. To replace CFCs, HCFCs started to be used. HCFCs also have a marked effect on the ozone layer, albeit a lesser one, and the climate. There is now an installation and replenishment ban on HCFCs as well. However, HCFCs may be used so long as replenishment is unnecessary.

HCFCs have been replaced by HFCs, which do not affect the ozone layer, but have a strong climatic impact (1000-2000 times stronger than carbon dioxide). Other refrigerants with little or no effect on climate are becoming increasingly common on the market. HFCs are not, however, covered by any ban on use.

HFCs belong to a class of products known as fluorinated greenhouse gases. Owing to their strong greenhouse effect, there is now an EC Regulation governing them (the F Gas Regulation). This Regulation means that the Swedish Environmental Protection Agency's administrative provisions must be revised.

Obligations under the F Gas Regulation and proposed regulations

The F Gas Regulation and the proposed administrative provisions entail the following obligations. Text in italics applies in accordance with the F Gas Regulation, while other requirements apply in accordance with the Swedish Environmental Protection Agency's proposed administrative provisions and are thus special Swedish requirements.

The party responsible for equipment containing refrigerants must

- Inform the supervisory authority before the installation of equipment containing more than 10 kg refrigerant.
- *Ensure that leakage inspection is performed on stationary equipment containing more than 3 kg F gases. The inspection must be performed at least once, twice or four times depending on whether the equipment contains more than 3, 30 and 300 kg refrigerant respectively.*
- Ensure that leakage inspections are performed on mobile equipment containing more than 3 kg F gases and on stationary and mobile equipment

containing more than 3 kg HCFC. The inspection must be performed at least once, twice or four times depending on whether the equipment contains more than 3, 30 and 300 kg refrigerant respectively.

- *Keep records of measures conducted on stationary equipment containing more than 3 kg F gases.*
- Keep records of the measures conducted on mobile equipment containing more than 3 kg F gases and on stationary and mobile equipment containing more than 3 kg HCFCs.
- Once a year report the result of the inspection to the supervisory authority.
- Inform the supervisory authority if the equipment has been scrapped.
- *Take technically feasible and economically justified measures required to prevent leakage of F gases from stationary equipment.*
- Take technically feasible and economically justified measures required to prevent leakage of F gases from mobile equipment and HCFCs from stationary and mobile equipment.

The refrigerating enterprise must

- Provide the equipment with instructions on how leakage of refrigerant should be avoided
- Check whether the equipment leaks after being installed and following intervention on it

The refrigerant supplier must

- Only supply refrigerant to enterprises with certified personnel and certain other categories
- Take back used refrigerant free of charge

On vessels on which intervention takes place at sea in equipment containing refrigerants, there must be certified personnel on board.

Consequences

The F Gas Regulation and the proposed administrative provisions entail the following changes in comparison with the Swedish Environmental Protection Agency's administrative provisions in force.

- The inspection requirements are tightened up for mobile equipment containing 30 kg F gases or more whereas they are abolished for equipment containing less than 3 kg F gases. The same applies to stationary and mobile equipment containing an equivalent quantity of HCFC.
- In total, the enterprises' costs fall and efforts are directed at where they give the greatest environmental benefit per krona. In environmental terms, emissions from large equipment are expected to fall, whereas there is a risk of them increasing from small equipment.
- For shipping companies, the new regulations mean sharply reduced costs even if the costs of leakage inspection increase in certain cases.
- Private individuals are no longer exempt from the competence requirements concerning installation and other intervention in the refrigerant system.

Consequences of the F Gas Regulation and the proposed changes in the Swedish Environmental Protection Agency's regulations

The consequences of the amended rules are set out below together with the background to them. A separate assessment of the consequences of the amended rules for small enterprises is set out at the end.

The F Gas Regulation and adaptations to it

Background

The Swedish Environmental Protection Agency's regulations concerning refrigerating and heat pump installations containing CFCs, other CFCs, halons, HCFCs and HFCs (the Refrigerant Proclamation) contains rules with a view to cutting the leakage of refrigerants that deplete the ozone layer and/or influence the climate.

CFCs and halons are strong greenhouse gases that heavily deplete the ozone layer. They have in principle been phased out and are still to be found only in refrigerators. HCFCs are potent greenhouse gases that likewise deplete the ozone layer. They must not be installed or replenished, and may only be used where they already exist. HFCs are a class of potent greenhouse gases (1000-2000 times stronger than carbon dioxide). They are not covered by bans on use.

Regulation (EC) No 842/2006 of the European Parliament and of the Council of 4 July 2007 on certain fluorinated greenhouse gases (the F Gas Regulation) has also been in existence since 4 July 2007. The fluorinated greenhouse gases governed by the Regulation include HFCs.

Although the Regulation has come into force, its provisions will be effective only as from 4 July 2007.

The provisions of the Regulation correspond to some of those that exist in the Swedish Environmental Protection Agency's administrative provisions in force. To avoid duplicate regulation and conflicting provisions and make it easier to apply the two sets of regulations at the same time, the administrative provisions must be adapted to the Regulation.

New provisions

Under the F Gas Regulation, recurrent leakage inspection must be conducted on stationary equipment (i.e. not equipment in vehicles and vessels) containing F gases. Equipment containing more than 3 kg, 30 kg and 300 kg F gases must be inspected at least once, twice and four times respectively each year. If leakage warning devices are installed, the inspection interval can be halved. The inspection must be performed by certified personnel. The outcome of the inspections and other action taken on the equipment must be recorded in a register.

According to the Swedish Environmental Protection Agency's administrative provisions *in force*, leakage inspection must be performed at least once a year independently of the quantity of refrigerant. Exceptions are made only for "standard units" (have been assembled and tested in the factory) and mobile equipment containing less than 3 kg. The inspection must be performed by an

accredited enterprise with a certified *supervisor*. The outcome of the inspections and other action taken on the equipment must be recorded in a register.

According to the *proposed* administrative provisions, the provisions of the F Gas Regulation are also to apply to mobile equipment containing F gases and to equipment containing HCFCs. The terms employed in the Regulation are also adopted in the administrative provisions.

The new provisions thus entail shorter inspection intervals for large equipment and abolished inspection requirements for small equipment. They also mean that not only the supervisor but also the person who performs the inspection must be certified.

Costs

The cost of the recurrent inspection is of course dependent on the size of the installation, but is around SEK 2000 each time. With the new requirements, the annual cost thus rises by around SEK 2000 for installations with refrigerating and heating equipment containing more than 30 kg F gases and which do not have leakage warning devices. The costs for installations with equipment containing more than 300 kg F gases increase by at least SEK 2000 and 6000 respectively according to whether or not leakage warning devices are installed. At the same time, enterprises with equipment containing less than 3 kg do not need to pay for the inspection.

In Sweden, there are currently just over 7500 stationary refrigerating and heating equipment units containing more than 30 kg F gases and around 75 containing more than 300 kg. Such units are therefore affected by the F Gas Regulation's stricter inspection requirements and thus increased costs.

The requirement in the proposed administrative provisions whereby mobile equipment containing F gases and equipment containing HCFCs must also be covered by the same inspection requirements means that a smaller number of pieces of equipment will be added. This entails around 150 (more than 30 kg) and 40 (more than 300 kg) units of refrigerating and heating equipment aboard vessels and several hundred units of stationary equipment that still contain HCFCs. The number of the latter is steadily declining as they are covered by the ban on replenishment. In the case of leakage, HCFCs are replaced with HFCs (F gases).

There is no definite information on how many enterprises have equipment containing less than 3 kg F gases and that will thus avoid inspection requirements in future. Up to 100 000 pieces of equipment are probably involved. As there are often several pieces of equipment within the same installation, the number of enterprises affected is considerably smaller. It is also uncertain how compliance with the inspection requirements currently works at enterprises with only small equipment. The total cost reductions are thus difficult to calculate.

The requirement for the inspection to be conducted by certified personnel means that individuals who currently work under certified supervisors must be certified. Several thousand are involved. The cost of this very much depends on what minimum criteria the Commission decides should apply for the competence test. See also the section *Competence requirements for personnel and enterprises* below.

The requirement in the administrative provisions that all rules should also apply to mobile equipment containing HFCs (F gases) and equipment containing HCFCs does not lead to extra certification costs as the same enterprises and people are involved.

Environmental impact

The small equipment exempted under the new rules accounts for roughly 40% of inspections at the present time but contains only 10% of the refrigerant inspected. Even if the figures are uncertain, the total inspection cost will therefore fall and efforts will be directed at where the environmental benefit per krona is greatest.

From the environmental point of view, the new rules mean that emissions from large equipment declines as the leakage is detected earlier when the inspection takes place more frequently.

The impact of the abolished requirements for small equipment is difficult to assess. Those who represent the owners who pay for the inspection of small equipment currently consider that the cost does not at all match the environmental benefit. Those who conduct the inspections consider that there is a need to inspect small equipment as well.

An important effect of the proposed administrative provisions is that the same inspection requirements apply to both HCFC and HFC (F gases). Lower inspection requirements for equipment with HCFCs should reduce the incentive to phase it out.

Other effects

The fact that the same terms and definitions are used in the administrative provisions as in the Regulation affects who has responsibility for the provisions. Under the Regulation, the “operator” has responsibility. The “operator” is taken to be the party who has “actual technical responsibility” for the equipment covered by the provisions. Under the administrative provisions in force, the owner has responsibility.

In many cases, the operator and the owner are the same person. In certain other cases, however, it can be difficult to determine who bears technical responsibility for the equipment. It is not, however, to retain the owner as the party responsible for the requirements of the administrative provisions. The same person should, for example, be responsible for the leakage inspection and the reporting to the supervisory authority.

As a result of the adaptation to the F Gas Regulation, the term ‘HFC’ is replaced by the term ‘fluorinated greenhouse gases’ (‘F gases’). The term ‘F gases’ covers not only HFCs but also SF₆ and PFCs. In practice, this does not mean any difference as only HFCs are used as refrigerant.

Supervision

Background

Technical developments are currently very fast-moving and new technologies utilising alternative refrigerants are available. Within certain areas, such

development has gone so far that it is not justified to use HFCs (F gases). There is, however, considerable reluctance to invest in new technology. There are currently two reasons to switch to refrigerants other than HFCs, namely environmental image and the risk of a tax being imposed on HFCs. A tax is not under discussion at present and so other means of control are needed.

The transition from ozone-depleting refrigerants such as CFCs and HCFCs to refrigerants that influence climate such as HFCs has to date taken place via an expensive but effective ban on installation and replenishment. The phasing-out of HFCs is not as easy to implement with bans as there are not as yet alternatives within all areas of use. It is nevertheless important that the transition takes place as quickly as possible.

To give the supervisory authorities an opportunity to check the choice of refrigerant, there are currently requirements concerning notification “in good time” before the installation of new equipment. In most cases, however, the notification is presented far too late for the supervisory authority to have a real opportunity to submit views before it is too late.

New provisions

Under the proposed administrative provisions, the supervisory authority must be notified before a decision is taken on what equipment and which refrigerant should be installed, i.e. the notification must be provided at the planning stage. This provision applies to equipment containing more than 10 kg HFC (F gases). The quantitative limit means that the focus is switched to larger equipment.

Current requirements for annual reporting of the inspection result are retained. The reporting requirement applies to installations with a total of 10 kg refrigerant or more. The total quantity includes only equipment covered by inspection requirements. As equipment with less than 3 kg refrigerant is not covered by inspection requirements pursuant to the F Gas Regulation, the number of enterprises covered by reporting requirements also falls.

A new feature of the proposed administrative provisions is that it is specified what details the reporting should contain and that the supervising authority must be notified once the equipment has been scrapped.

Costs

The amendment whereby the supervisory authority must be notified prior to installation does not entail any increased costs. In fact, the reverse applies, as the supervisory authority no longer needs to be notified if the equipment contains less than 10 kg HFC (F gases).

Emissions of refrigerants currently equate to around 1% of Sweden’s total emissions of greenhouse gases, i.e. approx. 700 000 tonnes of CO₂ equivalents. In 1991, emissions were 2-3 times higher, i.e. up to 2 million tonnes of CO₂ equivalents. Before 1988, when the Swedish Environmental Protection Agency’s administrative provisions came into force, emissions were even higher. A major factor in the reduction is the requirement for recurrent leakage inspection and associated reporting.

The reporting to the supervisory authority is intended to ensure that the leakage inspections are conducted and that emissions thus do not rise to previous years' levels. Business's administrative costs for the reporting are SEK 3 million per annum (NUTEK's report *Business's administrative costs in the environmental arena*).

By way of comparison, it can be mentioned that the trading of emission rights covers 23 million tonnes of CO₂ equivalents. The hope is that such trading should contribute to the target of cutting greenhouse gas emissions by 4%. A 4% cut within the sector affected by emissions trading means a cut of around 1 million tonnes of CO₂ equivalents. Business's administrative costs for emissions trading are SEK 13 million (NUTEK's report).

Even if it is difficult to compare, it can be stated that business's administrative costs for reporting do not exceed the costs of emissions trading, based on the level of emissions designed to be prevented.

Reporting is considered to be the most cost-effective way of checking compliance with the provisions. The hope is that the annex with information on what the reporting should cover and the requirement for information on scrapped equipment will cut costs. After all, the actual scrutiny of the inspection reports calls for very low levels of resources. The most demanding work is instead handling reports that are deficient or that have failed to materialise.

As mentioned above, the F Gas Regulation and the proposed administrative provisions mean that the number of enterprises covered by reporting requirements decreases. Following contact with the supervisory authorities, the decrease is put at 10-20%.

Environmental impact

The only effective means of control for the phasing-out of HFCs (F gases), apart from taxation, is considered to be to ensure, via binding rules and supervision, that alternative refrigerants are used where possible. This is conditional, however, on the Swedish Environmental Protection Agency providing guidance on how energy consumption, the greenhouse impact of the refrigerants and other environmental effects should be balanced, i.e. guidance on the basis of the consideration provisions of the Environmental Code. The work on such guidance has been commenced.

The environmental impact may ultimately become significant. As more installations with alternative refrigerants take place, technological developments will be promoted and costs will fall. The new installation of HFCs may therefore cease very quickly within certain areas of use. The work commenced in the late 1980s, with the phasing-out of CFCs, may then be regarded as over.

Competence requirements for personnel and enterprises

Under the F Gas Regulation, the Commission must, no later than 4 July 2007, submit minimum criteria for the certification of personnel who install, inspect and service refrigeration, air conditioning and heat pump equipment containing F gases. Member States then have one year to adapt their competence requirements to the minimum level.

Private individuals are not covered by the competence requirements of the Swedish Environmental Protection Agency's current administrative provisions. The F Gas Regulation does not, on the other hand, make any exceptions for private individuals. Private individuals thus become responsible for ensuring that anyone who, for example, installs their heat pumps is certified in accordance with the competence requirements that Sweden is required to have introduced by 4 July 2008 at the latest.

The *proposed* administrative provisions do not make any exception, for example, for installers of equipment containing F gases, but who do not do this commercially. Private individuals are thus covered by the competence requirements that currently apply, i.e. the competence requirements that have not yet been adapted to the Commission's minimum criteria. As the administrative provisions become effective on 4 July 2007, private individuals become responsible one year earlier than what happens under the F Gas Regulation.

The competence requirements of the Swedish Environmental Protection Agency's administrative provisions are otherwise left unchanged for the time being. This is in light of the fact that competence requirements must still be revised once the Commission has presented its minimum criteria.

Costs

The amendment means that the cost of installing heat pumps is increased by several thousand kronor where the intention had been for a private individual to install them before 4 July 2008. It is difficult at the same time to calculate the final cost as installation by a proficient individual should mean the equipment becoming more reliable and saving more energy.

Environmental impact

The amendment should mean a reduction in the risk of leakage from poorly implemented installations of residential heat pumps. It is impossible, however, to quantify this reduction.

Other provisions

Background

The situation in Sweden differs from that in the rest of Europe. Sweden already has legislation in the form of the Swedish Environmental Protection Agency's administrative provisions, which have very successfully contributed to cutting emissions of refrigerants. Emission levels are much lower than in most other European countries.

In many European countries, the F Gas Regulation is the first set of regulations for HFCs (F gases). This means that it is not at all as comprehensive as the Swedish Environmental Protection Agency's administrative provisions in force, even if it is in some cases more stringent.

The administrative provisions in force may be regarded as over-regulating, but have been accepted and form part of an established system. The starting point has

therefore been not to eliminate provisions that are accepted by all involved and that provide effective and established cornerstones for cutting refrigerant emissions.

New provisions

The following elements have been retained in the proposed administrative provisions:

- requirements for leakage inspection also to be conducted in connection with the installation of and intervention in equipment containing refrigerants
- requirements for instructions on how the equipment should be serviced to prevent emissions
- provisions concerning who is allowed to purchase and accept refrigerants
- requirements for the party who supplies refrigerants also to take back used refrigerants free of charge.

The aim of the last two points is for the refrigerants only to be handled by those with the required competence and to prevent the establishment of a black market for used refrigerants.

Other provisions that have been retained deal with the specific conditions that apply to vessels. A major change has been made in this respect. It is specified in the administrative provisions in force that vessels should have on board employed personnel with certified competence to, for example, repair equipment containing refrigerants. In the proposed administrative provision, the requirement applies only to vessels where repairs actually take place at sea.

Costs

The mitigation of the requirement for certified personnel on board vessels means major cost reductions for shipping companies. The rules in effect have been criticised by these companies, which have considered that it is too expensive to ensure all the time that there are personnel with properly certified competence on board. This applies at a time when most enterprises still repair the equipment in port. There are only certain vessels, for example refrigerated cargo vessels, that have to rectify the faults at sea.

Environmental impact

The impact of the mitigated requirements for vessels may in certain cases lead to an increased risk of emissions. It is nevertheless important to remember that personnel on board vessels have certain training in this area, even if they lack certified competence. In light of the high costs, it cannot be considered justified to retain the requirement. Shipping companies will be hit by high costs if the use of HCFCs is banned. The environmental benefit of these costs is substantially greater than the benefit of the costs that shipping companies currently have for meeting the requirement for certified personnel on board.

Eliminated provisions

Background

The requirements in effect are unstructured and contain a number of provisions that are either obsolete or unnecessary owing to other legislation.

The Swedish Refrigeration Code is a sectoral standard that describes how equipment containing CFCs, HCFCs and HFCs should be designed, maintained and inspected, etc. It is indicated in the administrative provisions in force that if the requirements of the standard are met, the requirements of the administrative provision are also. Following the standard is thus *one* way of meeting the legislative requirements.

Even if the Swedish Refrigeration Code describes a way of complying with the administrative provision, its provisions have been viewed by many as legislative requirements.

New provisions

The provisions concerning the selection of refrigerant in the administrative provisions in force have been dropped as they are covered by the Environmental Code's consideration rules. A number of other provisions have been dropped and replaced with references to other legislation in the proposed administrative provisions. Certain provisions have also been dropped as they are no longer appropriate after the installation bans for CFCs and HCFCs have come into effect.

To make it clear that the Swedish Refrigeration Code does not have legislative status, the reference to the standard has been dropped. As the competence requirements will be revised in autumn 2007, the reference to the Swedish Refrigeration Code is nevertheless retained in relation to them. The standard has played a very important role in the successful work on cutting emissions of refrigerants in Swedish. It would be unfortunate for it entirely to lose its current significance, and a reference to it is therefore planned in general advice or manuals.

Apart from that, the sections have been reorganised to make it easier to gain an overview. Among other things, all the special rules for vessels and vehicles have been combined at the end of the administrative provisions.

The competence requirements are very involved and form a major part of the administrative provisions. This means that the proposed administrative provisions are, despite the revision, also difficult to read. As the administrative provisions complement the F Gas Regulation and the Regulation's concepts are used in the administrative provisions, both need to be read in context with each other.

Costs and environmental impact

The fact that the provision concerning refrigerant selection has been dropped does not mean any change in itself as it still satisfies the Environmental Code's consideration rules. The requirement nevertheless becomes more unclear as it is no longer contained in the administrative provisions. The consideration rules should therefore be highlighted in some other way.

The supervisory authorities do not have knowledge of how energy consumption and the environmental impact of refrigerants should be weighed up against each other. Guidance from the Swedish Environmental Protection Agency has been sought from many quarters. It is therefore important that the provisions that have been removed are replaced by guidance based on Chapter 2 of the Environmental Code concerning how the environmental assessment should be performed. Otherwise, the phasing-out of HFCs risks being delayed.

Alternatives to the proposed administrative provisions

Besides minor adjustments of the proposed new administrative provisions, there are essentially two alternatives to what should happen with the Swedish Environmental Protection Agency's administrative provisions when the provisions of the F Gas Regulation come into force.

A "zero" alternative is merely to make the changes required for the administrative provisions not to conflict with the requirements of the F Gas Regulation. This means that the administrative provisions can continue to apply as now.

There are in principle benefits of such a zero alternative. The disadvantages are that it should be more or less impossible to gain an overview of which rules actually apply. In addition, the phasing-out of HCFCs should be disadvantaged by the inspection requirements applicable to them being lower than for HFCs (F gases). The alternative is therefore not appropriate.

A contrary alternative is to have the F Gas Regulation govern the area without supplementary Swedish legislation other than for the actual competence test. The advantage is that the Swedish Environmental Protection Agency would need to deploy fewer resources in revising the administrative provisions. These would in that case entail competence requirements. With well established requirements over and above the competence requirements, there should nevertheless be little need to revise the proposed administrative provisions. The advantage of only having the F Gas Regulation govern this area thus does not become so great.

The alternative has, among other things, the following disadvantages:

- mobile equipment should be left more or less unregulated
- the phasing-out of HCFCs is disadvantaged by the inspection requirements applicable to them being lower than those for HFCs (F gases)
- supervision would be more or less non-existent as it would then be based on the supervisory authorities going out and checking that leakage inspection has been performed. It is doubtful whether this can be considered to make it possible to meet the F Gas Regulation's requirements for penalties to be imposed in the event of non-compliance with the rules
- Confidence in the administrative provisions would decline, with the signal being sent out being that it is no longer so important to prevent the discharge of F gases

Given these disadvantages, this alternative is not appropriate either.

Specific analysis of the consequences of rules for small enterprises

Under the Order (1995:1322) on specific analysis of the consequences of rules for small enterprises, a specific analysis of consequences must be conducted when amended rules are considered. The analysis of consequences must be based on the questions set out below.

The changes in the administrative provisions that may lead to increased costs are the provision that the rules of the F Gas Regulation concerning leakage inspection must apply also to mobile equipment and equipment containing HCFCs.

In relation to the proposal that mobile equipment should be covered by the provisions of the F Gas Regulation, it is considered that only shipping companies are adversely affected, and not small enterprises. The review below is therefore based on the stricter inspection requirements for equipment containing more than 30 kg HCFC. It is important to note that the proposed administrative provisions also mean relaxations for equipment containing less than 3 kg HCFCs. Most small enterprises will thus experience reduced costs.

1. What is the problem and what happens if no regulation takes place?

As a result of the inspection requirements being tightened up for refrigerating and heating equipment containing F gases, there will be a greater incentive to keep equipment containing HCFCs. Unless the inspection requirements for HCFCs are adapted accordingly, the phasing-out of HCFCs risks being delayed.

2. Are there alternative solutions?

To prevent HCFCs benefiting from more relaxed inspection requirements than F gases, the same requirements must apply also to HCFCs. There is therefore no alternative.

3. What administrative, practical or other measures must small enterprises take as a result of the regulation?

In so far as small enterprises have refrigerating or heating equipment containing 30 kg HCFC or more, the adaptation to the F Gas Regulation means that inspection of the equipment must take place twice a year instead of the current once a year. If leakage warning devices are installed, no change takes place.

4. What demands in terms of time may the rules mean for small enterprises?

According to NUTEK's report *Business's administrative costs in the environmental arena*, it takes about 30 minutes for enterprises to report the result of the annual inspection to the supervisory authority. Even if the number of checks is doubled for equipment containing HCFCs, the time for reporting should not change because, as before, it takes place once a year.

5. What wage costs, other costs or resource pressures in other respects may the rules bring about?

The cost of the inspection of refrigerating and heating equipment is currently SEK 2000 per annum, according to NUTEK. If there are small enterprises with refrigerating or heating equipment containing 30 kg HCFC or more, the cost rises to SEK 4000 on condition that no leakage warning devices are installed.

6. Could the rules distort competition to the detriment of small enterprises or otherwise harm their competitiveness?

No.

7. Will the rules affect small enterprises in other respects?

No.

8. Is it possible to check compliance with the rules, and how will the impact of the rules for small enterprises be noticed and checked?

Compliance will be checked via the annual reporting to the supervisory authorities. The impact of the rules will be noticed in future revisions of the legislation.

9. Should the rules apply only for a certain limited time to prevent any adverse effects for small enterprises?

No.

10. Does special account need to be taken of the conditions of small enterprises in terms of the time for the entry into force of the rules?

No.

11. Is there a need for special information efforts?

Yes. Information efforts will still take place owing to the changes entailed by the F Gas Regulation.

12. How has required consultation taken place with the business community and with authorities that are specifically affected, and what key viewpoints have emerged?

Meetings have been held with SWEDAC, the Swedish Maritime Administration, the Swedish Energy Agency, the Swedish Work Environment Authority, the Swedish Refrigeration Foundation, the Swedish Automobile Association and the environmental administration in Stockholm, Eskilstuna and Sollentuna. Contact has also been made with the Swedish Chemicals Inspectorate, the Swedish National Road Administration and the Swedish Motor Vehicle Inspection Company as well as the county administrative board in Skåne. The Swedish Trade Federation has been offered a meeting. In connection with telephone calls from supervisory authorities and enterprises, questions concerning the revision of the proclamation have been taken up.

The views that have emerged have been mixed. Important views in this respect have been as follows:

- The inspection requirements for HCFCs should not be more lenient than for F gases
- Current inspection requirements for equipment containing less than 3 kg refrigerant should be retained, i.e. the Swedish requirements should go further than the requirements of the F Gas Regulation
- The Swedish inspection requirements should not go further than the requirements of the F Gas Regulation, i.e. equipment with less than 3 kg refrigerant should be exempted from inspection requirements (i.e. the opposite of what is set out above)