Prepared	Revised	Validated	Approved
EDPR PT EMS Manager	*EDPR EU EMS Manager*	*Country EMS Management Representative*	*EDPR EU EMS Management Representative*
Name: Vasco Soares	Name: Ángela Toledo	Name: Timóteo Monteiro	Name:
Date: 02/03/2015	Date: 02/03/2015	Date: 02/03/2015	Date: 02/03/2015

0 CHANGE CONTROL

Edition	Date	Description of the modification
00	23/11/2011	Initial Edition
01	11/04/2013	General revision and introduction of the responsibilities flowchart
02	02/03/2015	General revision and adaptation to the Regulation (CE) n.º 517/2014

1 OBJECTIVE AND SCOPE

This procedure defines the methodology that should be adopted in order to manage all equipment that may contain Ozone Depleting Substances (ODS) or Greenhouse Gases (GHG), and it is applicable to all facilities and activities included in the scope of the EMS, as defined in the file *Facilities in the EMS scope*.

2 REFERENCES

- ISO 14001:2004 standard.
- EMS Manual.
- EXPR-EU/EMS-GEN-00013 "Management of equipment with Greenhouse Gases and Ozone Depleting Substances"
- EXPR-EU/EMS-GEN-00007 "*Operational control, monitoring and measurement_v00*".
- EXPR-EU/EMS-GEN-00008 "*Emergency preparedness and response_v00*".

3 DEFINITIONS

- **Controlled Substances**: substances listed in Annex 1 of Regulation (CE) nº 1005/2009, September 16th, on *substances that deplete the ozone layer*, including their isomers, whether alone or in a mixture and whether they are virgin, recovered, recycled or reclaimed (for example HCFC-22, commonly known as R22).

- **Global Warming Potential (GWP)**: climatic warming potential of a greenhouse gas relative to that of carbon dioxide (CO_2), calculated in terms of the 100-year warming potential of one kilogram of a greenhouse gas relative to one kilogram of CO_2.
- **Greenhouse Gases (GHG)**: gases that can absorb and emit infrared radiation and are thought to cause the greenhouse effect
- **Greenhouse effect**: process by which thermal radiation from a planetary surface is absorbed by atmospheric greenhouse gases, and is re-radiated in all directions. Since part of this re-radiation is back towards the surface and the lower atmosphere, it results in an elevation of the average surface temperature above what it would be in the absence of the gases.
- **Fluorinated Greenhouse Gases (FGHG):** hydrofluorcarbons (HFCs), perfluorcarbons (PFCs) e sulphur hexafluoride (SF_6), as listed in Annex I of the Regulation (CE) nº 842/2006, May 17th, on *certain fluorinated greenhouse gases and preparations containing those substances*, excluding substances controlled under Regulation (CE) nº 1005/2009, September 16th, on *substances that deplete the ozone layer*.
- **Leakage Detection System:** a calibrated mechanical, electrical or electronic device for detecting leakage of fluorinated greenhouse gases which, on detection, alerts the operator.
- **Ozone-Depleting Substances (ODS):** halogen-containing substances that damage the ozone layer in the upper atmosphere. Some ozone depleting substances are also powerful greenhouse gases.
- **Tonne(s) of CO2 Equivalent:** quantity of greenhouse gases expressed as the product of the weight of the greenhouse gases in metric tonnes and their global warming potential (GWP).

4 ABBREVIATIONS

- **EDPR PT:** EDP Renováveis Portugal.
- **FGHG**: Fluorinated Greenhouse Gases.
- **ODS:** Ozone Depleting Substances.
- **SGA**: Environmental Management System.

- **SIRAPA:** Integrated Registration System of the Portuguese Environmental Agency.
- **SIS:** EDPR Sustainability Information System

5 PROCEDURE

5.1 LEGAL FRAMEWORK

Legal requirements:

- Decreto-Lei n.º 56/2011, April 21st (concerning FGHG).
- Decreto-Lei n.º 85/2014, May 27th (concerning ODS)
- Regulation (CE) n.º 1494/2007, December 17th.
- Regulation (CE) n.º 1516/2007, December 19th.
- Regulation (CE) n.º 303/2008, April 2nd.
- Regulation (CE) n.º 305/2008, April 2nd.
- Regulation (CE) n.º 1005/2009, September 16th.
- Regulation (CE) n.º 517/2014, December 16th.

The ODS and FGHG contained in refrigeration equipment, air conditioning or circuit breakers, should be managed to prevent their emission to the atmosphere and minimize the impact on the degradation of the ozone layer and the contribution to the greenhouse effect.

Legal requirements establish that only qualified technicians can ensure the transfer, recycling, valorization and destruction of controlled substances, including maintenance, repair and assistance operations in that equipment, including the detection of any leakage of such substances.

5.2 EDPR PT OBLIGATIONS

5.2.1 Ozone depleting substances

Given the serious consequences that the release of these substances into the atmosphere can cause, it is essential to proceed in accordance with the legal requirements.

Portuguese national legislation regulates the operation of recovery for recycling, valorization and destruction of substances that deplete the ozone layer contained in refrigeration and air conditioning, heat pumps, fire protection systems and fire extinguishers and equipment containing solvents, as well as maintenance operations and assistance of such equipment, including the detection of any leakage of such substances.

In compliance with the imposed by that legislation, the following rules should be followed:

a) Since December 31st 2014 it is prohibited to use regenerated or recycled HCFCs for equipment maintenance or servicing. However, it is not necessary to uninstall the previously existing equipment, as long as these still work properly. When any of these equipment needs any maintenance operation or gas refill, it has to be uninstalled, or at least the gas has to be removed and replaced by a non-HCFC gas.
b) Contract a qualified technician for the technical interventions in equipment containing controlled substances, which includes leak detections;
c) Repair any and all detected gas leaks as soon as possible within 14 days of its detection.
d) Guarantee that the mentioned controlled substances are adequately removed and stored, for posthumous adequate elimination/recycling.
e) Deliver to an authorized waste handler, the equipment that reaches the end of its life cycle and becomes waste.
f) Develop and update a database containing all equipment with ODS and associated relevant information.

If there are fixed equipment with a load of fluid of 3 or more kg (check template TMP-EU/EMS-SPF-00005 form), the Regional Manager shall ensure that an examination for the detection of leaks by a qualified technician/company is done every 12 months. According to standing legislation on this matter, leak detections are to be performed on each equipment according to the following conditions:

EQUIPMENT	PERFORM LEAK DETECTION
Which has had a leakage of Controlled Substances	Within 1 month after the repair, in order to ensure that it has been effective.
Containing 3 kg or more of Controlled Substances*	At least once every 12 months

Containing 30 kg or more of Controlled Substances	At least once every 6 months
Containing 300 kg or more of Controlled Substances	At least once every 3 months

*The equipment with hermetically sealed systems labelled as such and containing less than 6 kg of Controlled Substances shall not be checked for leakage.

If it is necessary to recover some ODS contained in equipment or perform some intervention in equipment implying contact with the fluid (ODS), the O&M Regional Manager should guarantee that these interventions are carried out by properly certified technician or company. The EMS Manager will support the O&M Regional Manager in the selection and hiring of these technician or companies.

For each technical intervention, performed in these equipment, the qualified technician should fill, in duplicate, a sheet model, set out in current legislation, and EDPR PT should retain one copy. The Facility Manager or the O&M Service Provider must ensure the filling of this sheet and send it to the O&M Manager for the EMS that will file all intervention sheets.

After each technical intervention performed in these equipment, template TMP-EU/EMS-SPF-00006 must be filled, recording the date of intervention, type of intervention (ex: preventive or corrective maintenance), the name of the qualified technician who performed the operation, information about its certification (when applicable), company name, the equipment that suffered intervention and its model and serial number, the name of the facility and possible impacts (leakage) and relevant comments.

The filling of this template is responsibility of the Facility manager, who shall submit it quarterly to the O&M manager for the EMS and to the EMS Manager.

In case of any breakdown or incident in equipment with ODS, the Facility manager should act in accordance with the procedure EXPR-EU/EMS-GEN-00008 (Near miss and emergency preparedness and response), and therefore should inform the O&M Regional Manager that will compile all the necessary information and send it to the EMS Manager, that in its turn, uses that information to fill the TMP-EU/GEN-00011 template (Environmental Near miss/Emergency report).

The EMS Manager should assure that all near misses or emergencies are reported in SIS.

For equipment ending its life cycle, the O&M Manager for the EMS should assure that they are disposed by a waste handler properly authorized for the treatment of equipment with ODS.

Equipment existing in the facilities that contain ODS must be inventoried, through its incorporation into the template TMP-EU/EMS-SPF-00005, which also includes information on the type and quantity of the controlled substance, as well as tones of CO_2 equivalent. The development and updating of this inventory are responsibilities of the EMS Manager.

5.2.2 Fluorinated Greenhouse Gases

In the facilities there is equipment containing FGHG, for example circuit breakers with SF6 and air conditioning equipment with R410a or R407c. For that reason, applicable legal requirements related to FGHG, must be followed.

Among other obligations, legal requirements enforces the communication of data to Environmental Portuguese Agency (APA), through the SIRAPA platform, namely quantities of FGHG introduced in the market or sent to the final destination

Thus, every year must be communicated to APA, the following information related to fixed refrigeration equipment and heat pumps with FGHG and for circuit breakers containing SF6:

a) The amount of FGHG installed (kg);
b) The amount of FGHG recovered for the purpose of recharging (kg);
c) The amount of FGHG recovered for the purpose of valorization or destruction (kg).

This communication must be assured by the EMS Manager, through the SIRAPA platform.

According to legal applicable requirements, leak detections should be performed in the following equipment and in compliance with the following periodicity:

EQUIPMENT	PERFORM LEAK DETECTION
Which has had a leakage of Controlled Substances	Within 1 month after the repair, in order to ensure that it has been effective.

EQUIPMENT	PERFORM LEAK DETECTION
Containing in between 5 and 50 tons of CO_2 equivalent.	At least once every 12 months. If the equipment contains a leak detection system, then it must be done every 24 months.
Containing in between 50 and 500 tons of CO_2 equivalent.	At least once every 6 months. If the equipment contains a leak detection system, then it must be done every 12 months.
Containing over 500 tons of CO_2 equivalent.	At least once every 3 months. If the equipment contains a leak detection system, then it must be done every 6 months.

Until the December 31st of 2016, equipment that contains less than 3 kg of FGHGs, or that are hermetically sealed and contain less than 6 kg of FGHGs are not required to be subjected to leak detections. From this day on, all hermetically sealed equipment that contains less than 10 tons of equivalent CO_2 are not required to be subjected to leak detections.

Electrical switchgear is not required to periodical leak checks if it complies with one of the following conditions:

- It has a tested leak rate of less than 0,1% per year, as set out in the technical specification of the manufacturer and is labelled accordingly;
- It is equipped with a pressure or density monitoring device;
- It contains less than 6 kg of FGHGs.

From the first of January of 2017 onward, whenever an equipment that contains over 500 tons of CO2 equivalent is installed, a leak detection system is required to be installed, which alerts the operator / service provider of any and all leaks. It is the operator's responsibility to assure that these systems are checked every 6 months for electrical switchgear, and every 12 months for the rest of the existing equipment in these circumstances.

Regional O&M Manager has to assure the leak detection of equipment in these conditions, by certified technicians/companies, within the deadlines.

The contracting of certified technicians and companies is also mandatory, according to legal requirements, for the following operations:

- Recovery of SF_6 in circuit breakers;

- Detection of FGHG leakage in fixed refrigeration equipment, air conditioning and heat pumps;
- Recovery, installation and maintenance or technical assistance of the fixed refrigeration equipment, air conditioning and heat pumps containing FGHG;
- Recovery and recycling at any location of any residual gas included in fixed refrigeration equipment, air conditioning, heat pumps and SF6 circuit breakers, which reach end of their lifetime.

The EMS Manager will support the Regional O&M Manager in the selection and hiring of certified technicians or companies.

For each technical intervention, performed in this equipment, the qualified technician should fill in a specific template on his professional log. Each record has an original and a duplicate, and the first should be kept by the technician and the second should be delivered to the facility, which in turn, will deliver it to the O&M Manager for the EMS to file them.

Besides the record in the technician log, it should be filled also the template TMP-EU/EMS-SPF-00006 template, recording the date of intervention, type of intervention (ex: preventive or corrective maintenance), the name of the qualified technician who performed the operation, information about its certification, company name, the equipment that suffered intervention and its model and serial number, the name of the Facility and possible impacts (leakage) and relevant comments.

The filling of this template is the responsibility of the Facility Manager, who shall submit it after each intervention to the Regional O&M Manager that validates the information and send it to the EMS Manager.

In case of any breakdown or incident in equipment with FGHG, the Facility Manager should act in accordance with the procedure EXPR-EU/EMS-GEN 00008 (Near miss and emergency preparedness and response), and therefore should inform the Regional O&M Manager that will compile all the necessary information and send it to the EMS Manager, that in its turn, uses that information to fill the TMP-EU/EMS-GEN-00011 template (Environmental Near miss/Emergency report).

The EMS Manager should assure that all near misses or emergencies are reported in SIS, including the quantities of SF_6 that are eventually released to the atmosphere. These quantities should also be recorded in the SIRAPA platform, in accordance with the necessity to communicate FGHG data, mentioned early in this chapter.

For equipment ending its life cycle, the O&M Manager for the EMS should assure that they are disposed by a waste handler properly authorized for the treatment of equipment with FGHG.

In the case of fire extinguishers and fixed systems for fire protection, the O&M Manager for the EMS must assure that, when acquiring new equipment, no FGHG fire extinguishers should be selected.

All equipment containing FGHG commercialized from 1st April 2008, must have a label in accordance with Regulation (CE) nº 1494/2007, containing the following information:

a) The statement: "Contains greenhouse gases covered by Kyoto Protocol";
b) The abbreviated chemical names of the greenhouse gases contained in or designed for such equipment, using a standard name accepted for the equipment or substance;
c) The amount of greenhouse gases, expressed in kilograms;
d) The words: "Hermetically sealed" when applicable.

In the case of acquisition of new equipment or replacing existing ones, the Facility Managers should verify that the new equipment is properly labeled. EMS Manager should support Facility Managers in that verification.

Equipment existing in the facilities that contain FGHG must be inventoried, through its incorporation into the template TMP-EU/EMS-SPF-00005, which also includes information on the type and quantity of the controlled substances. The development and updating of this inventory are responsibilities of the EMS Manager.

6 RESPONSIBILITIES

EMS Manager:

- Communicate the amount of FGHG installed and recovered, through the APA platform.
- Guarantee the use of non-HCFC equipment.
- Prepare and update the list of equipment with regulated gases (template TMP-EU/EMS-SPF-00005).
- Fill in the template TMP-EU/EMS-GEN-00011, whenever is communicated event of any environmental accident or near miss with equipment that contain regulated gases.
- Ensure among SIS contributors that all environmental accidents or near-misses on equipment with regulated gases are reported in SIS, as well as the amount of SF6 released into the atmosphere.
- Support Facility Managers in the verification of the correct labeling of new equipment with ODS or FGHG.

O&M Manager for EMS:

- File the copies of the intervention records that are filled by the certified technician in intervention on equipment with ODS or FGHG.
- Ensure that equipment containing ODS and FGHG that reach the end of its useful lifetime are collected by a properly authorized waste handler and file the correspondent GAR, stamped and signed by the recipient.
- Ensure that, during the acquisition of fire extinguishers, only equipment without FGHG is chosen.
- Request to central maintenance the substitution of the labels or devolution of equipment, when incorrect labels are found on new equipment.

Regional O&M Manager:

- In case of incident or breakdown of equipment with FGHG or ODS, collect all necessary information to fill in the environmental emergency or near miss record and send that information to the EMS Manager.
- Ensure that technical interventions in equipment containing ODS and FGHG are performed only by certified technicians.

- Ensure verification of equipment to detect eventual leaks of ODS and FGHG, in accordance to the conditions and periodicity established in this instruction, resorting to certified technicians/companies.
- Ensure the correct and complete filling of the template TMP-EU/EMS-SPF-00006 (Interventions in Equipment with Regulated Gases).
- Guarantee the use of non-HCFC equipment.
- Assure that all detected leaks are adequately repaired in due time.

Facility Manager:

- Report to O&M Regional Manager any breakdown or incident in equipment with controlled substances (ODS or FGHG).
- Fill in the template TMP-EU/EMS-SPF-00006 (Interventions in Equipment with Regulated Gases).
- For each technical intervention performed in equipment with ODS or FGHG, verify the filling, in duplicate, by the certified technician, of the correspondent intervention record and send one copy to the O&M Manager for the EMS.
- In case of any leakage of a controlled substance (ODS or FGHG), act in accordance with EXPR-EU/EMS-GEN-00008 and inform the O&M Regional Manager about the facts.
- Verify, with the support of the EMS Manager, the correct labeling of new equipment with ODS or FGHG.

O&M Suppliers / Service Providers:

- For each technical intervention performed in equipment with ODS or FGHG, verify the filling, in duplicate, by the certified technician, of the correspondent intervention record and send one copy to the Facility Manager.
- In case of any leakage of a controlled substance (ODS or FGHG), act in accordance with EXPR-EU/EMS-GEN-00008 and inform the Facility Manager about the facts.

7 TEMPLATES

- TMP-EU/EMS-SPF-00005 *"List of equipment with Regulated Gases"*
- TMP-EU/EMS-SPF-00006 *"Interventions in Equipment with Regulated Gases"*

TMP-EU/EMS-SPF-00005

LIST OF EQUIPMENT WITH REGULATED GASES

Operator:	
Facility:	
Operation Start Date	

											Leak Check	
Equipment	Reservoir nº	Gas	Gas Quantity (kg)	Brand	Model	Recovered gas quantity to be inserted in the same equipment (kg)	Recovered gas quantity to be inserted in another equipment (kg)	Recovered gas cuantity to be recycled (kg)	Recovered gas cuantity to be destroyed (kg)	Gas Total (kg)	Gas Total (ton eq CO_2)	Equipment With Leak Detection System?	Leak Check Periodicity
Totals:													

EMS-EU/F-00021

INTERVENTIONS IN EQUIPMENT WITH REGULATED GASES

Last update:

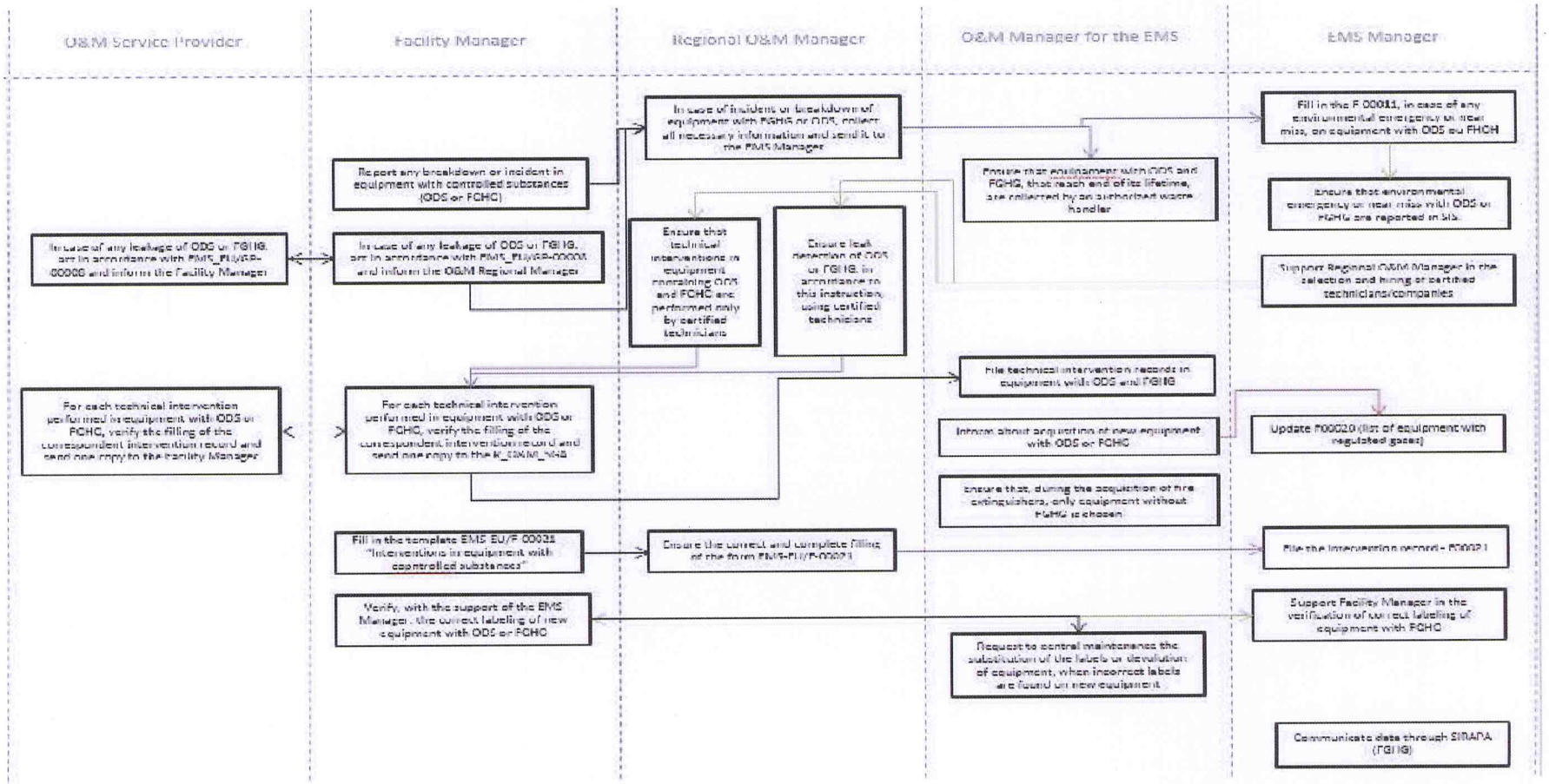
Date	Type of Intervention	Technician	Certificate	Company	Equipment	Model	Facility	Incidents [1]	Comments

[1] Fill in case of leakage

O&M Manager for the EMS

(Date and signature)

8 FLOWCHART


O&M Service Provider
Facility Manager
Regional O&M Manager
O&M Manager for the EMS
EMS Manager
In case of incident or breakdown of equipment with FGHG or ODS, collect all necessary information and send it to the EMS Manager
Fill in the F 00011, in case of any environmental emergency or near miss, on equipment with ODS ou FHCH
Report any breakdown or incident in equipment with controlled substances (ODS or FCHC)
Ensure that equipment with ODS and FGHG, that reach end of its lifetime, are collected by an authorized waste handler
Ensure that environmental emergency or near miss with ODS or FGHG are reported in SIS.
In case of any leakage of ODS or FGHG, act in accordance with EMS_PLI/SP-00005 and inform the Facility Manager
In case of any leakage of ODS or FGHG, act in accordance with EMS_PLI/SP-00005 and inform the O&M Regional Manager
Ensure that technical interventions in equipment containing ODS and FCHC are performed only by certified technicians
Ensure leak detection of ODS or FGHG, in accordance to this instruction, using certified technicians
Support Regional O&M Manager in the selection and hiring of certified technicians/companies
File technical intervention records in equipment with ODS and FGHG
For each technical intervention performed in equipment with ODS or FCHC, verify the filling of the correspondent intervention record and send one copy to the Facility Manager
For each technical intervention performed in equipment with ODS or FCHC, verify the filling of the correspondent intervention record and send one copy to the K_EMM_M48
Inform about acquisition of new equipment with ODS or FCHC
Update F00020 (list of equipment with regulated gases)
Ensure that, during the acquisition of fire extinguishers, only equipment without FGHG is chosen
Fill in the template EMS EU/F 00035 "Interventions in equipment with controlled substances"
Ensure the correct and complete filling of the form EMS-PLI/F-00001
File the intervention records - F00021
Verify, with the support of the EMS Manager, the correct labeling of new equipment with ODS or FCHC
Support Facility Manager in the verification of the correct labeling of equipment with FGHG
Request to control maintenance the substitution of the labels or devolution of equipment, when incorrect labels are found on new equipment
Communicate data through SINAPA (FGHG)