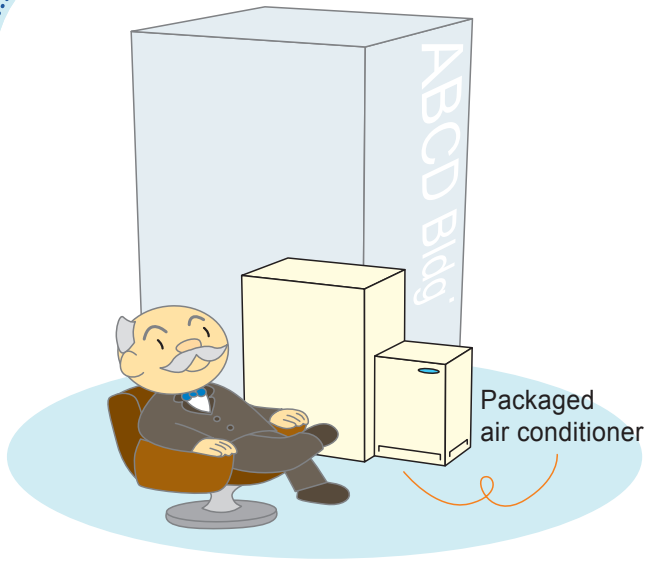
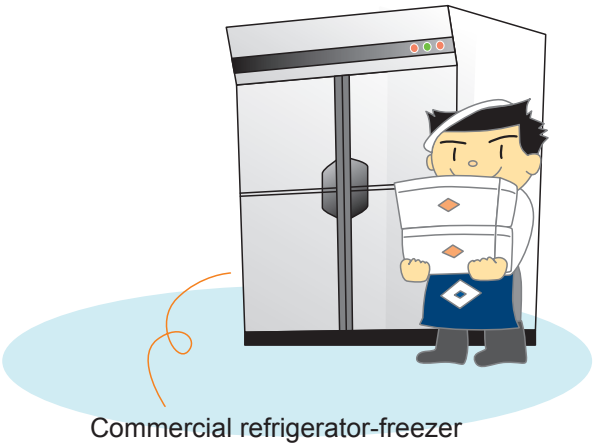
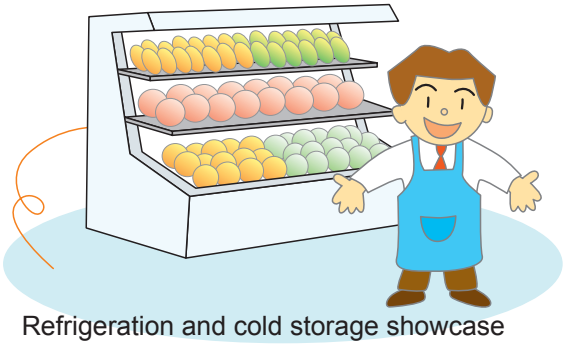
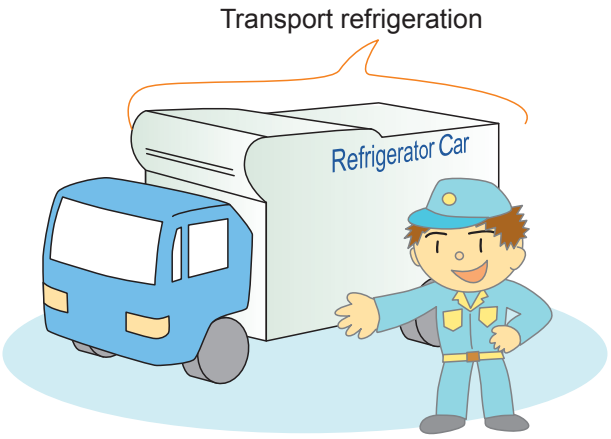
Act on Rational Use and Proper Management of Fluorocarbons

JAPAN







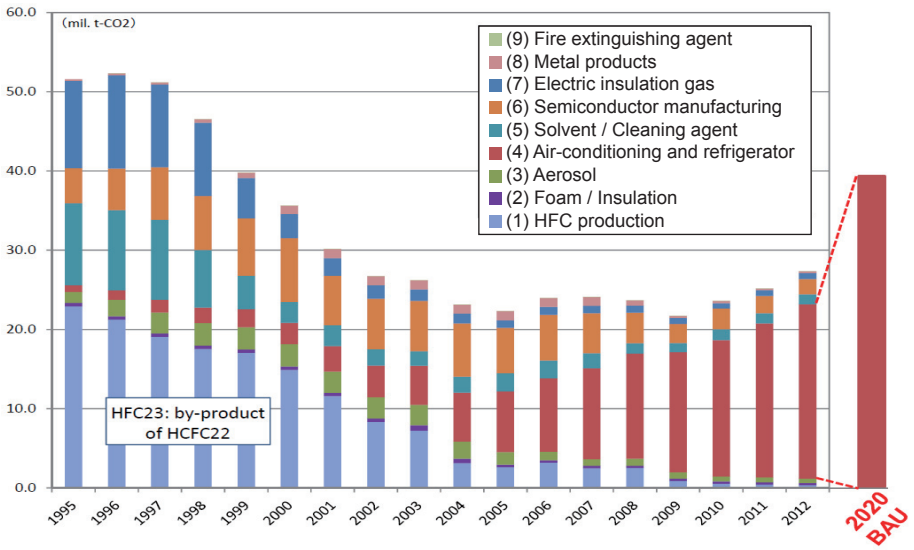


Comprehensive measures throughout the life cycle of fluorocarbons

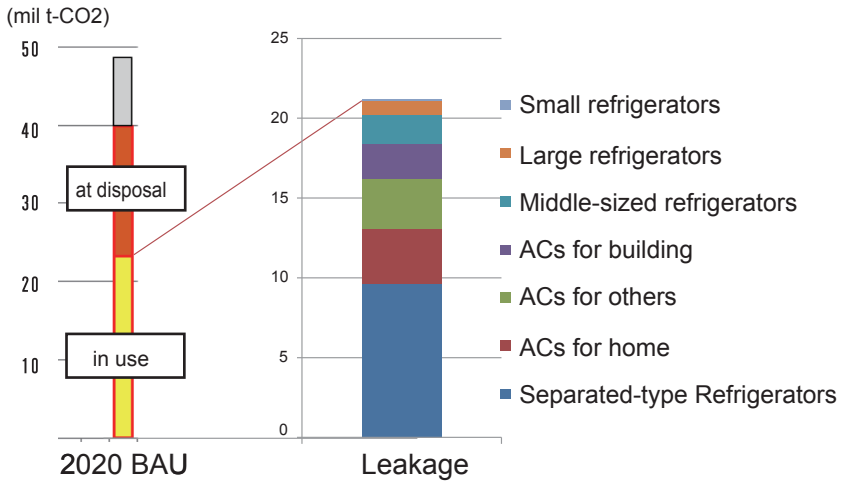
In Japan, since 2001 under the “Law Concerning the Recovery and Destruction of Fluorocarbons”, CFCs, HCFCs, and HFCs have been recovered from commercial refrigerators and air conditioners at the time of maintenance and disposal of equipment and have been recycled or destroyed in order to prevent fluorocarbons from being released into the air.

However, HFCs emissions have been increasing rapidly and are expected to double in 2020 as compared to the emissions in 2011 from refrigeration and air conditioning equipment. The recovery rate of fluorocarbons from end-of-life commercial refrigerators and air conditioners remained low (about 30%) and it was found out that refrigerant leakage from the equipment in use was much higher than expected due to poor maintenance, aging, etc.

In light of this, the government of Japan decided to amend and strengthen the “Law Concerning the Recovery and Destruction of Fluorocarbons” in order to implement comprehensive measures throughout the life cycle of fluorocarbons. The amended law has come into force on 1 April 2015 as the “Act on Rational Use and Proper Management of Fluorocarbons”.



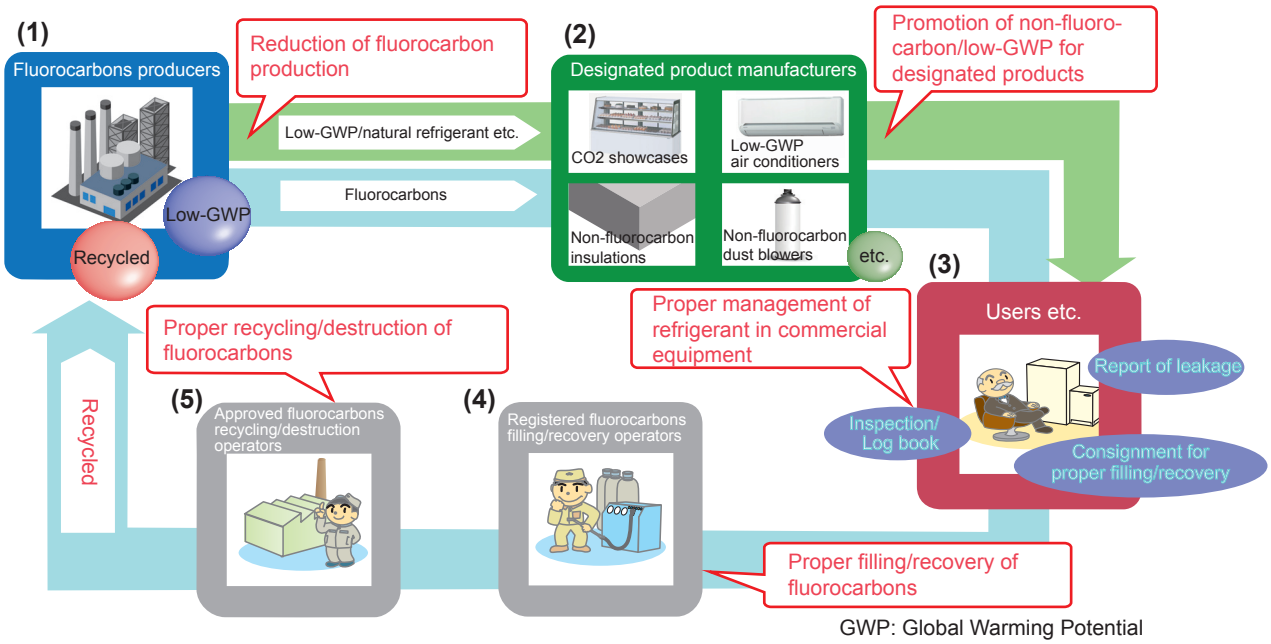
Estimated fluorocarbon emissions from refrigeration and air-conditioning in 2020



Estimated fluorocarbon emissions and leakages by sector in 2020 (BAU)

Outline of the Act on Rational Use and Proper Management of Fluorocarbons

Life cycle of fluorocarbons



GWP: Global Warming Potential

Major responsibilities of stakeholders

＜Measures for the rational use of fluorocarbons＞

(1) Fluorocarbons producers

Producers and importers of fluorocarbons must make the rational use of fluorocarbons, including the production of alternatives for fluorocarbons in accordance with the evaluation criteria established by the national government. (See page 4 for details.)

(2) Designated product manufacturers

Manufacturers and importers of designated product must strive to reduce environmental impact due to fluorocarbons in accordance with the evaluation criteria established by the national government. (See page 4 for details.)

＜Measures for proper management of fluorocarbons used for specified products＞

(3) Users/ maintenance operators/ disposal operators of specified products

Users of specified products carry out inspection of the equipment in accordance with the evaluation criteria for initiatives by users. (See page 5 for details.)

They must report calculated leakage amount to the national government if there is leakage of a certain amount or more of fluorocarbons. (See page 5 for details.)

When filling and recovery of fluorocarbons or disposal of equipment (including transfer of equipment for the purpose of using it as the raw material or parts of new equipment) is necessary, maintenance operators and disposal operators of specified products must consign filling/recovery of fluorocarbons or deliver fluorocarbons to a registered filling/recovery operator.
(See page 6 & 7 for details.)

(4) Registered fluorocarbons filling/recovery operators

Registered fluorocarbons filling/recovery operators must comply with the filling/recovery criteria in filling or recovering fluorocarbons. If they do not recycle recovered fluorocarbons by themselves, they must deliver fluorocarbons to an approved fluorocarbon recycling operator or an approved fluorocarbon destruction operator. (See page 6 & 7 for details.)

(5) Approved fluorocarbons recycling/destruction operators

Approved fluorocarbons recycling/destruction operators must recycle or destroy delivered fluorocarbons in accordance with the standards for the recycling/destruction of fluorocarbons.
(See page 6 & 7 for details.)

■ Specified products are commercial refrigerators and air conditioners containing fluorocarbon refrigerants. (Automobiles' mobile air conditioners are sepately regulated under a different law, i.e. the "End-of–life Vehicle Recycling Law".)

Measures for fluorocarbon producers and designated product manufacturers

Fluorocarbon producers

Producers and importers of fluorocarbons are required to:

- Reduce GWP of fluorocarbons produced or imported and/or replace fluorocarbons with non-fluorocarbons; and
- Install facilities necessary for the production of alternative gases, improve technology, and make efforts for recovery, destruction, and reclamation of fluorocarbons.

Formulation of forecast of fluorocarbon usage by the national government

The national government formulates and discloses the forceast of the domestic usage of fluorocarbons (HFC) to producers and importers of fluorocarbons.

Formulation of fluorocarbon use rationalization plan by producers etc.

Based on the forecast of the fluorocarbon usage formulated by the national government, gas producers and importers formulate and disclose their "Fluorocarbon use rationalization plan", which include the following items:

- The target for reducing the shipping amount of fluorocarbons.
- Matters concerning facility installation and technology improvement for rational use of fluorocarbons.

Evaluation of initiatives

After the end of each fiscal year, the national government requests gas producers and importers to report the shipping amount of fluorocarbons in the previous fiscal year.
The national government evaluates and discloses the state of initiatives implemented by gas producers and importers in the fiscal year following the year when the reduction target has been set, taking into consideration the opinion of the advisory body.

Designated product manufacturers

Manufactures and importers of the designated products are required to replace high-GWP products with products using low-GWP or non-fluorocarbon alternatives in order to reduce climate impact. The target GWP value is set based on the lowest GWP (weighted average by volume) among the designated products in the market in Japan and also in consideration of safety, energy efficiency, affordability, etc.

Designated products *	Refrigerant currently in use (GWP)	Target value (GWP)	Target year
Room air-conditioning	HFC-410A (2090) HFC-32 (675)	750	2018
Commercial air-conditioning (for offices and stores)	HFC-410A (2090)	750	2020
Mobile air-conditioning (for passenger cars of passenger capacity less than 11 people)	R134a (1430)	150	2023
Condensing unit and refrigerating unit (except equipment of the rated capacity of the compressor 1.5 kw or lower)	HFC-404A (3920) HFC-410A (2090) HFC-407C (1774) CO2 (1)	1500	2025
Cold storage warehouse (for more than 50,000 m^3 , new facilities)	HFC-404A (3920) Ammonia (lower than 10)	100	2019
Rigid urethane foam insulation (for spray foam for house building materials)	HFC-245fa (1030) HFC-365mfc (795)	100	2020
Dust blowers (except for applications that require non-flammable)	HFC-134a (1430) HFC-152a (124) CO2 (1), DME (1)	10	2019

* Other types of product will be added to the designated products, depending on the availability of alternatives.

Refrigerant management by commercial refrigeration and air-conditioning equipment users

Enterprises and businesses that own commercial refrigeration and air-conditioning equipment are required to fullfil the responsibilities as the “user” of the equipment by complying with the evaluation criteria for initiatives by users.

Compliance with the evaluation criteria for initiatives by users

Measures during normal circumstances

1) Installation at appropriate places

・In order to prevent damage of equipment, users must install the equipment at appropriate places and maintain the appropriate environment for installation.

2) Inspection of equipment

・Users must carry out simple inspection of all specified products more than once in 3 months.
・Concerning certain specified products, periodic inspection must be carried out by a person with specialized knowledge.

Inspection frequency required by the law

Product category	Capacity	Inspection frequency
Refrigerators	7.5kW or larger	more than once/year
Air conditoners	50kW or larger	more than once/year
	7.5kW or larger (smaller than 50kW)	more than once/3 years

Measures when leak is delected

3) Measures to prevent leakage and ban on filling without repair

・If refrigerant leakage is detected, a leakage-causing part must be identified and the part must be repaired as quickly as possible. In case of leakage or damage, filling of fluorocarbons is prohibited in principle until a leakage-causing or damaged part is repaired.

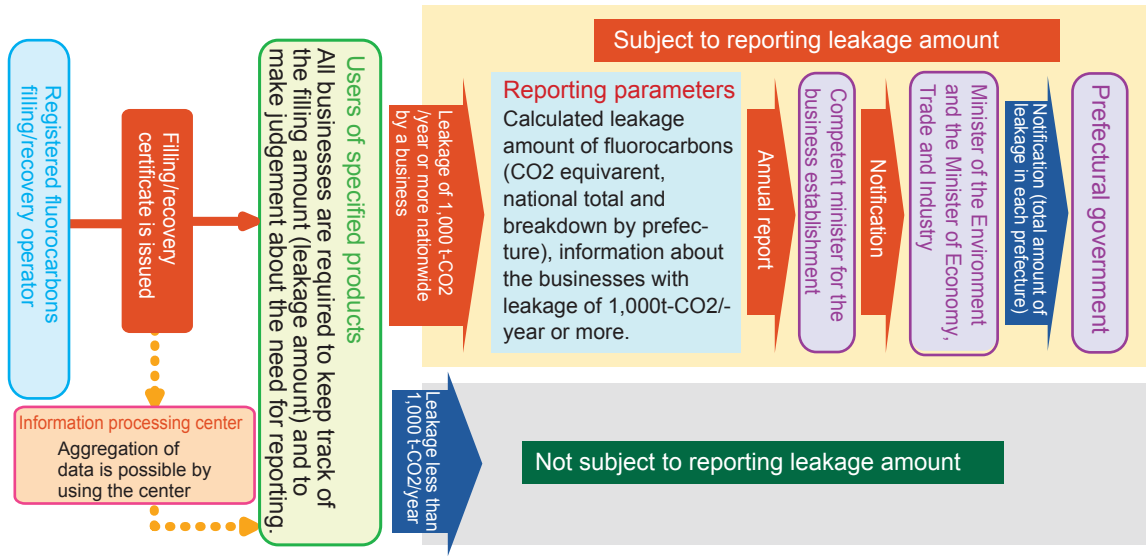
4) Record-keeping of inspection history etc.

・Users must keep the record of the history of inspection, repair of equipment, fluorocarbons filling/recovery, etc..

・Related records must be disclosed upon request of a maintenance operator etc. at the time of equipment maintenance.

Report of calculated leakage amount of fluorocarbons

- Calculated amount of fluorocarbons leaked from commercial refrigeration and air conditioning equipment (specified products) managed by the user must be reported on a company-wide basis. In case of franchise chain where the use of commercial refrigeration and air conditioning equipment is specified in adhesive terms and conditions, calculation and report must be made on a chain-wide basis.
- Regarding calculated leakage amount of fluorocarbons, the total amount of fluorocarbons filled additionally is considered to be the leakage amount of fluorocarbons. Users calculate the leakage amount based on the filling/recovery certificate issued by a registered operator.
- Users must report to the competent minister for the business establishment (by the end of July of the following fiscal year).

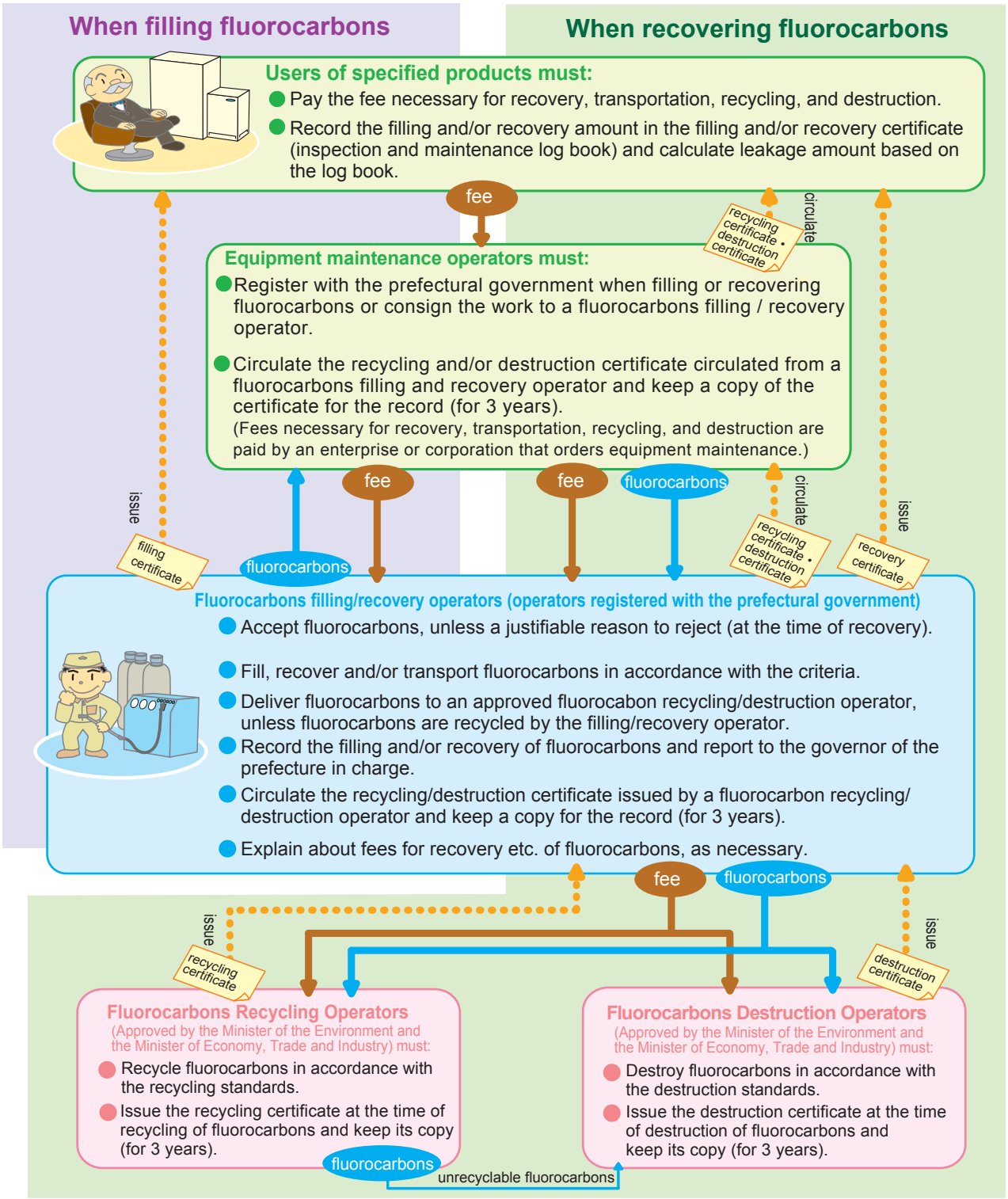


The amount of refrigerant leakaget（CO2-t）＝Σ{(the amount of refrigerant charged to refill the equioment (kg) - the amount of refrigerant recovered (kg)) * GWP of refrigerant)} / 1000

Filling, Recovery, Recycle and Destruction of Fluorocarbons

At the time of maintenance

Filling and recovery of fluorocarbons at the time of maintenance of commercial refrigeration and air conditioning equipment (specified products) must be consigned to a registered fluorocarbons filling and recovery operator. The filling and recovery operator issues the filling and recovery certificate necessary for the calculation of leakage amount of fluorocarbons.



Use of the information processing center

- Fluorocarbons filling/recovery operators can register filling/recovery data to the information processing center, instead of issuing the certificate. (The information is electronically sent to users.)
- By using the information processing center, users can electronically manage the data about filling/recovery amount.

At the time of disposal

Recovered fluorocarbons at the time of disposal etc. (including transfer as the substance or part of a product) of commercial refrigeration and air conditioning equipment (specified products) must be delivered or consigned for delivery to a registered fluorocarbons filling/recovery operator. At the time of delivery or consignment for delivery, a specified product disposal operator must issue the recovery request document or the consignment confirmation document. After fluorocarbons are delivered to the fluorocarbons filling/recovery operator, the certificate of receipt is issued to the specified product disposal operator.

The building owner who order demolition of a building must:

- Cooperate with a demolition operator in confirming whether or not specified products are installed.

Demolition operators must:

- Check prior to demolition of a building if fluorocargon-containing equipment is installed and report to the building owner in writing (the pre-confirmation deocument).

pre-confirmation document

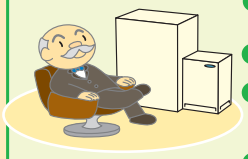
Filling/recovery operators

When fluorocarbons are delivered to filling/recovery operators.

Fluorocarbons delivery consignees

When fluorocarbons are delivered to delivery consignees.

Users of equipment (specified product disposal operators)



- Deliver fluorocarbons to a filling/recovery operator at the time of disposal etc. of equipment.
- Pay fee necessary for recovery, transportation, recycle and destruction.
- Issue the recovery request document or the consignment confirmation document at the time of disposal etc. of equipment and keep its copy (for 3 years).
- Keep the receipt certificate (or its copy) issued by a filling/recovery operator.
- Keep a copy of the reconsignment approval if issued.

fee, fluorocarbons, recovery request document, issue, receipt certificate, circulate, reclamation certificate/ destruction certificate, consignment confirmation document

Facility operators, demolition operators, industrial waste disposal operators, recycling operators (Fluorocarbons delivery consignees)

- Have to circulate and keep a copy of the consignment confirmation document issued by a specified product disposal operator.
- Have to keep the reception certificate (for 3 years)

Fluorocarbons filling/recovery operators (operators registered with the prefectural government) must:

- Accept fluorocarbons, unless there is a justifiable reason to reject.
- Recover and transport fluorocarbons in accordance with the standards.
- Deliver fluorocarbons to an approved fluorocarbons recycling/destruction operator unless fluorocarbons are recycled by the filling/recovery operator.
- Record the recovery of fluorocarbons and report to the governor of the prefecture.
- Issue the receipt certificate and keep its copy (for 3 years) at the time of receiveing fluorocarbons from disposed equipment.
- Circulate the recycling/destruction certificate issued by a fluorocarbons recycling/de-struction operator and keep a copy (for 3 years).
- Explain about fees for recovery etc. of fluorocarbons, as necessary.

fee, fluorocarbons, issue, reclamation certificate, destruction certificate

Fluorocarbon Recycling operators

(Approved by the Minister of the Environment and the Minister of Economy, Trade and Industry) must:

- Recycle fluorocarbons in accordance with the recycling standards.
- Issue the recycle certificate at the time of recycling of fluorocarbons and keep its copy (for 3 years).

Fluorocarbons Destruction operators

(Approved by the Minister of the Environment and the Minister of Economy, Trade and Industry) must:

- Destroy fluorocarbons in accordance with the destruction standards.
- Issue the destruction certificate at the time of destruction of fluorocarbons and keep its copy (for 3 years).

fluorocarbons, unrecyclable fluorocarbons

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