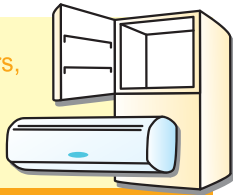




Recovery, Recycling & Destruction of CFC, HCFC, & HFC

In Japan, CFCs, HCFCs, and HFCs are controlled and they must be recovered from home appliances, cars, and commercial equipment when the equipment containing these gases is discarded. Recovered gas must be recycled or destroyed, instead of being released into the air.

Household end-of-life refrigerators, freezers, A/C and heat-pump washer-dryers



Will be recovered under "Home Appliance Recycling Law"

Request the shop from which you bought the end-of-life product or the shop from which you buy a new product to **take back** the end-of-life product

Pay for **collection, transportation and recycling** when handing over the end-of-life product

*Price for collection and transportation differs between shops.
*Recycling fee differs between product manufacturers.

After you have paid the recycling fee, request the shop to issue a **home appliance recycling ticket**

You can monitor the status of recycling on the Internet with the ID number on the ticket.



Fluorocarbons

Recovered for recycling or destruction

Iron, aluminum, etc.

Recycled as resources

End-of-life automobiles



Will be recovered under "End-of-life Vehicle Recycling Law"

Hand over the end-of-life vehicle to collection operators registered with local governments. (Car dealers or servicing workshops)

Pay recycling fee

*Recycling fee differs between car manufacturers.

When and to whom to pay

*Purchase of a new car	When purchasing	To the car dealer
*For already owned cars	Before next periodical inspection	To Transport Bureau or servicing workshops
When you discard a car before next automobile inspection	When discarding	To the collection operator

*Once the payment has been made at the time of purchase or periodical inspection, no more payment is required at the time of discarding the vehicle

Fluorocarbons

Recovered for recycling or destruction

Iron, aluminum, etc.

Recycled as resources

Service or discard of commercial refrigeration and A/C

Will be recovered under the "Act on Rational Use and Proper Management of Fluorocarbons"

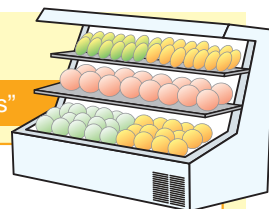
- Commercial A/C
- Cold showcase and freezers
- Commercial refrigerators and freezers
- Freezing units for transportation

Those who wish to discard any of the listed above equipment must...

Request Fluorocarbon recovery operators registered with prefectural governments to **recover fluorocarbons**

When requesting a Fluorocarbon recovery operator (i.e. car dealers or servicing workshops) registered with a prefectural or municipal government with a public health center to recover fluorocarbons,

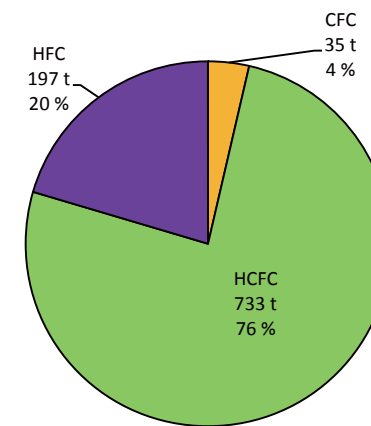
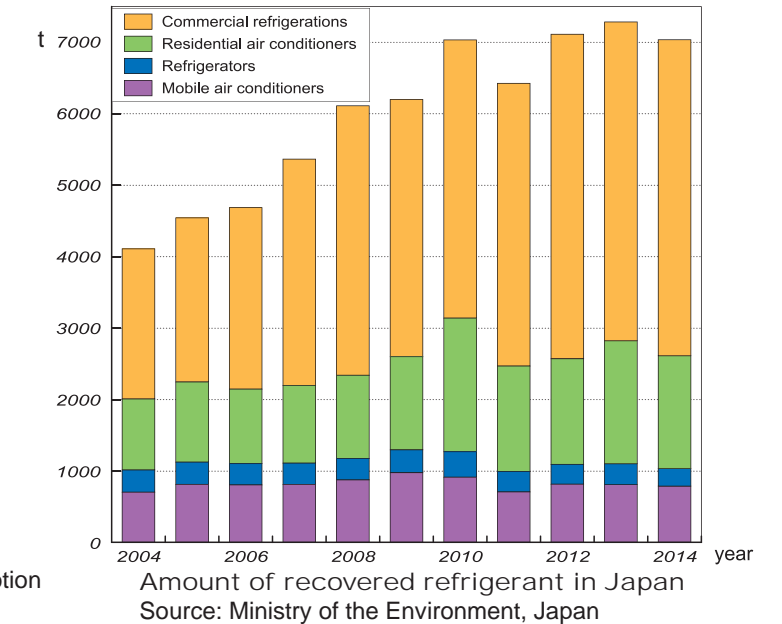
- 1) Issue a "Recovery request form" or a "Consignment confirmation form" in accordance with the relevant law. (They are applied only at the time of a disposal.)
- 2) Pay the fee for recovery, recycling and destruction of fluorocarbons.



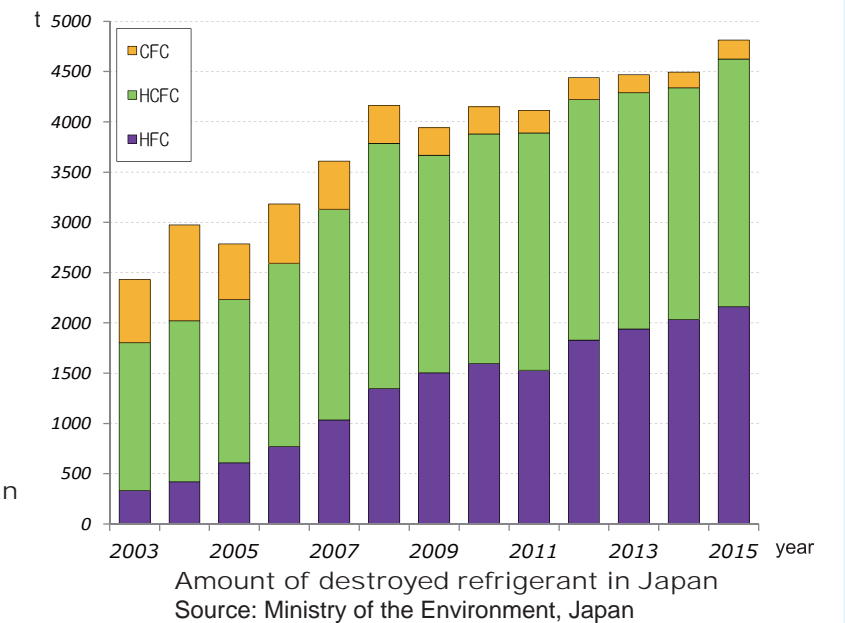
In Japan, there are more than 40 home-appliance recycling plants, more than 20 F-gas recycling facilities and more than 60 F-gas destruction facilities in commercial operation using various technologies such as superheated steam, municipal waste incinerators, cement kiln, etc. More than 7,000 tons of refrigerant CFC, HCFC and HFC was recovered from equipment in Japan in 2014, and about 965 tons of refrigerant was recycled and about 4,800 tons of refrigerant was destroyed in Japan in 2015.



Recovery of refrigerant from super-market cold showcase
Source: Refrigerants Recycling Promotion and Technology Center, Japan



Amount of recycled refrigerant in Japan in 2015
Source: Ministry of the Environment, Japan



Amount of destroyed refrigerant in Japan
Source: Ministry of the Environment, Japan

Type	Technology	Decomposition capacity (indicative)
Devoted system	Superheated steam	25 kg/h
	Submerged combustion	10 kg/h – 300kg/h
	Ark plasma	Large 10 kg/h Small 1 kg/h – 2 kg/h
	Solid alkali reaction	10 kg/h
	Catalyst	6 kg/h
Multipurpose system	Municipal waste incineration	10 kg/h – 120 kg/h
	Cement kiln, Lime calcination furnace	10 kg/h – 50 kg/h
	Electric furnace	50 kg/h

Major F-gas destruction technologies in use in Japan and their capacity ranges