



GOVERNMENT OF BERMUDA
Ministry of Home Affairs

Department of Environment and Natural Resources
Pollution Control Section

Permitting of Refrigerant Handlers
Residential & Commercial HVAC Systems

This is to certify that I have read and understood the following 7-pages of conditions for a permit for an individual to handle refrigerants. This permitting process is authorised by the Environmental Authority and administered by the Department of Environment and Natural Resources under the 'Permissions' requirements of the Clean Air Act 1991, Rules 1993 and Regulations 1993. By signing this document I agree to operate in a manner that is consistent with these requirements and the conditions stated herein.

Name:	<input type="text"/>	
Company:	<input type="text"/>	
Email:	<input type="text"/>	
Phone:	<input type="text"/>	
Signature:	<input type="text"/>	
Date:	<input type="text"/>	Permit No.: <input type="text" value="C"/>

Background

A worldwide effort is underway to control the amount and type of synthetic refrigerants that reach the atmosphere. In 1987 a meeting of the industrialised nations was held in Montreal, Canada, to initiate worldwide controls on chemicals that deplete ozone in the stratosphere. In particular, the Montreal Protocol called for the elimination of production of CFC and HCFC refrigerants on a schedule that began in 1992. Refrigerant aerosol spray, certain cleaning agents, and some types of fire extinguishing chemicals have already been banned, and many HVAC refrigerants are currently being phased out of use, being replaced by non-ozone depleting refrigerants.

Bermuda has obligations under the Montreal protocol 1987 to manage and report the import, usage and disposal of Ozone Depleting Substances (ODS, *i.e.* Refrigerants). To manage the usage of ODS in a responsible manner it is necessary to ensure that all personnel who handle refrigerants have been trained appropriately. The training scheme introduced by Bermuda Government with Bermuda College from 2000 to 2005 was not fully accepted throughout the industry and the purpose of this proposed permitting system is to redress this requirement.

Overview of Objectives

From the 28th February 2015 this certification process for refrigerant handlers will be mandated for all individuals who handle or manage refrigerants in domestic and commercial HVAC systems. This 'permission' under the Clean Air Rules 1993 to handle Controlled Chemicals, specifically ODS as listed in the Clean Air Regulations 1993, requires personnel to pass a course and/or assessment to US EPA Section 608 of the US Clean Air Act 1990 at Bermuda College for HVAC systems in residential or commercial premises. Equivalent qualifications will also be accepted such as City and Guilds Certificate in Handling Refrigerants Scheme 2078 or 2079-11 or 2079-12. These qualifications will be used by Bermuda College to determine whether the person meets the requirements of being classed as a 'Certified Technician' in the HVAC industry.

Bermuda College will determine the equivalency of any alternative HVAC qualifications to the standard set forth in US EPA Section 608. Once this assessment at Bermuda College is complete the individual can obtain a 'Permission,' or Permit, from the Department of Environment and Natural Resources (DENR) to allow such ODS Controlled Chemicals to be handled. The duration of the Permit is for a 5 year period which is in line with the duration of the assessment period under US EPA and Bermuda College. The cost of the Permit is \$220 per 5-year period. Maintaining the 5-year US EPA 608 qualification is encouraged by DENR but is not necessary if the person has worked continuously in the HVAC industry and has attended at least one meeting at Bermuda College over each 5 year period to be informed of changes to legislation and updates to international best practice. However, the Government 5-year Permit will need to be kept current with the above conditions being met.

This permission process is being introduced ahead of future regulations to require the companies that undertake HVAC installation, servicing or disposal to become licenced. It shall be noted that under the Clean Air Regulations 1993 (Section 5) it is unlawful for any person to vent refrigerants of any type to the atmosphere except under, and in accordance with, a valid permission issued to him by the Authority for this purpose.

This permit addresses the environmental concerns associated with the correct handling and waste management practices of refrigerant gases. The permit will ensure that permit holders are aware of the latest requirements of the Montreal Protocol and Clean Air Regulations 1993. Permit holders are expected to also have other qualifications, to be determined by the Department of Workforce Development or equivalency in other developed jurisdictions (*i.e.* UK, US, Canada, etc), to demonstrate that they are qualified to install or service HVAC equipments.

Applicability

The following personnel require a permit if they undertake the following activities:

- Installation, Servicing, Maintenance of Residential and Commercial HVAC systems.¹
- Purchasing and importation of refrigerant gases in cylinders (Excludes vehicle refrigerant ¹).

Activities such as the installation of self contained, non-split, window HVAC units that do not require any filling of refrigerant gases will not require a refrigerant handlers permit.

The following categories of personnel are exempt from needing to be a Certified Technician before they can handle refrigerants:

¹ Automobile air conditioning systems will require a permit from a later date to US EPA Section 609 – Date TBD

- Trainees are exempt for up to 2 years, but they must work under the direct supervision of a Certified Technician and must be enrolled in a recognised training course to obtain certification.
- Personnel only undertaking brazing, soldering or welding on a piece of HVAC equipment are exempt if they hold a recognised qualification to undertake such activities AND if they are supervised by a 'Certified Technician.'

The requirements set forth in this document are for persons handling refrigerants to fulfil under the Clean Air Act 1991 and associated Rules 1993 and Regulations 1993 and also under the good practice set forth in US EPA Section 608 (or equivalent).

These requirements cover the following management processes:

1. Certification of refrigerant handlers
2. Safe disposal of refrigerated equipment
3. Repair of systems with substantial leaks
4. Recovery/recycle equipment
5. Acceptable levels of pressure for recovery
6. Reuse of recovered refrigerant
7. Reporting

1. Certification of Refrigerant Handlers

Effective 28th February 2015, refrigerant may only be sold by, or sold to, or handled by qualified personnel who have been certified with a 'Permit' by the Department of Environment and Natural Resources. The attached flow diagram (Figure 1) describes the process for first time applicants and experienced applicants to follow. Depending on existing qualifications and experience the process requires the applicant to register at Bermuda College ² for either:

- (i) Course (full or refresher) and test to US EPA 608 or
- (ii) US EPA 608 test-only or
- (iii) If a person already has valid US EPA 608 Certification (or equivalent) and can demonstrate that they have been working continuously in the HVAC industry for 5-years or more since then the Permit may be re-issued upon application providing the person has attended a meeting (or two) at Bermuda College with the HVAC Instructor, Mr Canny Roberts. The meeting will provide details of updates to legislation and changes to international best practice over the past 5+ years since their last Permit or US EPA Section 608 certificate (or equivalent qualification) was issued.

The course and test is to the requirements of US EPA Section 608 of the US Clean Air Act 1990 and can be taken through Bermuda College to achieve the qualification of 'Certified Technician'. Bermuda College will also consider equivalency of valid alternative qualifications from other countries. 'Certified Technicians' will hold the same authority and responsibilities in Bermuda as their qualification would allow in the US.

A 'Permit' for refrigerant handlers is currently available from the Department of Environment & Natural Resources. It is proposed that all refrigerant handlers operating in Bermuda shall obtain a permit to handle refrigerants by the 28th February 2015. After this date refrigerants may only be sold or handled by qualified personnel who have been certified by the Department of Environment &

² Contact Mr Cannoth Roberts at Bermuda College on Tel: 717 1040 or croberts@college.bm.

Natural Resources as a 'Certified Technician'. Furthermore, no individual may handle, charge, recover, or dispense refrigerant in any manner unless they are a 'Certified Technician' under the Bermuda College assessment criteria and permitted to do so by the Department of Environment and Natural Resources.

The course at Bermuda College will address the proper procedures for recovery and handling of refrigerant, aspects of ozone depletion and its effects, and knowledge of Bermuda's Clean Air Act 1991 and Regulations 1993 and international regulations.

Before an individual can be certified, they must provide a company-signed letter indicating that the organisation that employs them has at least one approved recovery unit (in good working order) that can be deployed either (i) with every service vehicle or, at the very least (ii) to every HVAC job site that is undergoing servicing or removal of HVAC units.

2. Safe Disposal of Refrigerated Equipment

All equipment or appliances that hold refrigerant and oils and that are being taken out of service, including non-refillable source refrigerant cylinders, are required to have their oils and refrigerant recovered to the vacuum levels described herein. This recovery shall be done by Certified Technicians at the point of dismantling. Small quantities of domestic units may be brought to the Airport Waste Management Facility for oil and refrigerant removal.

The requirement to recover refrigerant shall apply to all appliances, even those that contain the newer refrigerant blends, as these are known to behave as strong greenhouse gases.

Before being delivered to the Airport Facility for disposal or to the Governemnt Quarry (by arrangement), all refrigerated equipment and appliances must have a yellow sticker with the generator number (Government Permit Number) attached to it to certify that the refrigerant and oil have been removed. Stickers are available from the Waste Management Section, Ministry of Public Works, 31 Palmetto Road, Devonshire (Tel: Ms Flood-Gordon 278-0563). HVAC pumps shall also be drained of oil and the oil disposed of to approved Government facilities (*i.e.* Tynes Bay Drop Off Facility or Sallyport Hazardous Waste Facility).

3. Repair of Systems with Substantial Leaks & Reporting

Certified Technicians who service refrigerant systems that have a refrigerant capacity greater than 50 pounds shall notify the Environmental Engineer of the Department of Environment and Natural Resources by email (see footer) within 24 hours or the next business day if the following amounts of refrigerant have been lost:

- >15% per 1-year for systems providing 'Comfort Cooling', or
- >35% per 1-year for systems providing 'Commercial Refrigeration' (*i.e.* refrigerators, freezers, computer server centre cooling, etc)

Furthermore the Certified Technician shall also notify the owner of the leaking equipment and their requirement to have it repaired.

4. Recovery/Recycle Equipment

A refrigerant recovery/recycle machine is required to be deployed either (i) with every service vehicle

or, at the very least (ii) to every HVAC job site that is undergoing servicing or removal of HVAC units. Equipment used for recovery and/or recycling of refrigerant from residential/commercial air conditioning and refrigeration systems shall be certified by a national entity for such use. It shall have the capability of self-purging itself to leave no liquid refrigerant in the unit after completion of use.

5. Acceptable Levels of Pressure For Recovery

Residential/commercial refrigeration and air conditioning systems shall be recovered to a vacuum of 100 microns (*i.e.* 0.0039 inches of mercury absolute, 0.00193 psi, 0.013 kPa) and be held there for 5 minutes before opening the system for service.

Exceptions to the recovery levels

Some minor releases are necessary or difficult to prevent. It is acceptable to vent minor amounts of refrigerant in the following situations:

- i) Purging of hoses or hose connections to eliminate noncondensable gases. It is recommended that low loss fittings at the ends of all service hoses be used to keep such emissions to a minimum.
- ii) Venting of dilute amounts of a compliant refrigerant appropriate to the HVAC system that is mixed with nitrogen gas for the purpose of leak detection.
- iii) Small leaks in equipment not classified as substantial.
- iv) Accidental leaks occurring when practising good faith efforts to capture and control refrigerants. These accidental releases shall be deemed “*de minimus*.”

Using refrigerant gases to clean heat exchangers or any other component is not permissible.

6. Reuse or Disposal of Recovered Refrigerant

Recovery of refrigerant is only the first step in containing refrigerant removed from a system. The recovered refrigerant may be dispensed by any of the following three ways:

- i) For refrigerant that has been removed by either recovery or recycling equipment from a residential or commercial appliance, it is acceptable to charge the refrigerant back into the original system, or any other system of the same refrigerant type.
- ii) Refrigerant removed from residential/commercial systems that can not be reused or recycled can be brought by appointment to the Ministry of Public Works Refrigerant Reclamation Facility, Sallyport, Dockyard. Tel: 278-0562. This Government facility re-packages and exports the waste refrigerant to the US for thermal destruction at a subsidised and competitive price of \$5 per pound.
- iii) Refrigerant removed from residential/commercial systems that can not be reused or recycled can also be sent overseas for processing by companies who possess an 'Export Permit' issued by the Department of Environment and Natural Resources. Application for an Export Permit for a Controlled Chemical can be found at: www.gov.bm.

It is expected that the owners of appliances will bear the cost of recovery and dispensing of refrigerant. The most economical and cost competitive method of dealing with recovered refrigerant is to reuse it

according to step (i) above.

7. Reporting Requirements

Reporting to the Department of Environment and Natural Resources annually for the January to December period by the 31st March of the following year is required for the following, unless stated otherwise:

- Systems that have leakage of refrigerants greater than 15 or 35% of the charge volume (See Section 3) for the system over a 1 year period. This is to be reported to DENR via email (see footer) within 24 hours or the next business day upon detection by the Certified Technician.
- Certified Technicians shall provide to their respective contracts departments a measure of time and effort for personnel to complete the activities associated with the planned disposal or reuse/recycling of refrigerants for each job. Companies will be expected in the new regulations to show these disposal, reuse or recycling costs within all quotations and invoices to their customers, including those of nil value.
- Notify the Department of Environment and Natural Resources in writing if you change employment to a new company in the HVAC industry.
- Numbers of HVAC systems drained prior to equipment disposal (*i.e.* Numbers of yellow stickers attached and signed by the Certified Technician).

Advice Note

1. The approved training and certification course for refrigerant handlers or test-only to US EPA Section 608 is held at the Bermuda College at a frequency that is aligned to the demand. For enrollment and further information on the course, contact the Faculty of Adult and Continuing Education, Mr Cannoth Roberts (Tel. 717-1040 or 236-9000 ext. 4492). You are encouraged to contact the College as soon as possible to schedule the course and test, test-only or for assessment of your existing qualifications before the Government Permit can be applied for. This process needs to be completed by 28th February 2015.

FIGURE 1. Flow Diagram of the Permitting Process for Refrigerant Handlers

