

Safe Handling, Transport and Storage of ODS

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**This presentation contains
safety instructions to follow
in order to
prevent any accident!**

Safety Issues

- ODS Chemicals can be harmful to humans.
- Pressurized Cylinders are prone to explosion if mishandled.
- Mishandling will release the ODS in the air-defeating the very purpose of the control.



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- What is **REFRIGERANT** ?

REFRIGERANT

- A volatile substance that is widely used in refrigeration and air conditioning as heat absorbent.
- In refrigeration and air conditioning system, it is considered as the “blood” of the system.

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- **What are the effects of refrigerant to human health ?**

INHALATION TOXICITY

- **Excessive exposure of refrigerants may cause health effects that can include temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, loss of coordination and even loss of consciousness or death.**

- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.



SKIN AND EYE CONTACT

At room temperature, most of refrigerant vapors have little or no effect on the skin or eyes. However, in liquid form, they can freeze skin or eyes on contact causing frostbite.




IN CASE OF SPILLS OR LEAKS



SPIILLS OR LEAKS

- **If large release of vapor occurs, such as from a large spill or leak, the vapors may concentrate near the floor or in low elevation areas, which can displace the oxygen needed for life resulting in suffocation. Evacuate everyone until the area has been well ventilated.**

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- **Do not touch or walk through spilled material.**
 - **Stop Leak if you can do it without risk IF NOT , ALLOW SUBSTANCE TO EVAPORATE.**
 - **If possible turn up leaking cylinders so that gas escapes rather than liquid**
 - **Keep unauthorized personnel away**
 - **Ventilate the area**

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- **What is the proper attire during handling of refrigerants ?**



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF FINANCE
BUREAU OF CUSTOMS
MANILA 1099

October 14, 2004

CUSTOMS MEMORANDUM ORDER

NO. 29-2004

TO: All Collectors of Customs
All Examiners/Appraisers
All CHS/ESS Personnel
All Others Concerned

SUBJECT: Guidelines in the Application and Use of Refrigerant Identifier/
Analyzer in Testing Suspicious Shipments of Ozone Depleting
Substances (ODS) and its Alternatives and ODS Using/
Containing Products and Equipment

I. OBJECTIVES :

1. To define the procedures and responsibilities in the application and use of Refrigerant Identifier/Analyzer in the monitoring and control of importation of ODS and ODS alternatives as well as in using ODS containing product/equipment.
2. To comply with the Bureau's commitment in the scheduled phase out of ozone depleting substances as mandated by the Montreal Protocol.

II. DEFINITION OF TERMS:

For the purpose of this memorandum the definition of the following terms should be as follows:

1. The MONTREAL PROTOCOL on substances that deplete the Ozone Layer is an agreement among 129 countries, including the Philippines, which limits the production, application and use of the most common ozone depleting substances like CFC's and provides for the phase-out of those chemicals; the protocol to the Vienna Convention, signed in 1987, which commits Parties to take concrete measures to protect the ozone layer by freezing, reducing and phasing-out the production and consumption of controlled substances.
2. OZONE DEPLETION is the process by which stratospheric ozone molecules are destroyed by man-made chemicals leading to a reduction in its concentration.
3. OZONE DEPLETING SUBSTANCES (ODS) refers to those substances that significantly deplete or otherwise the ozone layer in a manner that is likely to result in adverse effects on human health and environment such as but not limited to chlorofluorocarbons, halons and the like. ODS are chemicals substances that have the potential to react with ozone molecules in the stratosphere, any substance which is controlled under the Montreal Protocol and its amendments. ODS include CFC's, HCFC's, Halons, carbon tetrachloride, methyl chloroform, hydro-bromofluorocarbons, bromochloromethane and methyl bromide.

- 2 CMO-29-04
4. ODS-BASED PRODUCT/EQUIPMENT - product or equipment which contains ODS, including equipment whose continuous functioning relies on the use of ODS.
 5. OZONE DEPLETION POTENTIAL (ODP) - a measure of substance's ability to destroy stratospheric ozone, based on its atmospheric lifetime, stability, reactivity and content of elements that can attack ozone, such as chlorine and bromine. All ODPs are based on the reference measure of 1 for CFC-11.
 6. Refrigerant 134A (TETRAFLUOROETHANE) is colorless, non-flammable gas atmospheric pressure with a slight ethereal odor supplied in low pressure steel cylinders. It is an alternative chemical for ozone depleting substances especially for CFC 12 (dichlorodifluoromethane) which is an ozone depleting substance (ODS) and regulated by the DENR-EMB pursuant to R.A. 6969 and our commitment to the Montreal Protocol.
 7. CFC 12 (DICHLORODIFLUOROMETHANE) is a colorless liquid, or at atmospheric pressure non-flammable, non-corrosive gas with a slight ethereal odor supplied in low pressure steel cylinders. There is a significant demand for CFC 11 and a small demand for R-502. The demand for CFC 12 and R-502 is for servicing of refrigerators and air-conditioning systems.

III. OPERATIONAL PROVISIONS

1. Refrigerant Identifier/Analyzer, which was donated by the UNEP through the DENR to the BOC (EPU-IEG) can identify four (4) chemicals, namely: R-12, R-22, R-134A and Hydrocarbon.
2. A Refrigerant Identifier shall be issued to each and every Collection District by means of a Memorandum Receipt by the Chief, EPU-IEG. It will be under the custody of the District Commander, ESS and will be operated by the EPU-IEG operatives assigned in the area.
3. Importation of ODS and ODS alternatives are usually selected by ACOS as either *Yellow*, where only document examination is required, or *Red*, in which case both documents and physical examination is required.
4. Importation of ODS and ODS Alternatives are released from BOC only upon presentation of a Pre-Shipment Importation Clearance (PSIC) issued by the Philippine Ozone Desk, Environmental Management Bureau, DENR to accredited and registered importers (CMC 75-2003).
5. A copy of Pre-Shipment Importation Clearance is forwarded to the EPU-IEG, personally delivered by POD-EMB-DENR representative.
6. The Chief, EPU-IEG validates the importer's copy of the PSIC presented by the Customs broker/importer upon verification.
7. The Customs Broker and/or importer's representative affixes his/her signature on the BOC Copy of the PSIC.





During Handling of refrigerant:



- Always wear safety goggles!



- Always wear safety shoes!



- Always wear working clothes!



- Always wear safety gloves!

When using the Refrigerant Identifier



Safety Bans

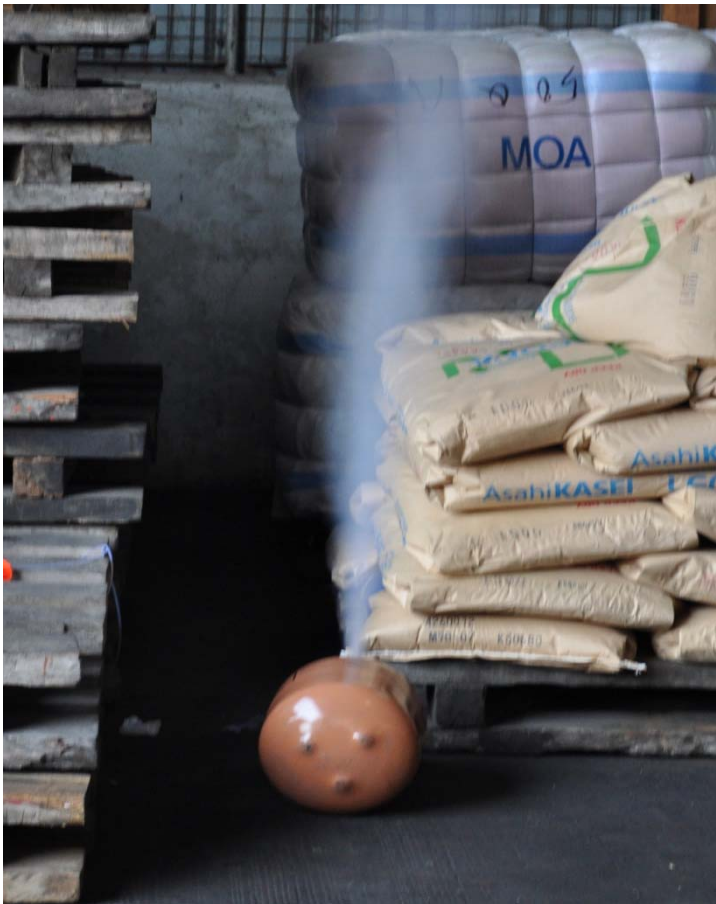


There is a strict
smoking ban
in **all** work
areas!

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- **CSC Memorandum Circular No. 17, Series of 2009 adopting and promulgating 100% Smoke Free Policy and Smoking Prohibition in all areas of government premises, buildings and grounds except for open spaces designated as smoking areas, in order to ensure a safe and healthful workplaces.**

LEAK DETECTION

- **E- Eyes** (although colorless, if forming in liquid, visible with naked eyes)
- **E- Ear** (if loud enough, a hissing sound could be indicator of leak)
- **N- Nose** (some refrigerants has pungent odor e.g. Hydrocarbon)
- **T- Thought** (if there's a leakage, try to isolate the leak, but if you will remain in the area and be overexposed, **DO NOT FIX!!** Let the substance evaporate ! Ventilate the area!



LEAK DETECTION

Never use electronic detector NOT intended for flammable refrigerants or halide leak detector if dealing with flammable refrigerants (e.g. hydrocarbon, HFC 32)



Use soap and water solution for leak testing

Safety Checklist

⌘ Handling and transport

- Use protective clothing, including safety goggles and cold-insulating gloves
- Do not eat, drink or smoke in storage areas
- Avoid handling and storage of ODS in confined spaces which lack ventilation



Safety Checklist (cont.)

⌘ Storage

- Away from the risk of fire or direct sun heating and not get in contact with hot surfaces.
- Equipped with appropriate fire extinguishing systems. Most ODS produce irritating or toxic fumes in a fire.
- Should be properly labelled and show appropriate warnings



Safety Warnings Labels



- Toxic/poisonous gases



- dangerous liquids



- pressurized gases

Safety Techniques for Handling , Transport and Storage of Pressurized Cylinder

- USE Personal Protective Equipment
- Ensure that the cylinder valves are always closed
- Extra care should be taken not to drop cylinders
- Always secure cylinder and transport in an upright position as much as possible

- Never use a lifting magnet or sling (rope or chain) when handling cylinders
- Never use the cylinders for rollers, supports, or any purpose other than to contain refrigerants
- Protect cylinders from any object that will result in a cut or other abrasion on the surface of the metal
- Do not drop or roll cylinders when transporting

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- Protect from weather and direct sunlight
 - Keep refrigerants and equipment in a well ventilated area



REFRIGERANT GAS RECOVERY & CONTAINMENT

Safety comes first. Read all safety information for the safety handling of refrigerant including the Material Safety Data Sheet provided by your refrigerant supplier. Never operate unit in an explosive environment. Wear safety glasses and protective gloves. Work area must be well ventilated.

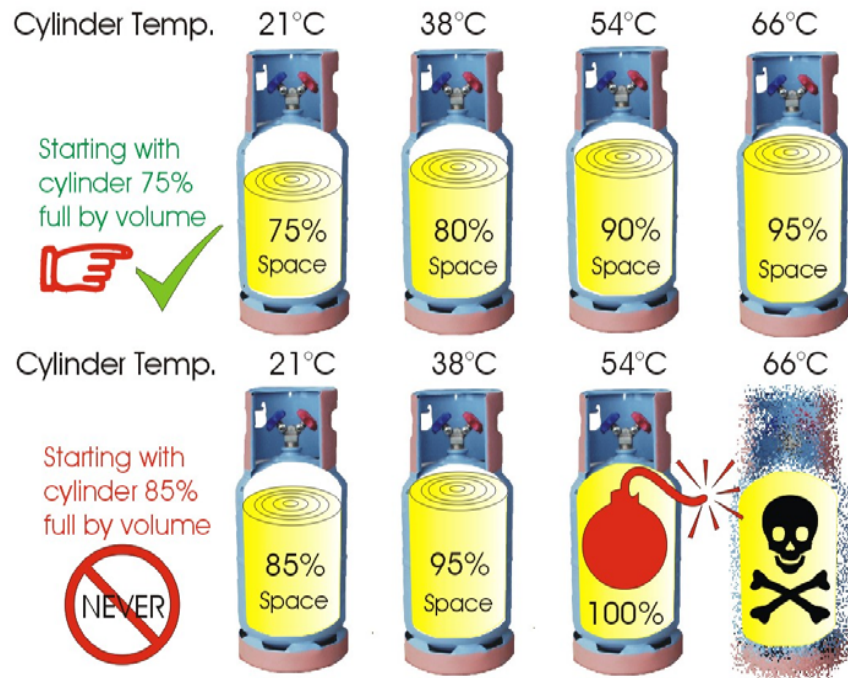
- ! Only use approved cylinders.
- ! Do not exceed the working pressure of each cylinder.
- ! Safety codes recommend that closed tanks not be

filled over 80% of volume with liquid.

Never transport an overfilled cylinder

Refrigerant expands when it gets warm and may cause tank to

- explode -
if overfilled.



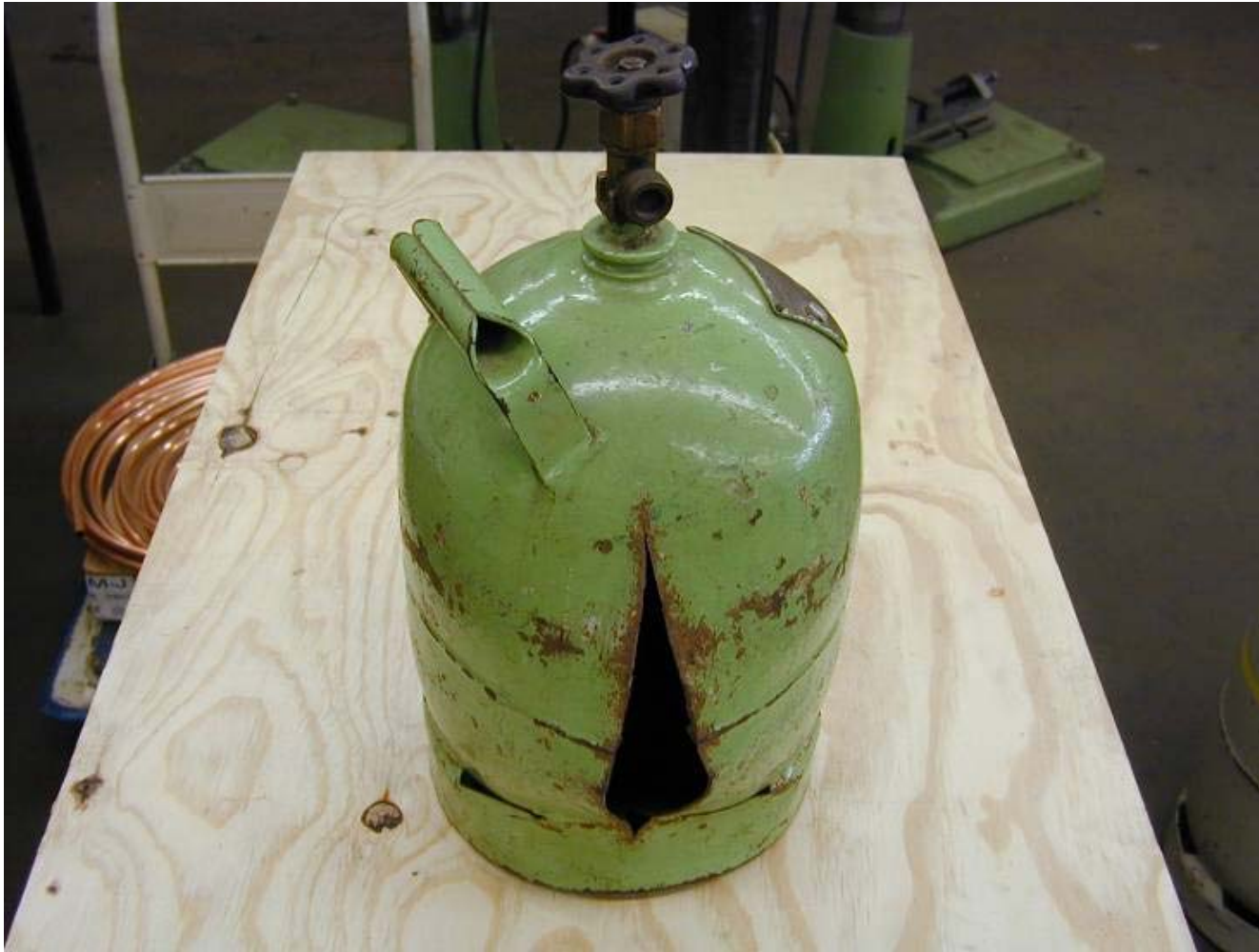
Consider THIS!



Cylinder protection



Cylinder protection



NO COMPROMISE
!



Ozone Layer



Thank you for
listening !