

SCALE



Status of Refrigerants used

<input type="checkbox"/> Room AC	: HCFC-22
<input type="checkbox"/> Packaged AC	: HCFC-22 & R407C
<input type="checkbox"/> Water-coolers	: HCFC-22 & HFC-134a
<input type="checkbox"/> VRF	: R410A
<input type="checkbox"/> Chillers	: HFC-134a, R407c & HCFC-22
<input type="checkbox"/> Refrigeration	: HCFC-22 & R404A
<input type="checkbox"/> Telecom	: HCFC-22 & R410A
<input type="checkbox"/> Others	: Mostly HCFC-22

9th April 2013





Blowing agents (used for foam production)

For example:

HCFC-141b and CFC-11



Solvents (used for cleaning)

For example:

HCFC-141b, CFC-113, methyl chloroform,
and carbon tetrachloride (CTC)

for electronic assembly production processes, precision cleaning, general
metal degreasing, dry cleaning, and
spot cleaning in textile industry



Precision cleaners



Batch cleaners

Propellants

HCFC-22 and CFCs (-11, -12, -113, -114) for deodorants, shaving foam, perfume, window cleaners, lubricants and oils



Domestic appliances

Refrigeration & Air Conditioning (with compressors)



Air conditioning compressors



Commercial Refrigeration (1)



Vending Machine



Visi-cooler

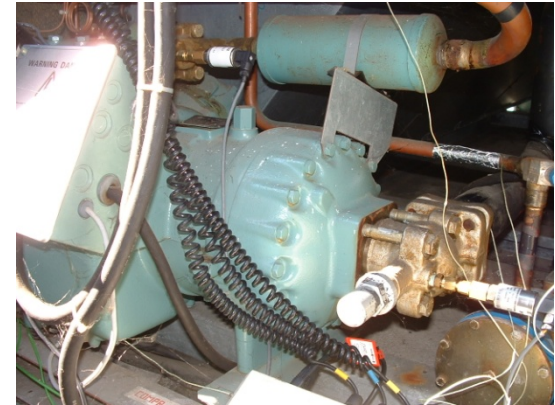


Commercial Refrigeration (2)

Supermarket chillers



Air Conditioning



Commercial Air Conditioning



**Air Conditioner
(R-22 5.0 ton unit)**



Heat pump

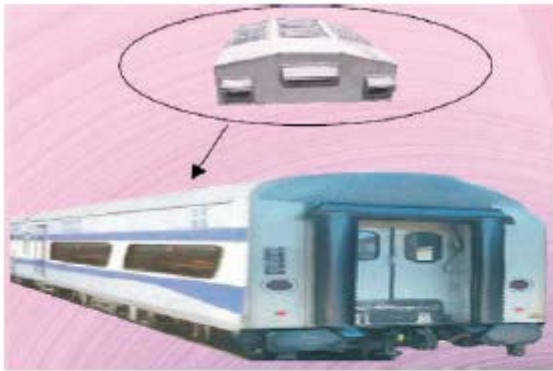


Unitary air conditioners



**Packaged Air conditioning units for medium sized
commercial establishments such as shops and offices**

Transport / Mobile AC units



**Air conditioning systems for buses / coaches,
railway coaches, truck cabs etc**



Industrial Air Conditioning



Screw chillers



Reciprocating chillers



Central air conditioning chillers



Industrial Refrigeration



Hermetic compressors



Open compressors



Walk-in coolers



Air handling units



Industry process chilling



Process chilling



Cold storages

Mobile (Transport) Refrigeration



Refrigerated
trucks
and
trailers



Reefer
containers



Condensing Units



Dehumidifiers



Heat Pumps



Ice Machine & Ice Cream Machine



Foam production equipment



Rigid polyurethane foams



Sandwich panels



Pipe insulation



Spray foam



Boards & Blocks

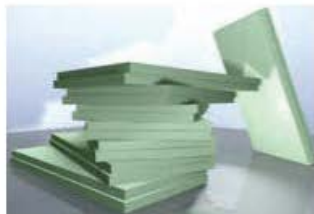


Pipe support

Extruded polystyrene or XPS foams



Boards for building insulation



Integral skin polyurethane foams



Automotive components



Furniture components

Microcellular foams



Engineering components



Shoe soles

Insulation (construction)



Insulation (shelters)



Insulation (trailers)



Fire Extinguisher



Metered-dose Inhalers (MDI)



Fumigants



DETECTION





How to Recognize ODS:

Common Identifiers





WARNING!

- Do not drop or subject this cylinder to rough handling
- Do not tamper with safety relief device in use
- Never refill this cylinder with compressed air or any other material
- Empty cylinder may contain hazardous residue. Dispose of properly.

FIRST AID

If inhaled, remove to fresh air. If breathing and artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Avoid placement of hot, give acetaminophen (aspirin). Get medical attention if inhaled by liquid or if irritation occurs.

In case of contact, flush eyes promptly with plenty of water for at least 15 minutes. Flush immediately with water. Red, hot or any other signs to which attention

REFILL
2

Portable Refrigerants Identifier

Type	Possible to check
Neutronics Ultima ID HVAC	R12, R134a, R22, R410a, and Hydrocarbons (HC); For MAC and cylinders
Ultima ID Pro - HVAC/R RI-700H	R22, R134a, R404A, R407C, R410A, R408A, R409A, R417A, R421A, R421B, R422A, R422B, R422C, R427A, and HC; Cylinders and some equipment





RESULTS

R410A
CONTAMINATED

BACK

MORE

RESULTS

R410A	98.7%
R22	1.3%

BACK PRINT DONE

RESULTS

100%
R410A

BACK

MORE

RESULTS

R410A	100.0%
R125	50.0%
R32	50.0%

BACK PRINT DONE

RESULTS

COMPONENTS OF
R410A

BACK

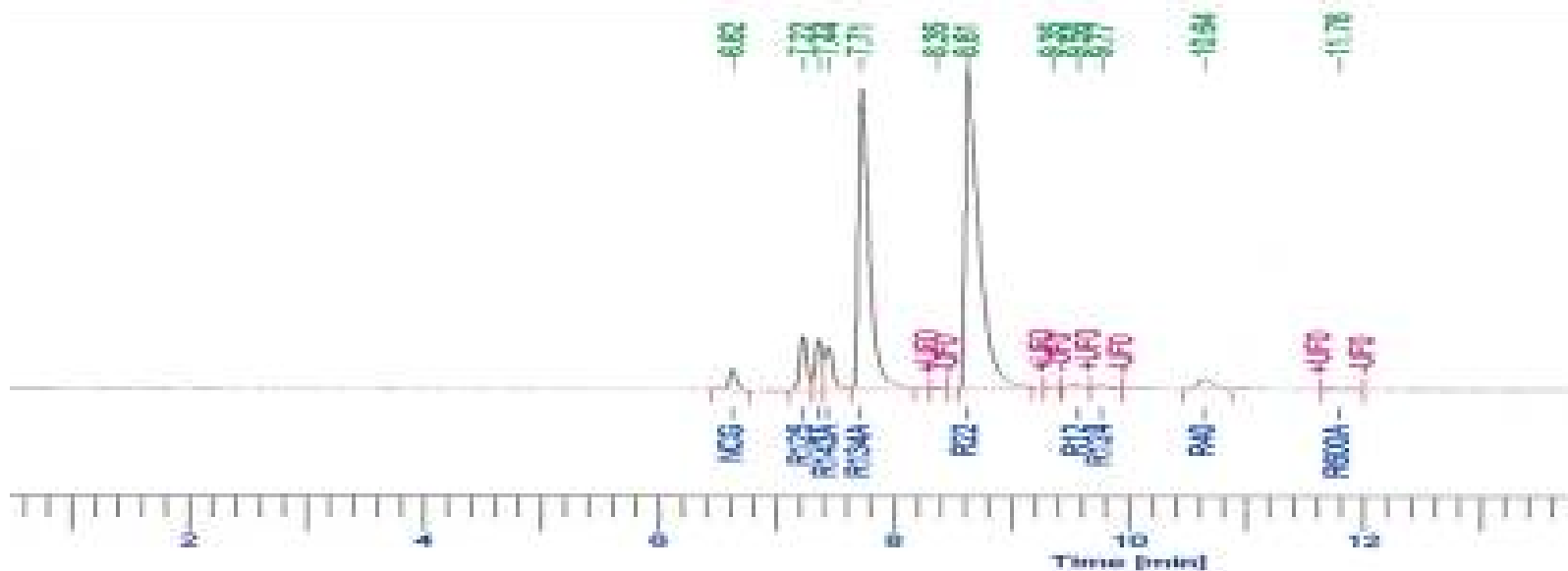
MORE

RESULTS

R125	60.0%
R32	40.0%

BACK PRINT DONE

Gas Chromatography (GC)



Safety hazards

Flammability

Explosion

Suffocation

Toxicity

Acidity

Equipment damage



DISPOSAL



ODS Destruction Operation at Holcim Indonesia



Flow Meter in feeding
system



Feedings Station for CFC
gases



Main Burner

Flame Temperature > 2000 °C

**Organic Waste will be
completely destroyed**

Flame in Cement Kiln

Cement kiln –Chichibu Taiheiyo Cement Inc.-

低温貯蔵室
low temperature storage

Gas



R-22(HCFC-22)
20kg cylinders

R-11(CFC-11)
50kg cylinders

Liquid



Collected ODS waiting to be destroyed

Approach selection

Parameters	Importing mobile destruction technologies	Retrofitting cement kilns in Nepal	Exporting ODS to United States for destruction
Capital cost	USD 200,000 for 200V/3 phase destruction device	USD 120,000 for necessary modifications required for feeding ODS in a controlled manner and monitoring hazardous emissions	None
Operating cost	USD 5-7 per kg	USD 3-5 per kg	USD 7-8 per kg
Destruction capacity	80 kg/hour	30-50 kg/hour	250 – 500 kg/hour
Pre-requisites for destruction	<ul style="list-style-type: none"> • Import of destruction device from Australia • Procurement and installation of support equipment like air compressor, cooling tower 	<ul style="list-style-type: none"> • Current cement facility should be capable of destructing hazardous waste like polychlorinated biphenyls (PCBs) 	<ul style="list-style-type: none"> • Clearance for export • US Environment Protection Agency (EPA) approval for import into US • Contract with local destruction facility on costs
Project completion time	3 months including import of technology, installation of equipment and destruction of ODS	7-8 months including identification of technology provider, retro fitment of cement kiln, performance testing and destruction of ODS	5-6 months including export clearance, import clearance from US EPA, contract with destruction facility, transport and destruction of ODS

Nepal project – co-funding

Mechanism	Geographical Requirement	Advantages	Disadvantages
Climate Action Reserve	Destruction must take place in the USA	Proven standard and methodology. Two projects have already generated credits	Sale of credits is difficult due to still impending climate action bill in US
Voluntary Carbon Standard	Destruction can take place anywhere	Established market standard, buyer comfort with VERs is high	Being voluntary market, buyers prefer visually appealing credits like wind, solar etc.
Chicago Climate Exchange	Destruction can take place anywhere	Simple procedures for earning credits, established market in the USA	Extremely low value of credits, currently trading at US\$0.10/tCO ₂ e
Japanese bilateral carbon offset scheme	Rules not yet articulated but usage of Japanese technology would be preferred	Non- market linked, speedy approvals, geographical proximity to Nepal	Scheme is still in conceptualization stage, not expected to go on ground before 2013



MESSAGE

- ✓ Methodology to calculate exact magnitude of IP infringing goods in applications traditionally associated with ODS is not defined.
- ✓ Incentives AND deterrents on IP infringing goods apply to ODS and ODS alternatives.
- ✓ Cost of storage is a major burden on Customs Administrations.
- ✓ Urgent to do more risk profiling based enforcement.
- ✓ Availability of genuine products with affordable price and in a timely manner is VERY important. >> Need to look at the distribution model.
- ✓ Safe disposal technologies AVAILABLE.





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