United Technologies

Building & Industrial Systems

EPA R-22 Briefing

January 9, 2014

AGENDA

Introduction: UTC Building & Industrial Systems

HCFC-22 "Dry Charge" Loophole

- Public safety concern
- Installed supply of R-22
- Precedent for future refrigerant phase-down proposals

UTC BUILDING & INDUSTRIAL SYSTEMS

Products & services

Elevator systems

Elevators

Escalators

Climate systems

Residential

Commercial

Refrigeration

Fire systems

Detection & Alarm

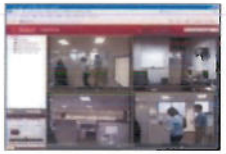
Specialty Detection

Suppression

Extinguishers

Security systems

Access control


Video surveillance

Intrusion

Services

Elevator

HVACR

Fire

Security

Energy services

INDUSTRY-LEADING BRANDS

AutomatedLogic
Autronica
Carrier
Carrier Transicold
Chubb
Delta Security Solutions
Det-Tronics
Edwards
fireye
GST
interlogix
Kidde
Lenel
Marioff
Noresco
Onity
Otis
Sensitech
Sicli
Supra
Taylor
UTEC

PUBLIC SAFETY CONCERN

REPORTED INCIDENT #1

Village Green Apartments: Peoria, IL

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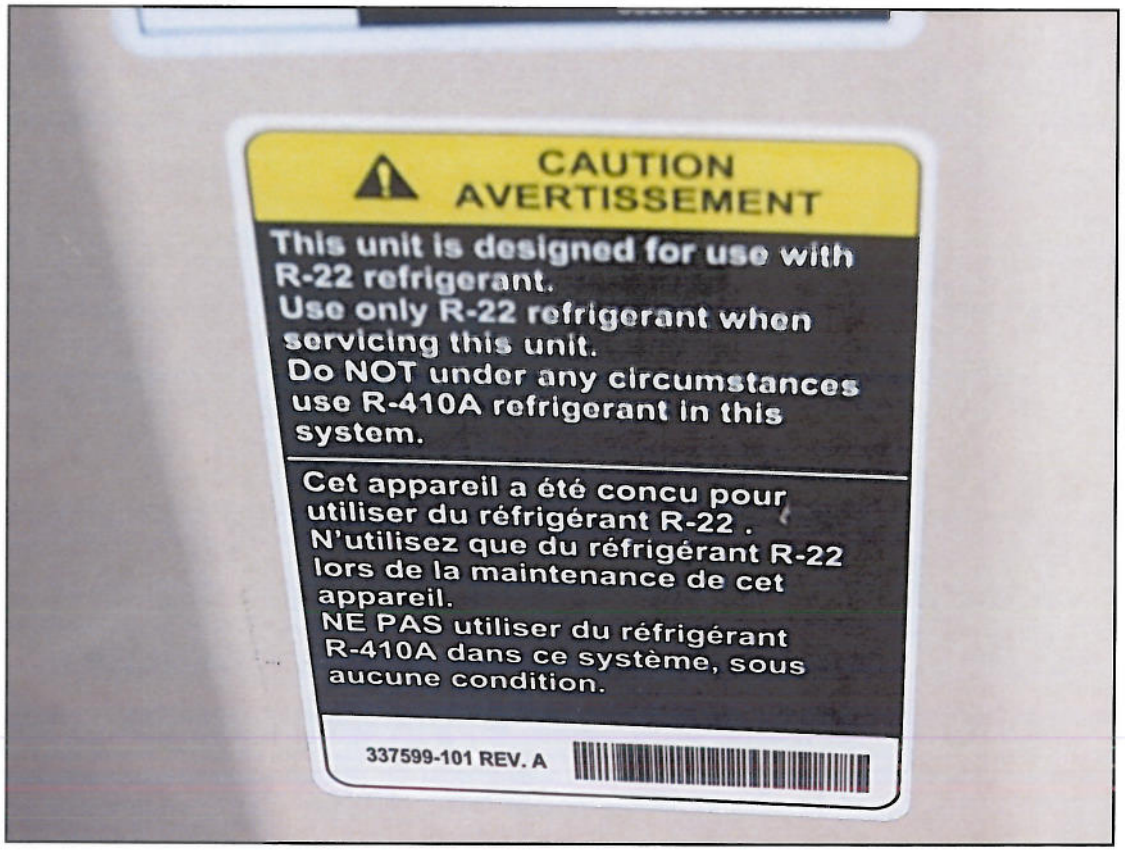
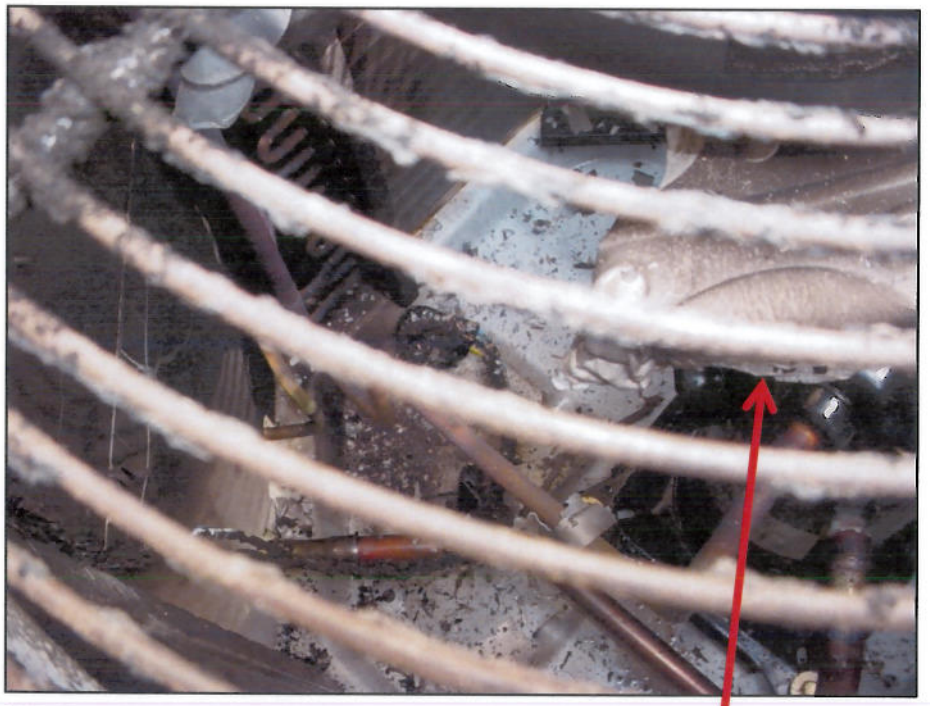
Village Green Apartments: Peoria, IL



REPORTED INCIDENT #1

Village Green Apartments: Peoria, IL



Extensive internal damage

Entire fan blade melted away

REPORTED INCIDENT #2

Stephen Mauffrey Residence: Pass Christian, MS

Product Install Date: 6/13/2013

Incident Date: 9/8/2013

Date Reported: 9/10/2013

Product Model #: R2A330GKR

Serial Number: X122170223

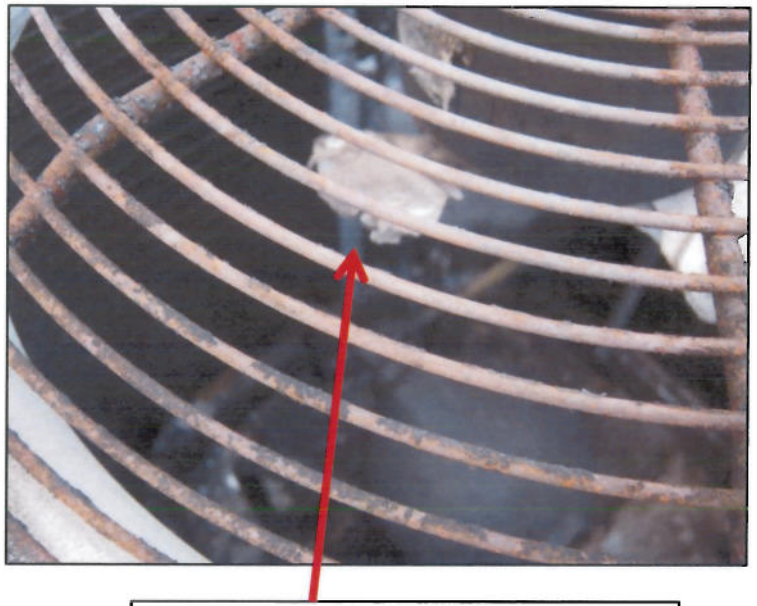
Brand: ICP (Heil)

Product Description: Dry R-22 outdoor condenser

Notes: Dealer has used 22a, but could not confirm type of refrigerant used in this unit. **Property damage**.

REPORTED INCIDENT #2

Stephen Mauffrey Residence: Pass Christian, MS



Entire fan blade melted away

REPORTED INCIDENT #2

Stephen Mauffrey Residence: Pass Christian, MS

REPORTED INCIDENT #3

Seville Apartments: Dallas, TX

Product Install Date: 9/1/2013

Incident Date: 9/16/2013

Date Reported: 9/17/2013

Product Model #: PA13NR02400GAJAA

Serial Number: 2013X70001

Brand: Payne

Product Description: Dry R-22 outdoor condenser

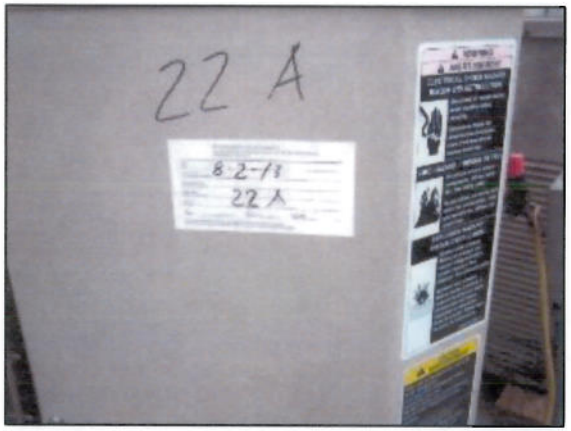
Notes: Maintenance staff confirmed that unit was charged with Enviro-Safe 22a refrigerant. Additional R-22a tanks seen in maintenance shed. **Personal injury (Technician burn)**

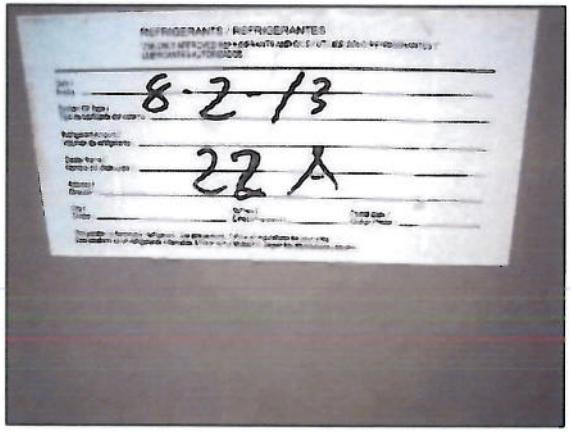
REPORTED INCIDENT #3

Seville Apartments: Dallas, TX

REPORTED INCIDENT #3

Seville Apartments: Dallas, TX





Adjacent units marked with 22a

Tanks of 22a in maintenance shed

ENVIRO-SAFE 22a

Web site claims

MSDS

22a 30/50 MSDS (832 KB, PDF)

*** In the USA only, Enviro-Safe 22a is sold as a second generation replacement for R407c, R404a, and MO99. Outside the US, Enviro-Safe 22a is sold as an R22 replacement.Not for use in R410a Systems.**

Enviro-Safe™ 22a Refrigerant is made of only the Most Pure, Quality, Refined ingredients available today.

Because Enviro-Safe™ 22a Refrigerant is so efficient you will use up to 40% less! Please see equivalencies below.

The 30 lb cylinder = 12 lbs of Enviro-Safe Refrigerant and is EQUIVALENT to 30 lbs of R22a

The 50 lb cylinder = 20 lbs of Enviro-Safe Refrigerant and is EQUIVALENT to 50 lbs of R22a

Each ounce of Enviro-Safe 22a Refrigerant is equivalent to 2.5 ounces of R22 or 2 oz. of R404a.

Source: www.es-refrigerants.com/products/details.asp?id=45&t=22a-refrigerant&Trying+ON

ENVIRO-SAFE 22a
MSDS

MATERIAL SAFETY DATA SHEET

Enviro-Safe™
22a Refrigerant 30 & 50 lb Cylinder

SECTION 1 – IDENTIFICATION

Company: Enviro-Safe Refrigerants, Inc.
600 Margaret Street
Pekin IL 61554
309-346-1110

Product Name: Enviro-Safe™ 22a Refrigerant
Proper Shipping Name: Petroleum Gases Liquefied
UN Number: UN1075
Dangerous Goods Hazard Class/Division: 2.1

CHEMTREC – TOLL FREE 24 HOUR EMERGENCY TELEPHONE NUMBER
1-800-424-9300

SECTION 2 – PHYSICAL DESCRIPTION AND/OR PROPERTIES

Appearance/Odor:	Clear, Colorless	Physical State:	Gas
Odor Threshold:	None available	Specific Gravity:	0.5066
Coeff. Water/Oil Dist.:	<1	Evaporation Rate:	Rapid
Freezing Point:	305°F	Boiling Point:	44.5°F
Vapor Density: (est.)	1.52	pH:	N/A
Vapor Pressure: (PSIG)	70° F @ 110 psi		

SECTION 3 – FIRE OR EXPLOSION HAZARD

Auto Ignition Temperature: 873°F
Flashpoint: Not Available Lower Flammable Limit (LEL): 2.15% Upp

Extinguish Media: If possible, stop flow of gas. Use water to cool fire-exposed tanks, surround shut off. Water spray, dry powder, or carbon dioxide can be directed at flame area to reduce fire leak can be stopped.

Hazardous Combustion Products: Normal combustion forms carbon monoxide.

Sensitivity to Static Discharge: Vapor may ignite if exposed to static discharge.

Explosion Data: Sensitivity to impact: Mixture is not sensitive.

Fire and Explosion Hazard: Flammable vapor may form if allowed to mix with air. Accumula are heavier than air and may travel to an ignition source.

SECTION 4 – INGREDIENTS

Hazardous Ingredients	%	Cas Number	LD50
Alkanes	100		n ap

(Enviro-Safe™ Refrigerant contains a trade secret odor of 1%. 5% unless otherwise noted.)

SECTION 5 – REATIVITY DATA

Chemical Stability: This material is chemically stable.
Conditions To Avoid: Avoid sparks, open flame or any source of ignition.
Incompatible Materials: Avoid contact with strong oxidizing agents such as chlorine, permanga
Products: This product may produce carbon monoxide with a deficiency of oxygen.
Hazardous Polymerization: will not occur.
Polymerization To Avoid: Keep separate from oxidizing agents.

SECTION 3 – FIRE OR EXPLOSION HAZARD

Auto Ignition Temperature: 873°F
Flashpoint: Not Available Lower Flammable Limit (LEL): 2.15% Upper Flammable Limit (UEL): 9.60%

Extinguish Media: If possible, stop flow of gas. Use water to cool fire-exposed tanks, surroundings and to protect personnel working on shut off. Water spray, dry powder, or carbon dioxide can be directed at flame area to reduce fire intensity. Do not extinguish flames unless leak can be stopped.

Hazardous Combustion Products: Normal combustion forms carbon monoxide.

Sensitivity to Static Discharge: Vapor may ignite if exposed to static discharge.

Explosion Data: Sensitivity to impact: Mixture is not sensitive.

Fire and Explosion Hazard: Flammable vapor may form if allowed to mix with air. Accumulation of gas is an ignition hazard. Vapors are heavier than air and may travel to an ignition source.

HCFC-22 INSTALLED SUPPLY

More than EPA proposed 2015-2019 Preferred Allocation

Source: Carrier estimates

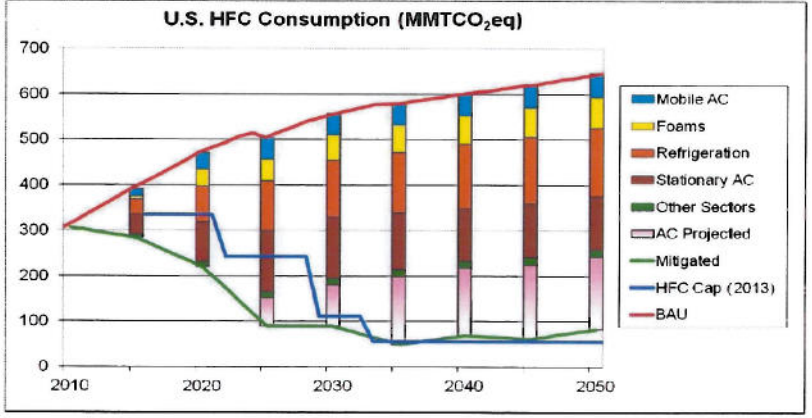
HCFC-22 LOOPHOLE PRECEDENT

EPA is changing the proposed definition of *pre-charged appliance component* to add compressors, condensing units, and coils to the list of examples of appliance components

December 2009

U.S. Environmental Protection Agency
June 2013

GRAPH 3. POTENTIAL HFC CONSUMPTION REDUCTIONS BY SECTOR FOR THE UNITED STATES



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