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Contaminated Refrigerant Poses Safety Hazard

By Barbara Carss

CANADA'S RECYCLING RULES offer a coincidental safeguard against counterfeit refrigerant, which is causing mounting safety and environmental concerns in the United States and other jurisdictions. The refillable refrigerant cylinders mandated in federal and provincial regulations for the control of ozone-depleting substances are costlier than single-use containers and thus less likely to be transgressors' choice for concealing illegal products.

Nevertheless, industry monitors warn that contraband is getting into the country, primarily via the Canada-U.S. border. Typically, counterfeit refrigerant is contaminated with methyl chloride, known as R-40, while masquerading as an allowable hydrofluorocarbon (HFC) or hydrochlorofluorocarbon (HCFC) product.

"This is a billion-dollar illicit trade in North America," says Mark Miller, Executive Director of the Manitoba Ozone Protection Industry Association (MOPIA). "It's comparable to the illegal drug trade and, any time there is a dollar to be made and traded this way, I think people are vulnerable to risk."

Refrigerant mixed with undue levels of R-40 can react with the aluminum components in cooling systems to produce volatile trimethyl aluminum that can cause fires and/or explosions. Earlier this year, the U.S. based Air-Conditioning, Heating and Refrigeration Institute (AHRI) released a guidance document to advise contractors and end-users how to detect contaminants and avoid purchasing counterfeit product.

"Contaminated refrigerants can cause a variety of issues that may range from increasing energy use and decreasing cooling performance, to significantly reducing the operating life of equipment, and even dramatic and injurious equipment failures," the AHRI report states. "In

addition, some counterfeit products contain varying amounts of ozone-depleting substances, which may be illegal in certain parts of the world under the terms of the Montreal Protocol."

The HFC refrigerant, R-134a, has been one of the most common targets for counterfeiters as the ongoing phase-out of HCFCs increases market share for refrigerants not categorized as ozone-depleting substances. Concurrently, the diminishing legitimate supply of the HCFC refrigerant, R-22, creates potentially lucrative demand.

"I think the whole issue does arise somewhat with the phase-out of R-22 and the less-than-scrupulous opportunities that people offshore are taking," suggests Warren Heeley, President of the Heating, Refrigeration and Air Conditioning Institute (HRAI) of Canada. "The issue of counterfeit product is really only part of the story. There is also the issue of bringing R-22 into the country without a permit."

Single-use refrigerant containers are permitted in the U.S., providing a cheaper vessel for counterfeiters to infiltrate the market. Meanwhile, Canada's requirement for refillable containers acts as an extra check in the system since customs officers and other enforcement officials must seize non-compliant cylinders. Miller reports that, to date, discoveries of counterfeit refrigerant in Manitoba have almost invariably occurred because inspectors were policing the containers in which it was held.

"This is where the issue has split between the U.S. and Canada," Heeley observes. "In Canada, the government decided it was more environmentally responsible for refillable cylinders to be used. In the U.S., the government was pretty significantly lobbied by some of the manufacturers and so it continues to allow non-refillable containers. That

makes it simpler for a counterfeiter to get into the U.S. market."

On the flipside, Canadians caught with counterfeit refrigerant likely have less leeway to claim they were unknowingly compromised. Heeley, Miller and the AHRI all emphasize the importance of a reputable supply chain.

For the disreputable, potential profits abound.

"Because the price point is probably half of what it would be to get it from a Canadian or U.S. known distributor, it is tempting for some to overlook those cylinder requirements," Miller acknowledges. "One cylinder of refrigerant that would retail for \$200, they can obtain [from counterfeiters] for somewhere around \$75 and then add their mark-ups."

Contractors are urged to verify suppliers' credentials and check the product packaging since lawful manufacturers generally use distinctive labelling, often incorporating holographic images, which are difficult to copy accurately. Methods of detecting contaminants – through a portable infrared analyzer, halide torch testing or gas chromatography – remain cost-prohibitive so Miller cautions consumers not to assume or expect that refrigerants have been tested.

"It costs around \$1,000 to do an analysis," he says. "Most service garages, for example, would not do any analysis of refrigerants."

Likewise, end-users can best protect themselves by ensuring that the contractors they hire are properly qualified. ■

For more information, see the Air-Conditioning, Heating and Refrigeration Institute website at www.ahrinet.org, the Manitoba Ozone Protection Industry Association website at www.mopia.ca or the Heating, Refrigeration and Air Conditioning Institute of Canada website at www.hrai.ca.