Companies Try Keeping Ice Cream Frozen, Emissions Down

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Coke, the Good Humor man and McDonald's have a temperature problem: The same chemical that makes their products cold is making the atmosphere warm.

Coca-Cola Co. and Unilever PLC, whose ice-cream brands include Good Humor and Ben & Jerry's, have millions of refrigerated beverage machines and ice-cream freezers in locations world-wide. McDonald's Corp. has thousands of restaurants, each with big refrigeration rooms and sundae machines. All these contraptions, it now turns out, are global-warming hazards.

The machines use a chemical refrigerant called HFCs, or hydrofluorocarbons. When companies began rolling out HFCs as a refrigerant about a decade ago, they were supposed to be helping the environment. The chemical they were replacing -- CFCs, or chlorofluorocarbons -- had been linked to the big environmental issue of the 1980s, ozone-layer depletion.

Now, HFCs are being fingered as a culprit in today's environmental hot-button issue: global warming. One ton of HFCs does as much atmospheric damage as 1,300 tons of carbon dioxide, the better-known global-warming gas, according to the United Nations. As a result, companies are scrambling to phase out the HFCs they just phased in.

[A hotter cool]Tonight, Coke, Unilever and McDonald's are scheduled to receive an award from the U.S. Environmental Protection Agency for their voluntary efforts to find an alternative to HFCs. The recognition by the U.S. government carries some irony: So far, the refrigerators being replaced with less-harmful models are located in Europe, where governments are moving more aggressively than Washington to curb global-warming emissions. For starters, the U.S. has rejected the Kyoto Protocol, the international treaty that forces industrialized nations to reduce those emissions.

Greenpeace, an environmental group that has been pressuring the companies to roll out climate-friendlier refrigerants, says their initial focus outside the U.S. highlights the need for caps on global-warming emissions in the U.S. "Unfortunately, there are no incentives in this country for companies to do these things," says Kert Davies, a Greenpeace official in Washington. "Therefore, the U.S. falls further behind in technological innovation."

In Europe, Unilever is beginning to roll out ice-cream freezers cooled by propane, the same hydrocarbon gas that fires up backyard barbecue grills. Coke and McDonald's, spooked by propane's well-known flammability, are choosing a different cooling agent: carbon dioxide itself.

Neither alternative is perfect, from an environmental standpoint. CO_2, after all, is the most famous global-warming gas. And pound for pound, propane is about six times as damaging to the atmosphere as CO_2, according to the U.N. But both are far less harmful to the atmosphere than HFCs.

Coke says it is introducing HFC-free machines in Europe first, because more Coke bottlers there are owned by the Atlanta parent company, rather than by franchisees, making it easier for the home office to oversee new technology tests there than in the U.S.

Unilever cites a similar business dynamic: In Europe, where small mom-and-pop shops dominate the ice-cream market, Unilever owns 1.2 million retail ice-cream freezers. In the U.S., where most ice cream is sold by big chains such as Wal-Mart Stores Inc., Unilever owns only about 60,000

retail freezers. McDonald's, for its part, says it isn't yet ready to announce a broad rollout of HFC-free technology, though it has opened an HFC-free restaurant in Denmark.

Companies began researching HFC-free refrigerants in the late 1990s. Pressure on Coke, Unilever and McDonald's heated up in the months leading up to the 2000 Sydney Olympic Games. The event was billed as a green extravaganza, with a solar-powered boat ferrying passengers and an energy-efficient Olympic village. Greenpeace, which was working to develop propane-cooled home refrigerators in Germany, approached the companies, threatening a nasty public campaign at the Olympics if they didn't agree to start phasing out corporate use of HFCs.

The companies banded together. They held technological conferences designed to spur equipment suppliers to innovate and urged competitors to join in. While switching to HFCs involved a simple shift in chemicals, giving HFCs up will require a more-expensive shift to new equipment.

HFC emissions are a small but growing piece of the global-warming puzzle. In 2002, global HFC emissions were equivalent to about 1.6% of carbon-dioxide emissions from fossil-fuel burning, according to the U.N. That portion is expected to triple, to about 4.8%, by 2015 unless economic alternatives are found.

Although commercial refrigerators represent the biggest potential for HFC- and other fluorocarbon-emissions reductions, according to the U.N., air-conditioners and automobiles also are major sources. Manufacturers of those systems also are looking for alternatives.

In an ideal world, HFCs wouldn't present any global-warming danger: They would be sealed in the guts of refrigeration units while the units were in use and would be disposed of safely when the equipment was scrapped. But refrigerators and air-conditioners leak.

Leaks aren't refrigerators' only global-warming problem. They also use electricity, produced by burning fossil fuels. As a result, companies seeking to phase out HFC refrigerants are looking for substitutes that also improve energy efficiency.

Unilever has settled on propane because it is especially effective at producing freezing temperatures. And since most of Unilever's ice-cream freezers are small, each one would require only about as much of the flammable substance as is found in a can of hair spray, says Alan Gerrard, the technical manager at Unilever responsible for the propane rollout.

Unilever last year introduced 15,000 propane units and plans to place 40,000 more this year; it expects to replace the "vast majority" of its HFC freezers world-wide over the next eight to 10 years, Mr. Gerrard says. But it isn't clear that Unilever will be able to replace HFC models in the U.S. with propane, because many fire-safety regulations discourage propane-cooled freezers in small spaces such as retail shops. Unilever is researching other HFC-free alternatives for the U.S.

Coke is testing its CO2-cooled machines in Europe, Japan and Australia. How fast Coke phases out HFC machines will depend on how fast its equipment suppliers move, which in turn will depend partly on Coke's competitors, says Jeff Seabright, vice president for environment and water resources at Coke. He headed global-warming policy in the Clinton White House before moving to the private sector. "It's not an off-the-shelf technology," Mr. Seabright says of the CO2 units. "We're literally building prototypes."

EPA officials say they aren't concerned that Coke and Unilever are going outside the U.S. to introduce HFC-free alternatives. Global warming is a global problem, notes Stephen Andersen, the EPA's director of strategic climate projects. So reducing a ton of emissions in the Netherlands is as helpful as reducing a ton in North Dakota. "Every product has a market where it will be most easy and most rewarding to introduce," he says.

PepsiCo Inc., Coke's major rival, says it too is working with its suppliers on HFC-free beverage coolers, though it hasn't set a target date to introduce them.

Chastened by the quick demise of HFCs, Coke wants to engineer the next generation of beverage machines to accommodate future environmental changes. One possibility: machines with "plug-and-play" refrigeration "cassettes" that could be replaced without taking apart the rest of the machine. That would minimize the hassle if, yet again, today's environmentally friendly technology is found to be less friendly tomorrow.