

## Lean, Green Cleaning Machine

Is the dry cleaning world ready to wash its hands of its dirty practices? By Justin Nobel



David Kistner spun a large steel wheel, opened what looked like a submarine hatch, and began pulling garments out of the only liquid carbon dioxide dry cleaning machine servicing New York City: a pleated red dress, a cashmere sweater, a black blouse with diamond-shaped beads decorating the waist.

"You could never have washed this in a heavy perc cleaner," he said, while inspecting the clothing for stains, "soft, beautiful and smells amazing."

Dry cleaning is a method of laundering fabrics that uses a substance other than water (usually called a "solvent") to dissolve dirt and stains. For 40 years, the most dry cleaners have relied on a perchloroethylene, a solvent commonly called "perc." But years ago, the International Agency for Research on Cancer labeled perc a "probable human carcinogen."

In the past few years, companies have begun to experiment with perc alternatives such as hydrocarbon and silicone, but so far, only liquid CO<sub>2</sub> has weathered environmentalists' scrutiny: Clothes cleaned with hydrocarbon emit noxious Volatile Organic Compound's

(VOC's) long after they're in the closet and silicone solvents are still being tested for possible health risks.

[Green Apple Cleaners](#) is one of only 32 companies in the country currently cleaning with liquid CO<sub>2</sub>. The company, which began operating in October 2006 out of a plant in Lodi, N.J., currently serves 25 doorman buildings in Manhattan on a daily basis. The company plans to acquire more clients, but Kistner is wary about expanding too rapidly. New machines are expensive—upwards of \$100,000, five times the cost of a perc machine—and Kistner doesn't want Green Apple to be a green flash in the pan.

A liquid CO<sub>2</sub> dry cleaning machine looks like a washing machine on steroids. The bulky door maintains the pressure necessary to keep CO<sub>2</sub> in its liquid form. Clothing is placed in what launderers call "the wash wheel" and liquid CO<sub>2</sub>, stored in tanks in the rear of the machine, is pumped in. (Liquid CO<sub>2</sub> is considered an ideal solvent because of the way it gently rubs stains out of clothing. Heavy solvents like perc and hydrocarbon can destroy fibers and make cleaning delicate garments, such as furs, impossible.)

Since heat is not needed to dry clothes washed in liquid CO<sub>2</sub>, stains not removed during the wash cycle won't set, and clothing is less likely to shrink. At the end of the cycle, lowering the pressure in the "wash wheel" draws liquid CO<sub>2</sub> out of the clothing and back into the storage tanks.

Even in New York City, not everyone is convinced CO<sub>2</sub> cleaning is more than a trend.

"CO<sub>2</sub> just hasn't matured," said Charles Ickes, general manager at Madame Paulette, a Manhattan cleaner that boasts Louis Vuitton and Versace as clients. Madame, with two perc machines and one hydrocarbon, isn't planning on switching to CO<sub>2</sub> anytime soon. "Five years from now it may peter out on us," said Ickes, "and then I'm stuck with this \$100,000 dollar machine."

And cleaners in other parts of the country have had trouble enlightening their clients about green dry cleaning.

"A lot of people like the environmental thing," said Bart Williams, co-owner of Hangers/Williams Cleaners in Wilmington, N.C., which in 1998 became the first cleaner in the country to use CO<sub>2</sub>. "But the average person really doesn't care as long as they get their clothes back on time clean and ready to go."

But Green Apple has faith in CO<sub>2</sub>. In February it will become the first cleaner in the country to begin using a CO<sub>2</sub> machine produced by R.R. Street, the nation's largest manufacturers of perc.

"They've seen the writing on the wall," said Kistner.

CO<sub>2</sub> Cleaners in the United States, according to [FindCO2.com](#)