

## Vector Produces Nicotine-Free Cigarette Using Genetically Modified Tobacco

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Tobacco-industry maverick Vector Group Ltd. has developed a cigarette made from genetically modified tobacco that contains virtually no nicotine.

Vector, the parent company of tiny discount-cigarette maker Liggett Group, said it expects the new cigarettes, which could be used to wean people off smoking, to be on store shelves early next year.

Bennett S. LeBow, Vector's chairman, said the new cigarette has the potential to disrupt the U.S. cigarette market. "You capture market share, and you reduce the size of the market" if people use it to quit, he said. "It's a double-whammy product."

Mr. LeBow has been a thorn in the side of Big Tobacco since the mid-1990s, when he broke ranks with the industry and agreed to settle lawsuits filed by state governments seeking to recoup the costs of caring for sick smokers.

Vector's nicotine-free cigarettes are the latest entry in a high-stakes race among tobacco companies to develop potentially less-hazardous cigarettes. In this case, the cigarettes aren't addictive, so people theoretically would smoke less. Vector, of Miami, also says the absence of nicotine prevents the formation of cancer-causing chemicals called tobacco-specific nitrosamines, although the cigarettes would still contain dozens of other carcinogens.

Other companies have focused on giving smokers the nicotine they crave, while trying to reduce the harmful chemicals that come with it in smoke. R.J. Reynolds Tobacco Holdings Inc., of Winston-Salem, N.C., for example, is selling its Eclipse cigarette, which primarily heats tobacco rather than burning it, while Star Scientific Inc., of Chester, Va., is test marketing Advance, a cigarette with reduced levels of nitrosamines.

More than a decade ago, Philip Morris Cos., New York, the nation's largest cigarette maker, took nicotine out of regular tobacco using an extraction process similar to the one used to decaffeinate coffee. It started test marketing the very low nicotine cigarettes Next and Merit De-Nic in 1989, but pulled them about a year later, after smokers complained about the taste.

Vector says the taste of its tobacco hasn't suffered. The reason, the company

says, is that the tobacco leaves aren't treated. Rather, the plant has been genetically modified to prevent the formation of nicotine. Vector's Vector Tobacco unit owns the world-wide rights to a patented process devised by a former North Carolina State University geneticist who now works for Vector. The scientist, Mark Conkling, discovered a way to turn off a gene in a tobacco plant's roots and block the plant's ability to produce nicotine.

Even if the cigarette tastes good, will smokers keep coming back if there is no nicotine "buzz"? The company certainly thinks there will be a substantial market for nonaddictive cigarettes. As evidence of potential demand, executives cite studies showing that about three-quarters of smokers say they would like to quit. Since Vector sells only about 1.5% of the cigarettes smoked in the U.S., capturing even a modest part of the market would translate into a big increase in sales for the company.

Jed E. Rose, a neuroscientist at Duke University Medical Center in Durham, N.C., who specializes in nicotine addiction, has been using Vector's new cigarettes in smoking-cessation studies. "They show promise as a potential weaning tool to get smokers unhooked from their nicotine dependence," he said. Mr. Rose said that about half the participants in his study were able to switch from their regular cigarettes to Vector's very low-nicotine smokes and that some smokers kept using the low-nicotine cigarettes for the entire 12-week duration of their part of the study.

Vector said testing continues and it intends to seek approval from the Food and Drug Administration to sell the new cigarettes as a smoking-cessation aid. Until then, Vector said it can't advertise the product specifically as a tool to quit smoking and instead will focus on the theme of allowing smokers to smoke because they want to, not because they have to.

Some public-health experts are critical of Vector's plans. "If they want to put this out there as a bridge to cessation, they ought to do the right tests to prove that it will actually help," said John Slade, a physician who is director of the program on addictions at the School of Public Health of New Jersey, in New Brunswick, N.J.