

Area/State

TURNING OVER NEW LEAF INVENTOR MAY HAVE MAKINGS OF A SAFER SMOKE

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Jonnie R. Williams may be the only tobacco executive trying to exit the cigarette business.

"I don't like tobacco," he said recently. "I'm more interested in health care."

Williams, 43, also is a pretty fair inventor. He's gained national attention for his small company, Star Tobacco & Pharmaceuticals Inc., for a patented process to remove dangerous substances from tobacco.

The secret, he says, is in the microwave.

Williams and his partners have spent more than \$5 million developing custom-made microwave ovens the size of tractor-trailers to try to stop the growth of a major class of carcinogens that form during the curing of raw tobacco.

Health experts are divided on the importance of Williams' invention, but most agree he's hit upon a way to block the formation of "tobacco-specific nitrosamines," chemicals that form in the breakdown of nicotine in cigarettes.

Unlike the nitrosamines found in foods such as hot dogs, the chemicals in cured tobacco have been linked to lung cancer.

Dr. Harold Burton, a leading tobacco researcher at the University of Kentucky, said he's measured Star's microwaved tobacco and found at least 90 percent fewer nitrosamines than in tobacco cured in heated barns.

More research is needed, including the results of Star's recent clinical trials on humans. But Burton said Williams has found "an excellent way" to lower the nitrosamine count.

Other experts maintain that this is only a first step toward reaching a long-sought goal of tobacco researchers: a cigarette that, while still hazardous to one's health, provides a less hazardous alternative.

"Tobacco smoke contains over 4,000 different chemicals," said Dr. Robert L. Balster, director of the Institute for Drug and Alcohol Studies at Virginia Commonwealth University's Medical College of Virginia.

The MCV expert said Star seems capable of taking out some, but not all, of tobacco's harmful substances.

"I doubt it could be easily predicted what percentage of the 400,000 deaths a year contributed to tobacco use would be reduced by a low-nitrosamine cigarette," Balster said.

Still, Balster and other experts say Williams has helped revive interest in creating a "less harmful" cigarette. They praise Williams for voluntarily submitting his proprietary research to the U.S. Food and Drug Administration.

"The most important thing they've done is take their product to the Food and Drug Administration," said Dr. Jack Henningfield, associate professor at Johns Hopkins Medical School and editor of the 1988 Surgeon General's Report on nicotine addiction.

Philip Morris USA, the No. 1 cigarette-maker, is test marketing a battery-powered cigarette, the Accord, to cut down on second-hand smoke. No. 2 R.J. Reynolds Tobacco Co. has its own low-smoke product.

But Star alone has "been willing to lay it out to the FDA instead of just putting the new product on the market," Henningfield said.

Now Williams and his leadership team face the daunting task of trying to roll out their "less dangerous" cigarette, tentatively titled "CigRx."

While it would be nice to have the FDA's blessing, that's not likely given the protracted legal battle between the agency and tobacco companies (the case is expected to wind up in the U.S. Supreme Court).

FDA officials won't discuss Star, citing privacy concerns. But the agency's former officials and researchers say Williams must be careful about making any health claims about his new tobacco product.

"It's a legitimately tricky issue," Henningfield said.

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Williams is a Stafford County native whose father retired from the Navy and found a second career at Philip Morris in Richmond.

But Williams decided not to follow in his father's footsteps and instead became a venture capitalist for new technology companies.

"I really don't care to be in the tobacco business," Williams said.

Before 1990, he never had set foot in Petersburg. At that time, he and a business partner were owed some money from a small cigarette-maker operating in the old Brown & Williamson Tobacco Co.

Williams could have collected the money, but it might have shut down the plant and laid off several dozen tobacco workers. Instead, he took over the company, renamed it Star Tobacco, and expanded its business.

By adding new brands and taking on contract work for other cigarette and cigar makers, Williams got Star Tobacco running in the black.

He was making money, but Williams, a nonsmoker, said, "It wasn't where I wanted to stay."

In 1994, he began developing a tobacco-rich chewing gum. He was inspired by a Wrigley's commercial that showed a smoker in the throes of a nicotine fit who gets some relief by chewing gum.

Williams, always the idea man, had a brainstorm. If he could add tobacco flavoring to gum, maybe he could create a cigarette substitute that could compete against cessation products such as Nicorette.

In early 1995, he was invited to bring his prototype, called Gumsmoke, to the FDA in Washington.

"We thought we'd be with a couple of people in the food division, and we walked in and the room was full of people," Williams recalled. One of those people was then-Commissioner David Kessler.

The FDA was in the thick of investigating the tobacco industry, including visits by FBI agents to Philip Morris employees in Richmond. It was a touchy time for a stranger from a small Virginia cigarette maker to appear.

"The agency had lawyers and security, and was a very tight, nervous kind of place," recalled a former FDA supervisor, who asked not to be identified. "In the middle of it, this brash fellow with a Southern accent shows up and proceeds to say, 'I'd like to talk with you about tobacco.'"

"We didn't know if he was for real," the former federal official said.

But Williams managed to gain the ear of the food and drug police.

Yet he quickly learned they were in no mood to endorse anything with tobacco in it, no matter how well-intentioned.

What was he going to do about something called "tobacco-specific nitrosamines?" Williams, a non-chemist,

never had heard of them.

The FDA never would approve any product, even chewing gum, that contained even trace amounts of the carcinogen.

A chastised Williams returned to Petersburg, shut his office door and closed his eyes. He pictured tobacco growing out of the ground.

"The first step was asking how on earth can a plant growing green out of the ground contain these carcinogens. I couldn't get a handle on that," Williams said.

He called Virginia Tech, seeking help in understanding tobacco science. He was referred to Burton in Kentucky.

In his direct fashion, Williams got the scientist on the phone and asked, "Is it like when a banana is yellow and ripe and it's ready for consumption at that point?"

Burton explained that nitrosamines form when tobacco turns yellow toward the end of the curing process.

"So, Dr. Burton," Williams replied, "this is simple. All I have to do is put the brakes on the yellow."

Burton laughed into the phone.

"Jonnie," he said, "it's very simple. It's so simple people have been trying to do it for 30 years. I wish you a lot of luck."

Williams had more than luck going for him, though. For years, he had worked with a St. Louis ophthalmologist, Dr. Francis E. O'Donnell, developing special lasers for eye surgery.

Williams considered trying lasers to stifle the nitrosamines' growth. But that would take time to arrange, and he was ready to start his research right away.

His eyes lighted upon his office microwave.

"A microwave agitates the moisture molecules, and it doesn't brown" food, he reasoned. Maybe it could block the breakdown inside tobacco cells.

He started out on cabbage and celery to see how they fared in his Goldstar kitchen microwave. This early research deserves the "don't try this at home" warning.

"One day I put a head of cabbage in the microwave and set it for 10 minutes. I walked around the corner to answer the phone."

When he returned, the microwave had burned up.

"I don't know what smelled worse - the cabbage, or the microwave that had melted the plastic right into the table."

There were more microwaves and more meltdowns as Williams worked steadily for a year zapping tobacco.

All the while, he sent his test batches to Burton's lab by overnight mail.

"Dr. Burton called me back and said, 'This works. No nitrosamines in tobacco.'"

By late 1996, Williams had discovered what he believed to be the right wavelength to stop the cancer-causing chemicals.

Then he faced the daunting question of figuring out a way to apply his science to process tons of tobacco for full-scale cigarette production.

"I figured we needed {a microwave} the size of a large tractor-trailer," he recalled. "I found {that} those things don't exist."

But he found a partner in Amana Corp., the Iowa-based kitchen appliance company. The company agreed to

build the first industrial microwave for tobacco processing.

Each machine costs more than \$400,000 and takes more than 17,000 volts of electricity to operate.

The expensive research has been funded by sales of Star's discount brands - Gunsmoke, Vegas, Sport and Main Street. After the next flue-cured tobacco harvest in 1999, Star plans to use its low-nitrosamine leaf in those brands.

Eye Technology - Star's parent company - recently reported an operating loss of \$1.2 million for the third quarter of 1998. Williams has been busy soliciting deep-pocketed investors as "we outstrip the cigarette company's ability to fund" the research.

He has two giant microwaves ready to zap leaves at Star's Chase City facility. But before he could produce a commercial-grade tobacco, Williams had to jump through yet another hoop: The microwaved leaf looked dry and crinkled.

So Williams teamed with Malcolm "Mac" Bailey, one of the state's largest tobacco growers near Chase City.

The tobacco man and the idea man devised another step in Star's patented process: An addition to the farmer's curing barn that manages to get the leaf in the right condition to survive the microwave treatment.

The new curing barns have smokestacks and gadgetry, the functions of which Williams and Bailey keep to themselves.

Bailey has emerged as one of Williams' top players: He's now president of the company.

He's been joined by other experts from medical and science circles, such as Dr. Robert J. DeLorenzo, chairman of neurology at MCV, who recently became Star's chief executive officer.

DeLorenzo, a brain researcher, has been conducting parallel research involving the effects of cigarette smoke on people suffering from clinical depression. One day, he hopes, Star will produce a drug that replicates the element in tobacco smoke that helps people cope with their emotions.

But for now, the focus is on the tobacco process, which the MCV scientist calls "a brilliant piece of work."

"I compare it to what Thomas Edison did in developing the light bulb," DeLorenzo said of Williams. "Everybody knew there was a way to do it . . . but it was Edison who worked on it" until he came up with the right filament for an electric bulb.

"What Jonnie brought to it," De

Lo Lorenzo said, "was a very inquisitive mind and creativity and stick-to-itiveness."

America's major cigarette companies have spent hundreds of millions of dollars - perhaps billions - researching the same problem. The jury's still out, but some experts think Williams has outsmarted the big boys.

"There's a lot of projects they work on," Williams replied, when asked about his larger competition. "I only have one. I was laser-focused. I was locked on."

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Now the question is: Will the tobacco industry bite?

With well over a billion pounds of tobacco processed in the United States each year, Williams knows he can't process all that leaf alone.

He hopes to license his exclusive technology to Philip Morris, Reynolds and other cigarette-makers. According to Star's recent disclosure to the Securities and Exchange Commission, the tiny company has sold 86,000 pounds of tobacco to "most of the major tobacco companies" for testing purposes.

Philip Morris spokeswoman Mary Carnovale wouldn't say whether her company is testing Star's tobacco. But, she said, Philip Morris does "try to monitor developments that suggest a reduction in compounds in cigarette-smoke that public health authorities have identified as potentially harmful."

A spokesman at No. 2 cigarette-maker Reynolds would not comment on Star's process.

Whatever the tobacco industry's official stances, Star's executives hope consumers will demand their "less harmful" form of tobacco, requiring the major manufacturers to license the microwave technology.

"I think the market is going to drive the tobacco companies to use nitrosamine-free tobacco," DeLorenzo said.

Outsiders aren't so sure.

"Would the companies have to use Jonnie Williams' process?" asked Henningfield of Johns Hopkins. "My guess is {that} the FDA would take a neutral view."

There's also no guarantee that Congress or the Supreme Court ever will grant FDA oversight of tobacco.

Williams and his advisers are struggling with their next step. They have considered test-marketing low-nitrosamine CigRx in pharmacies around Richmond as a smoking cessation product. And they've pondered sending their research to doctors in the hope that they might suggest that patients who can't quit smoking at least try a less-deadly cigarette.

But with challenges from all sides - the government, the tobacco industry, and the health community - Star's leaders are carefully charting their next move.

Asked what they'll do next, Williams joked, "It may be easier to remove the nitrosamines than to answer that question."

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