

Is there a battery-powered cigar in your future?

Don't snicker. This is a serious question. In China, right now, thousands of factory workers in a nation of 400-million smokers are assembling electronic cigars, cigarettes and pipes in preparation for a tomorrow without tobacco smokers.

The devices they are making deliver nicotine in a vapor; there is no smoke, no tobacco on fire.

And there are increasing numbers of people - research experts among them - who say this nicotine delivery method is the future of smoking. Tobacco will become taboo. Goodbye, Romeo y Julieta, hello, Janty.

They say this because inhaling nicotine vapor trumps burning tobacco in several ways: E-smoking is cheaper; it does not produce second-hand smoke to annoy or endanger others; it can be done in "no smoking" locations; it presents no fire hazard; there are no butts to litter the landscape; and it is almost certainly healthier for the consumer.

Some see it as a triumph of technology, a rescue for smokers being forced into ever-smaller quarters.

Whatever it's deemed, it is a new way to satisfy nicotine addiction. And that should delight smokers fed up with today's restrictive society.

Understand first that nicotine doesn't kill smokers. It simply hooks them to the habit of smoking tobacco. It's the substance that triggers uncomfortable cravings when smokers can't smoke. Health problems arise from other substances carried to the lungs in the tarry soup of each inhalation of smoke. E-smoking vapor doesn't contain tars - or any of the 4,000 or so identified chemicals in tobacco smoke. Instead of smoke, wispy vapor carries the nicotine to be absorbed through the mouth or inhaled into the lungs. The vapor clings to lung walls, transferring nicotine to the blood stream. The vapor itself degenerates into harmless acetic acid.

Very little is exhaled.

An electronic smoking device - cigar, cigarette or pipe -- looks like its tobacco-based counterpart. An e-cigar is a metal cylinder that contains a rechargeable battery, an atomizer, a spongy cartridge soaked with nicotine dissolved in a propylene glycol solution, and a mouthpiece - all roughly the size of a corona cigar.

Suck on the mouthpiece and the atomizer instantly heats and vaporizes some liquid in the cartridge. That vapor is then inhaled. Various levels of nicotine are available in so-called e-liquid solutions; using the highest level, each puff contains about half as much nicotine as the amount in a comparable puff from a regular cigarette.

When the cartridge core begins to dry up, e-liquid from a vial is dripped into the cartridge, or the entire cartridge is replaced.

The e-cig is by far the most popular offering. E-cigs now come in "mini" models, but earlier offerings looked like a cigarette in a holder, something FDR would clamp between his teeth. The e-cigar looks remarkably like the real thing. The e-pipe looks realistic, but is too heavy to hold comfortably with closed teeth.

New products hint at a future of disposable devices. The largest e-smoking manufacturer, Ruyan, has begun selling a \$45 disposable cigar called the Ruyan Vegas. It strikingly resembles a real cigar and smokes for about a week in normal use. Single-use e-cigarettes are being sold, too. No refilling, no battery charging.

While Ruyan is considered the "Rolls-Royce" manufacturer of e-smoking devices, numerous cheaper imitations are flooding the Internet. Prices range from about \$26 for the cheapest e-cigar to more than \$200 for a Ruyan pipe. For this article, an e-cigar was purchased for \$34 and came with eight cartridges of

nicotine, two batteries, a battery charger and the cigar device. Keeping the battery charged and the cartridge full is all that is required

It's no more trouble than a cell phone.

So far, so good, you say. But what's the "smoking" experience like?

For smokers trying to quit, there likely will be an initial letdown. The nicotine-laced vapor doesn't taste like the "regular tobacco" flavor it is claimed to be. It tastes a bit like damp air left behind in a room just deserted by cigar club members. And the vapor has no mouth feel. No aroma.

Let's put it this way: Winston Churchill would never have said, "Damn the torpedoes, I want an e-cigar." But with a new disposable e-cigar, Arnold Schwarzenegger could "smoke" in the California governor's mansion - with impunity from state and federal "no smoking" laws.

The new Chinese products are not the first attempt at creating a vaporizing device for smokers. After years in development and at a cost of over \$1-billion, R.J. Reynolds introduced the Premier to America in 1988. This special cigarette employed a charcoal lump that was ignited in its tip, much as barbecue coals are. The heat from the charcoal then vaporized tobacco in a cigarette-like aluminum tube. The smoker inhaled mostly vapor.

Premier didn't make it to a second birthday. Smokers complained of a charcoal taste to the smoke. Few finished even one pack. Ominous for the future of all "safe" nicotine delivery systems, some public health officials argued that Premier should be regulated as a drug, not left unregulated as a tobacco product.

Reynolds went back to the drawing board and came up with the Eclipse in 1994, test-marketing it in select cities. Eclipse repeated the use of a charcoal tip, which heated reconstituted tobacco in a cigarette paper roll. The heat would release nicotine and the glycerol in the mix would become vapor that carried the chemical to the lungs. Again, anti-smoking forces shouted loudly that this was not a cigarette and the Food and Drug Administration should regulate it.

Eclipse never caught on, and took some heat that didn't come from its charcoal tip.

John Kelly, then chairman of the American Cancer Society's board of directors, demanded Eclipse be removed from the marketplace. "RJR's Eclipse cigarette is nothing more than a cancer-causing nicotine delivery device," he said in 2000.

Philip Morris went a different route in search of a near-smokeless cigarette. In 1998, it showed the world the Accord. A special cigarette had to be used, inserted into a hole in the device's body to touch a battery-powered heater. In use, the Accord looked like a smoker was sucking on his or her pager. When a user sucked on the cigarette, the heater created vapor from the special tobacco. Recently, the device has morphed into the Heatbar, introduced in Australia. It now looks like a cordless power toothbrush with a cigarette stuck in one end.

Both of these attempts at a "safer cigarette" used tobacco. They were the products of tobacco companies, after all.

China chose another course. Companies there took advantage of miniaturization of electronic components to produce a tobacco-free smoking product, one that looked like the real thing but could be enjoyed even in no-smoking areas.

A company called E-Cig gave the product its name.

The first electronic cigarettes came to market in 2003, largely unnoticed by the Western world. Last year, before the world really took notice of e-smoking, Ruyan sold about 1 million units.

Despite the resemblance to traditional smoking, e-smoking does not replicate tobacco smoking. Even the technique of pulling maximum vapor from a

device takes some practice. But so did clipping a cigar or packing a pipe. E-smoking is easier.

Already, there are 28 cartridge flavors to choose from, in four nicotine strengths. One Chinese company recently introduced a flavor called "Marlboro". Fluid makers say they will be able to duplicate any flavor - including all commercial cigarette brands.

Kahlua cigar vapor cannot be far away.

JantyUSA now has a battery-replacing USB cord that draws power from a user's computer to vaporize the fluid in an e-cigarette. That way, the device is always ready beside the computer. There's even a plug for a car's power outlet.

And, before long, the size of an e-cigar or e-cigarette will be identical to a traditional one. They will look exactly like their counterparts.

Then what?

Enter governments and medical professionals. This is, after all, a device to deliver a substance said to be as addictive as heroin or cocaine. And there are Big Bucks at stake for governments and the pharmaceutical industry, in addition to tobacco growers, wholesalers and retailers.

At present, these products, including the nicotine liquid, are unregulated in the United States. Invoices on the Chinese exports frequently are fraudulent, stating the contents are a "plastic pipe" or "sample" with a value unrelated to the cost of a package's contents. Customs agencies in various countries, including the United States, are stopping these shipments and demanding proof of contents and true value.

The Food and Drug Administration has so far remained silent, although it might be interested in a device that delivers the addictive drug nicotine. It was the FDA that had to give approval to all of the smoking-cessation devices now on the market. It was the FDA that nixed nicotine-laced water, lip balm and lollipops in 2002. The FDA did not respond to questions on e-smoking.

Likely to challenge claims that these devices can help smokers quit or "smoke" healthier will be the Federal Trade Commission. These regulators regularly slap quit-smoking hucksters with million-dollar fines. The FTC has a singular message for manufacturers and promoters claiming anything: Prove it.

The devices are too new to have anything beyond anecdotal testimonials from happy ex-smokers.

Some governments are already up in arms. Belgium has banned the devices. Holland banned advertising them. Australia is not welcoming e-smoking at a time when the country is successfully cutting down on tobacco smoking in general.

In Turkey, Democratic Society Party (DTP) Sirnak deputy Hasip Kaplan asked Parliament to ban even *using* an e-smoking device.

"Under the law, smoking is prohibited in schools and hospitals," Kaplan is quoted in Turkish newspapers, "but such a prohibition is not valid for electronic cigarettes. Imagine a person who walks along the corridors of a school with an e-cigarette in his hand. Why do we deceive ourselves? We need to ban the usage of such devices."

A rush to harsh judgment is the wrong way to approach this alternative to continued tobacco smoking, according to the world's foremost researcher on e-smoking, Dr. Murray Laugesen of New Zealand.

Laugesen is a Down Under public health physician who this year will complete studies on the safety and efficacy of electronic smoking devices. He's trying to determine how well the electronic devices satisfy smokers' need for nicotine. If they work, Laugesen says they should receive tax breaks and be promoted to smokers, not banned or restricted.

In a lengthy letter for this article, Laugesen suggested taxes on smoking products be based on their potential to harm. Cigarettes would get the highest tax. Nasal snuff, Swedish snus and e-smoking devices would get a lesser tax, to encourage their use. All of these smokeless methods are less harmful than

smoking, his research shows. On www.smokeless.org.nz, Laugesen promotes numerous harm reduction alternatives to continued cigarette smoking, or even cigar and pipe smoking.

In 2003, just prior to invention of the electronic cigarette by Hon Lin in China, Dr. Walton Sumner II of Washington University School of Medicine in St. Louis wrote his thoughts on nicotine addiction's future.

"There seems to be no effective way to convince many smokers to quit," wrote Sumner. "If one accepts that cigarette smoking will under no circumstances disappear, then one becomes committed to considering ways to make the habit safer." One way, he suggested, would be to switch smokers to inhalers that deliver doses of clean nicotine.

He began studying inhalers after his father died of lung cancer and he saw other nicotine-replacement therapies fail to get smokers off cigarettes. Among the relapse reasons is the lack of an immediate "kick" a smoker gets by inhaling tobacco smoke. Maybe, Sumner reasoned, nicotine inhalers could satisfy the nicotine craving in a smoker who wanted to quit. Maybe inhalers could do it quickly, in a way gum and patches cannot.

Of this much Sumner is sure: Prohibition of tobacco won't work.

"Cigarettes, or an equally addictive alternative, will be a permanent and common product in most societies," he says. All attempts throughout history to prohibit tobacco or its use have failed.

"Historically, smokers accept personal and public hazards that make the dangers we associate with tobacco look quaint," Sumner wrote. "After Christopher Columbus failed to control his crew's tobacco use, monarchs from England to China tried to contain the weed by execution, disfigurement, exile, and onerous taxation. Tobacco use spread anyway."

A better course, he says today, is to make tobacco smoke unattractive by every measure, but using nicotine for recreational or medical purposes both legal and acceptable.

Doing that, he says, will save lives and public health costs.

The U.S. pioneer in "harm reduction" is Dr. Brad Rodu, a professor of medicine at the University of Kentucky. Rodu has for years advocated that smokers switch from cigarettes to smokeless tobacco, saving themselves from the unhealthy consequences of inhaled smoke.

"My position is that alternative sources of nicotine should be considered by any smoker who is unable or unwilling to quit smoking with abstinence-only (i.e. quit-or-die) conventional approaches," Rodu wrote in answer to questions for this article. "Nicotine is strongly addictive," he added, "but its use is associated with virtually no adverse health risks. The model for this is caffeine, which is also addictive (although less so than nicotine), but consumed safely by millions of Americans in coffee and soft drinks."

Rodu says "there has been a lot of discussion in the tobacco world about these (e-smoking devices) recently."

Recent research shows that a person's genes play a role in nicotine addiction. Some people are more quickly and permanently addicted. In essence, they were born to smoke, this research concludes. For these "inveterate" smokers, the quit-or-die mandate from anti-tobacco hardliners is not the choice they need, Sumner says.

Besides, he notes, many governments depend heavily on tobacco taxes. What would be the cost to all taxpayers of losing tobacco taxes? Where would monies come from to replace taxes now levied on tobacco products?

"Tax revenues diminish prospects for even slowing the growth of tobacco sales in Africa, Eurasia, and South America," Sumner says, "and prohibition in those areas is currently impossible."

Also working against prohibition is the fact that nicotine has benefits.

"Many smokers may use nicotine to treat various problems, including depression, attention deficits, other mental illness, symptomatic systemic diseases, or to control weight. Nicotine users may perform some tasks better, especially those involving vigilance and rapid visual cue processing," he wrote.

The present public policy of the United States -- where the most dangerous product, cigarettes, is largely unregulated and widely available, while safer nicotine products are expensive or unavailable -- does not serve the interest of public health. That will only be served, Sumner argues, when smokers are encouraged to switch to safer alternatives that are readily available and affordable.

"Nicotine use will remain common indefinitely," the doctor says. "Federal legislation must not obstruct free market ideals of competitive innovation and informed consumption."

Rodu agrees and foresees problems if addicts are denied their needed nicotine. He noted that a Colorado ban on smoking in prisons created "an instant black market serviced by prisoners and their families, guards, teachers and supervisors."

On the other side of the globe, Laugesen's goal is elimination of tobacco smoking products in his country within a decade. To do that will require moving smokers from an unsafe form of addiction to a safer form that they can use the remainder of their lives.

His research is funded by Ruyan, but he says he does not own stock in the company and his studies are unbiased. His controlled studies on use of e-smoking devices, due by the end of this year, will be the world's first. His initial report released at a medical conference in the United States in February, found nothing to fear from e-smoking and much to praise.

Sumner singles out the United States as a country that ought to embrace e-smoking.

"The United States should reflect carefully on the irony that the trade-balancing, antiquated instrument of death it exported to the world might be supplanted by innovation from the people burdened by our past policies," he wrote in answer to a question for this article. "We insisted that countries accept our cigarettes, and refused to modernize nicotine delivery to reduce the inherent harm. Now will we add e-cigs to our list of imports, or impose import restrictions so that we must continue to afflict our population with smoky cigarettes, or - at long last, and after losing the lead - compete to make nicotine addiction as safe as possible?"

In Malaysia, motorcycle-riding Dr. Jim Loi operates a clinic in Kuala Lumpur. There, he is testing 300 smoking patients with e-smoking devices he purchased with his own money. The doctor, who worked under Mother Teresa during an internship in 1992, is a firm believer in the effectiveness of e-smoking.

"As a doctor for many years," Loi writes, "I have never seen my patients so happy with therapy. Ninety percent have given up smoking and 5% still smoke but much less ... the 5% failure might be due to device problems or bad habits. Sometimes you can't change a leopard's skin."

Loi himself was a heavy cigarette smoker until he learned of e-smoking and bought an e-cigarette. He says he was able to quit, easily and without withdrawal cravings. It encouraged him to begin testing with patients who came to his clinic.

Smokers, he says, took to the e-cigarettes quickly. One woman being counseled for mental health problems only opened up when Dr. Loi gave her an electronic cigarette to suck on. A breakthrough in her therapy occurred then, he reports.

Loi is the Thomas Edison of e-smoking, constantly experimenting with liquid contents, creating new flavors, modifying the smoking devices and how the devices are used. Since many Malaysians, like the doctor, ride motorcycles, Loi

rigged up a plastic tube that allows a biker to suck on a pocketed e-cigarette while riding. Nicotine-on-the-go has proven popular, he says.

Patient problems have been few, Loi says. A small percent of people will have a reaction to the propylene glycol used in the e-liquid. They might experience coughing, a dry mouth or tongue numbness. He says these symptoms often pass within a week or two.

Loi is pioneering the use of Oriental herbal extracts in the nicotine liquid. It might be possible to not only satisfy nicotine addiction with a vaporizing device, but also improve specific health problems. He's created numerous new flavors requested by his patients, and incorporated herbs to help conditions like coughing.

His preliminary results show that users of e-smoking devices have decreases in heart rate and blood pressure, decreased snoring and relief from congestion.

The Malaysian government has its own quit-smoking tests underway - using products from pharmaceutical companies. Loi is a noisy thorn in their side, insisting e-smoking is superior to any drug product yet marketed.

He openly "smokes" in shopping malls and on airplanes. If questioned by authority, he takes apart and demonstrates the device, which usually brings only smiles of approval, he says.

But not all physicians are enthusiastic.

"Products ... which look like cigarettes will undermine the control of smoking bans and make it impossible to denormalise smoking in public," says Manfred Neuberger, professor of preventive medicine at the Medical University of Vienna, in the British Medical Journal.

There are likely to be more governmental issues, too.

Consider this: While e-smoking doesn't use any form of tobacco directly, it does use nicotine extracted from tobacco leaves. One wholesaler writes on a Web site that the tobacco cartridges for Chinese e-cigs originate in Cuba. That could be a violation of the U.S. embargo against Cuba.

The safety of inhaling the vapor remains an unknown. While propylene glycol is recognized as safe for external and internal uses, it has never been tested as an inhalant for prolonged use. Dow Chemical cautions that propylene glycol vapors used for "fog" during theatrical performances should not be inhaled for long. And eye contact with the vapor should be avoided, the company adds in cautions posted on its Web site.

New Zealand's Dr. Laugesen believes it is safe when used for e-smoking. So does Malaysia's Dr. Loi.

The bottom line is that pressures are ratcheting up on the 46 million Americans who smoke cigars, pipes and cigarettes. Anti-tobacco forces have made being a smoker a sometimes uncomfortable reality today. Yet nicotine addiction dictates continuation, driving smokers outside in the cold to satisfy an overwhelming and persistent urge. Many smokers have tried to quit, of course. Estimates are that 75 percent have tried at least once. Half of all cigar smokers are estimated to be former cigarette smokers. And 2 million American cigarette smokers have switched in the past decade to smokeless tobacco.

Pressures on smokers come from escalating product costs and decreasing social acceptance of their habit. Cigarette prices have soared and there's talk of much higher taxes soon on cigars and niche tobacco products. Today, smoking is banned in most public places, including parks and beaches and public transportation. Moves are afoot to ban smoking in common buildings, like apartments and condominiums. One proposal would ban smoking inside a car where anyone under age 18 is present.

In the United Kingdom, a new proposal would require a "license to smoke." Smokers over 18 would have to fill out a complex form, have a photo taken for

the license and fork over about \$50. The license would have to be renewed every year and would have to be presented for every purchase of a tobacco product.

The idea, Health England says, is to aggravate smokers into quitting.

Every cost increase, every new aggravation, every extension of the smoking ban encourages more demands from triumphant anti-tobacco forces.

But will these zealots oppose e-smoking? E-smoking produces no second-hand smoke. No leftover butts. No fire danger. No public nuisance at all. Instead, it promises healthy benefits to users compared to continued tobacco use. The choice for smokers addicted to nicotine is not quit-or-die, e-smoking's researchers say. Safer, life-extending alternatives exist.

E-smoking is the newest one.

An e-cigar might be in your future. Seriously.