

# No Coke, Pepsi

Canadian firm says it has the answer to TSA's liquid screening technology quest

JOHN M. DOYLE/QUEBEC CITY

**T**he Transportation Security Administration (TSA) is searching for technologies to make the hunt for explosives hidden in liquids easier on passengers—and airports.

The aim, says TSA Administrator Edmund (Kip) Hawley, is to add multiple sensors to existing equipment, but “we’d like to be able to use the existing footprint” without increasing the size of the security checkpoint in already crowded airport terminals.

So far, no technology has combined speed, cost-effectiveness and reliability sufficiently. Most existing products, which use technologies like lasers or microwaves to bombard a liquid and measure its chemical reaction, are not easily integrated into existing security checkpoints, cost too much or use too much electrical power.

But a small Canadian company thinks its modified Cold War technology is the answer. The Opto-Screener, produced by Quebec’s Optosecurity Inc., is an X-ray screening upgrade that automatically identifies weapons and liquid explosives. The slim metal device is clamped onto the existing machine without screws or bolts that might damage the X-ray machine’s warranty or alter its existing capability.

“It’s seamless. It uses the same checkpoint integration, the same real estate, the same footprint, the same screeners, the same machine,” says Optosecurity founder Eric Bergeron. “We just add our machine on it, and we tell you what’s inside the bottles . . . whether it’s acetone, gasoline, V-8 juice or water.” The technology is so sensitive, claims Bergeron, that “we can even differentiate between Coke and Pepsi.”

The OptoScreener turns the X-ray signal into a molecular spectrometer to determine the exact chemical signature

of a liquid. The device also collects additional data from the legacy X-ray machine and interprets it for the human operator, calling attention to weapons such as guns and knives. The system uses an image library drawn from the Royal Canadian Mounted Police that includes stun guns and hundreds of fire-



Optosecurity has developed an add-on X-ray screening upgrade that can quickly scan liquids for explosive traces.

arms. It is compatible with most forms of checkpoint X-ray imagery, including two dimensional, multi-view and dual energy.

OptoScreener’s throughput depends on the customer’s operational procedures and the X-ray machine’s speed, says Bergeron. Also, the retrofitting requires the X-ray vendor to give Optosecurity access to the legacy machine’s data, which some have done. But a non-disclosure agreement prevents Bergeron from identifying which ones.

Bergeron says the company’s chief technical officer came out of the video game and semi-conductor industries. “So he used signal-processing algorithms to treat the audio signal from telecommunications or video signals. Using that knowledge, he decrypted the X-ray machine data. It’s a mix of physics, chemistry and signal processing,” says Bergeron. The device can screen and identify liquids within seconds, although

they have to be removed from carry-on baggage, as the TSA now requires.

The venture capital-funded firm grew out of the Cold War efforts of Canada’s National Optics Institute, from which it was spun off. Bergeron got the idea to use the institute’s Optical Correlator technology—developed to spot and identify tanks and fighter jets—to look for explosives and other dangerous items in air travelers’ luggage.

The 45-employee company, located in a technology park between downtown and the Aeroport de Quebec, has raised more than \$20 million (US) in financing based on its prospects. It recently won a contract for an undisclosed amount from a U.S. government agency, which the company isn’t authorized to identify.

Optosecurity is working with its Canadian regulator, which works closely with U.K. and U.S. authorities. “So we’re working closely with the three countries right now,” Bergeron says. OptoScreener is being tested in North America and Europe, he says, but the locations are confidential at the customers’ request.

OptoScreener “looks very impressive” during demonstrations at industry conferences, says British aviation security consultant Norman Shanks, but “seeing it in the field is a different matter.” He

says the data the device is gathering is not as extensive as traditional explosive detection systems using multiple energy sources. “So it’s questionable whether this is a really viable operation,” he says. Nevertheless, Shanks, former head of security for BAA, thinks “it’s interesting enough to be pursued and that’s something TSA should be doing.”

Brian Rutenbur, a homeland security analyst for the Memphis securities firm Morgan Keegan & Co., is even more skeptical. If the technology works, he says it would be a security breakthrough. But, “I haven’t seen the big R&D spend from the TSA. When I see a 12-month trial, then I’ll start to believe.”

The threat from liquid explosives is nothing new, says Shanks. “Perhaps it got a little out of hand” after the London incident, he says, “but whether it justified the worldwide changes that have been made since is a matter that is now being debated here in Europe.”