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Stellar Startup: Keeping your burger - and you – safe

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There's nothing more satisfying than a good, juicy burger - and potentially, there's nothing more dangerous. Just ask Stephanie Smith, who ate a bad burger in 2007, and ended up paralyzed. Smith was infected with an extremely bad case of E. coli poisoning, the result of a burger that apparently fell through the cracks of an already lax food inspection system. Her plight was featured in a major story in the *New York Times* (<http://tinyurl.com/ybp5fxn>).

Relying on a patchwork of federal regulations and voluntary inspection, food safety - even in the United States, which has traditionally been one of the most avid regulators in the area of food safety - has always been an iffy proposal. Thousands of people get sick with food poisoning each year, resulting in lost workdays, hospital stays, or, in some cases, long-term illness or even death. And even in cases where food is supposedly safe, it may still contain debilitating bacteria that, for all the government's best intentions, still gets through to wreak havoc among the public.

All that could change, though, thanks to a new innovation by Israeli startup MS-Tech (<http://www.ms-tech.co.il/>). MS-Tech, which has been deeply involved in the area of sensor technology for years, is developing a hand-held sensor for use by government, industry and consumers that will indicate quickly whether food is safe to eat - or whether it should be disposed of as a health hazard, like those burgers that destroyed Stephanie Smith's life.

Currently, public food safety is in the hands of overworked and underpaid government inspectors, who must make do with inspecting small samples of stock, and determining based on



MS-TECH CEO Doron Shalom holds the FoodScan 3000 between his fingers.

those samples whether or not food is safe enough to be consumed by the public. But MS-Tech's FoodScan 3000 device, when it is ready, will take the power of safety out of the hands of government and put it where it belongs, says MS-Tech CEO Doron Shalom - in the hands of the people most affected by food safety issues, the consumers themselves.

"Right now, consumers are dependent on the inspection efforts of professionals, who sometimes miss major problems," Shalom says. "Whether at a supermarket or a restaurant, the end-user - or even the retailer, who has his reputation to worry about - is not in control. But imagine if every McDonald's could check the shipments of food as they come in, and eliminate lots that could make customers sick. Thanks to the FoodScan 3000 we are developing, that dream will become a reality soon," he says.

The FoodScan 3000, one of an array of sensor devices being developed by MS-Tech, is based on High-Frequency Quartz Crystal Microbalance chips, with individual sensors working together to present a quick and accurate reading of food items it checks, to make sure they are within acceptable ranges for amount and types of bacteria present, composition of ingredients, and nearly any other measurable factor.

"The FoodScan 3000 is the only handheld and portable food contamination detector that can detect pathogens such as salmonella, E.coli, Listeria, and others," said Shalom. And, he added, it can do it all within just a few seconds, instead of the days or weeks usually needed for a lab analysis, and without the radiation generated by detection systems currently in use.

The FoodScan detector does its magic by using a host of smart sensor technologies, including quartz-crystal microbalance technology, plasma etching, chemical coating and deposition technologies, micro-mechanics, electronics, algorithms and digital data processing.

The system works from a template of what a "healthy" piece of meat or other food item should look like to its sensors, and begins comparing; too much of a differentiation in quality, and the item gets labeled as "undesirable." And for even more effectiveness, the device can be equipped with WiFi and GPS, allowing inspectors to check information on remote databases instantly, as well as alert authorities of exactly where a potential food safety crisis is brewing. About the size of two iPhones and weighing not much more than a kilo, the FoodScan acts as an "electronic nose or tongue," says Shalom - except it can detect and identify the contaminants that you can't smell or see.

MS-Tech is just now beginning its marketing campaign for the device, and Shalom says he

expects his products to become part of the food inspection arsenals of local and national governments over the next year to year and a half; after that, the device will be marketed to manufacturers, distributors, retailers, and eventually to consumers. The device was developed as an outgrowth of other sensor research MS-Tech had been doing at the behest of the Israeli and American governments (several of its security detection systems are in use at airports across the US).

As it happens, the FoodScan 3000 has come along at just the right time.

Interest in food safety has grown considerably over the past few years, as recalls of everything from hamburger to spinach have grabbed the headlines - to the extent that US President Barack Obama has established a Food Safety Working Group, to specifically determine ways to increase the level of food safety. Shalom says his company is working not only with the US government, but with governments in Europe and the Far East - especially Japan and Singapore - where food safety awareness is very high.

"Food safety is a \$2.5 billion annual market, and we believe we have the best solution," Shalom says. Unfortunately, the FoodScan 3000 came a little late for Stephanie Smith - but hopefully, with the new device, E.coli won't get a chance to strike at anyone else, ever again.

<http://www.israeltech.net>

<http://www.jpost.com/servlet/Satellite?cid=1254756248137&pagename=JPArticle%2FShowFull>