

Flashlight Weapon Makes Targets Throw Up

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It looks like a big flashlight — but it's really a nonlethal weapon designed to make you sick.

Its inventors call it the LED Incapacitator (L-E-D, as in light-emitting diode). Weapons buffs call it a nonlethal weapon. But test subjects who have buckled and reeled from its nauseating strobe call it other names—none printable.

A flashlight designed to make you nauseatingly ill? What fiendish minds would invent such a tool? The minds of Bob Lieberman and Vladimir Rubtsov, president and senior scientist of Intelligent Optical Systems, Inc., a small R&D company in Torrance, CA. Under a multiphase contract from the S&T Directorate’s Small Business Innovation Research (SBIR) Office, with technical direction from S&T program manager Gerald Kirwin, the two physicists are refining an ultra-bright, multicolored, pulsing “lightsaber” that’s more disorienting, dazzling, and dizzying—though a tad less dangerous—than disco. It’s enough to make you sick. And that, Lieberman says, is not always a bad thing.

How does the LED Incapacitator incapacitate? By simultaneously overwhelming the subject both physiologically (temporarily blinding him) and psychophysically (disorienting him). A built-in rangefinder measures the distance to the

nearest pair of eyeballs. Then, a “governor” sets the output and pulse train (a series of pulses and rests) to a level, frequency, and duration that are effective, but safe. The colors and pulses continuously change, leaving no time for the brain or eyes to adapt. After a few minutes, the effects wear off. The light could be used to make a bad guy turn away or shut his eyes, giving authorities enough time to tackle the suspect and apply the cuffs … all while sparing the lives of passersby, hostages, or airline passengers. An animated cross section shows how red, green, and blue LEDs are focused through an optical plate. “There are often confrontations at border crossings with suspected illegal aliens or drug runners,” Lieberman says. “You don’t want to hurt or kill them, just take them into custody. With this,” he smiles, “they don’t need to know English to comply.”

easily be scaled up to fit the need; immobilizing a mob, for instance, might call for a wide-angle "bazooka" version. Scaling down is more difficult. At 15 inches long by 4 inches wide, the current prototype is more transportable than portable. The next-generation weapon must be as short and svelte as a D-cell Maglite, designed to fit on a duty belt. "Phase 3 will be our shrink phase," Lieberman says. This fall, in Phase 2, researchers at Pennsylvania State University will test the LED Incapacitator on volunteers at the school's Institute of Nonlethal Defense Technology. Intelligent Optical Systems will use the test results to evaluate design features and tweak the strobe's pattern and colors. "There's one wavelength that gets everybody," says Lieberman. "Vlad calls it the evil color." Further tests are scheduled for the fall, and production could begin by December. By 2010, the LED Incapacitator could be in the hands of thousands of policemen, border agents, and National Guardsmen.

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