Cannon-fired shock wave could stun, kill people

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The Thunder Generator produces shock waves that result in a loud sonic boom and extreme air pressure, which can be heard and felt by people up to 100 meters away. Image credit: Army Tec.

(PhysOrg.com) -- Police and military forces around the world may soon have a new non-lethal weapon at their hands. Called the Thunder Generator, the device is a cannon that fires shock waves that pass through people and objects. Although the shock waves are harmless, they give people the impression of standing in front of a firing squad, according to the cannon's developers.

Originally, the Thunder Generator was used by farmers in Israel to scare away birds that might eat their crops. Recently, Israel's Ministry of Defense has approved a license for the Israeli technology company ArmyTec to market military and paramilitary versions of the Thunder Generator. The company hopes that the cannon, which was originally developed by Israeli company PDT Agro, could have applications in crowd control and border security.

"Anyone within 30 to 50 meters from the cannon will feel like he's standing in front of a firing squad," said Igor Fridman, president of PDT Agro, who developed the system. "He'll feel and hear the blast, but he won't be hurled to the ground. He'll be able to run away unharmed … and that's the point of this application."

Maintaining a safe firing distance is important, though, since if a person is standing within 10 meters of the cannon, the shock wave could inflict permanent damage or even kill them. Rather, the device is intended for longer distances. Fridman estimates that by increasing the current five-inch diameter of the barrel, the cannon could have a range of up to 100 meters.

To generate the shock waves, the cannon uses a mixture of liquefied petroleum, cooking gas, and air. As the fuel travels through the cannon barrel, it detonates and intensifies until it exits, producing a series of rapid-fire, high-velocity shock bursts. The shock bursts can be calibrated and programmed for different purposes. According to the company, the system can generate 60-100 bursts per minute, with each burst traveling at about 2,000 meters per second and lasting up to 300 milliseconds. The resulting extreme air pressure and sonic boom effect create a double deterrent to rioters and intruders.

"It's all done in a controlled and safe manner, using the cheapest, cleanest fuel available," said Fridman, noting that a standard 12-kilogram canister of liquefied petroleum can produce about 5,000 shock bursts at a cost of about $25. "The trick is to cause it not to burn, but to explode."

In agriculture, the shock waves have provided a cleaner alternative to hazardous chemicals that farmers might use to keep pests away. For police and military uses, the system could offer a safer, cheaper and more politically acceptable weapon than other explosive materials or lethal force. Over the past two years, about a dozen systems have been operating at Israeli farms and fisheries, with no accidents.

ArmyTec plans to modify the single-barrel cannon for different applications. The company has proposed a multi-barrel design and synchronized networks of multiple cannons to simulate a battlefield experience. The cannons could also be mounted on vehicles and operated via remote control. Plus, by using a curved barrel design, the cannon could produce shock waves at 90-degree angles to bend around walls or other obstacles.

More information: More information: ArmyTec.net

via: Defense News and Gizmodo

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