

# “Non-Lethal” Weapons: Where Science and Technology Service Repression

By [Tom Burghardt](#)

Global Research, July 10, 2008

[Antifascist Calling...](#) 10 July 2008

Theme: [Militarization and WMD](#), [Police State & Civil Rights](#), [Science and Medicine](#)

Acoustic microwave armaments? Laser induced plasma channels? Vortex ring guns? Are these high-tech MacGuffins spiffing-up the latest Hollywood near-future thriller? Regrettably, no. Welcome to the twisted world of “non-lethal” weapons research brought to you by the “fun” folks at the Pentagon’s Joint Non-Lethal Weapons Directorate ([JNLWD](#)).

Like a newborn’s proud parents, the JNLWD is heralding the successful phase two testing of Raytheon’s Active Denial System (ADS), a directed energy weapon used for “crowd control.” Known for its “goodbye effect,” it functions as a primitive, though highly-effective “pain ray” by heating the skin to around 130 degrees F.

According to a blurb on the JNLWD [website](#), the ADS is “helping to fill the gap between the ‘shout’ and ‘shoot’ alternatives faced by our troops.” ADS “represented the first integration of the key technology elements such as the millimeter wave source, cooling system, and antenna, among other things.” With a range of some 550 yards, the ADS can penetrate clothing. Its effects have been described by test subjects as “excruciating.”

A domestic version of the system known as the [Silent Guardian](#) is being hawked to law enforcement by Raytheon for its alleged ability to provide “a zone of protection that saves lives, protects assets and minimizes collateral damage.” According to some reports, ADS has “been present” at some public events in the United States. How comforting.

But as disturbing as Raytheon’s ADS may be, there are systems about to come “on-line” that are far, far worse. *New Scientist* recently described how one enterprising outfit of capitalist grifters, the [Sierra Nevada Corporation](#), is “ready to build a microwave ray gun able to beam sounds directly into people’s heads,” David Hambling [reports](#).

Touted as the “next big thing,” MEDUSA (Mob Excess Deterrent Using Silent Audio) will eventually be deployed for “crowd-control” applications in U.S. military “[operations other than war](#).” According to Hambling, MEDUSA

exploits the microwave audio effect, in which short microwave pulses rapidly heat tissue, causing a shockwave inside the skull that can be detected by the ears. A series of pulses can be transmitted to produce recognisable sounds. (“Microwave Ray Gun Controls Crowds with Noise,” *New Scientist*, July 3, 2008)

Sierra Nevada Corporation’s Lev Sadovnik is working on the latest in a series of “active denial systems” under contract with the U.S. Navy which said in a preliminary report that

the device “was shown to be effective.”

According to its manufacturer, MEDUSA involves an “auditory effect” loud enough to “cause discomfort or even incapacitation.”

While the technology is ballyhooed by weapons designers as an “advance,” its effects are wholly insidious since “normal audio safety limits do not apply since the sound does not enter through the eardrums.” Sadovnik told *New Scientist*, “The repel effect is a combination of loudness and the irritation factor. You can’t block it out.”

Another technological “breakthrough” that greatly impressed Sierra Nevada’s Pentagon “customer” is “a new reconfigurable antenna developed by colleague Vladimir Manasson. It steers the beam electronically, making it possible to flip from a broad to a narrow beam, or aim at multiple targets simultaneously.”

In other words, a “target” could be one person, say a union leader speaking outside a plant gate to “disruptive” strikers challenging the corporatist paradigm, or a range of “targets” engaged in “anti-social behavior” such as nonviolent civil disobedience by concerned citizens blocking the entrance to a major polluter’s factory-or weapons manufacturer, for that matter.

With one eye on his corporate masters’ bottom line while the other is focused on potential adverse publicity that might accrue from fabricating a product that creates a *shockwave* inside someone’s skull, Sadovnik resorts to the old “dual-use” public relations ploy to cover his ass-ets, so to speak. Without skipping a beat, Sadovnik claims the technology *could* have “non-military” applications such as scaring away pesky flocks of birds or even as a means to “help” people with impaired auditory functions!

While the system may be feasible, James Lin of the Electrical and Computer Engineering Department at the University of Illinois in Chicago told Hambling that a high-power system such as MEDUSA “would mean much more powerful-and potentially hazardous-shockwaves.”

“I would worry about what other health effects it is having,” says Lin. “You might see neural damage.”

Damaging or not, the next phase in acoustic weapons development will almost certainly entail human testing. According to [Wired](#), a military-funded lab “is pushing to get approval to conduct human testing at 130Db to see if, in that range, sound could have a ‘deterrent effect’.”

At a “non-lethal” weapons conference back in December, Nicholas C. Nicholas, the Chief Scientist at Penn State’s Applied Research Laboratory, told his audience that “Behavior modification is next logical step [in testing].” Sharon Weinberger reported,

You would think for all the talk of acoustic weapons, there’s tons of data. Not true, says Nicholas. There isn’t really any reliable data on the effects on human as you move up the decibel range. The big problem is safety standards. “Current standards are far too conservative,” argues Nicholas, whose lab works on a number of projects for the Pentagon’s Joint Nonlethal Weapons Directorate. OSHA standards, Nicholas says, are for occupational hazards that cover up to 30 years of exposure, and shouldn’t be used for testing weapons.

(“Lab Pushes for Sonic Blaster,” Wired, December 12, 2007)

Despite the potential of acoustic weapons inflicting permanent injuries, Nicholas was not concerned in the least: “Some injury has to be tolerated or you cannot develop nonlethal weapons.” Nevertheless, their implicit dangers are already well-known.

When the U.S. Army’s Intelligence and Security Command (INSCOM) was forced to release a [study](#) under the Freedom of Information Act, it did just that, documenting a multitude of hazardous side-effects. Under the heading, “Incapacitating Effect: Microwave Hearing,” we discover the following:

Microwave hearing is a phenomenon, described by human observers as the sensations of buzzing, ticking, hissing, or knocking sounds that originate within or immediately behind the head. There is no sound propagating through the air like normal sound. This technology in its crudest form could be used to distract individuals: if refined, it could also be used to communicate with hostages or hostage taken directly by Morse code or other message systems, possibly even by voice communications.

The mechanism described by INSCOM analysts refer to the so-called “Frey effect,” named after Allan H. Frey, a Cold War neuroscientist who first published his 1962 findings in the *Journal of Applied Physiology*. While some of the technologies are still in the conceptual stage, how does INSCOM view their possible deployment as a “crowd control” weapon? The following passage sets the tone (if you’ll pardon the pun) of the sinister nature of these systems and those who design them. Under the heading, “Microwave Hearing: Possible Influence on Subject(s),” INSCOM analysts hypothesize:

Application of the microwave hearing technology could facilitate a private message transmission. It may be useful to provide a disruptive condition to a person not aware of the technology. Not only might it be disruptive to the sense of hearing, it could be psychologically devastating if one suddenly heard “voices within one’s head.” (“Bioeffects of Selected Nonlethal Weapons,” U.S. Army Intelligence and Security Command (INSCOM), 17 February 1998)

Although “non-lethal” microwave acoustic weapons have yet to be deployed, they have been field tested. According to [New Scientist](#),

It is claimed that the so-called “Frey Effect”—using close-range microwaves to produce audible sounds in a person’s ears—has been used to project the spoken numbers 1 to 10 across a lab to volunteers’. ... In 2004 the US Navy funded research into using the Frey effect to project sound that caused “discomfort” into the ears of crowds. (David Hambling, “U.S. Army Toyed with Telepathic Ray Gun,” New Scientist, March 21, 2008)

While Hambling may believe such systems are “outlandish,” given time—and virtually unlimited resources courtesy of their intended “targets”—U.S. citizens, I’m far less sanguine.

Despite all the hoopla, it should be clear by now that descriptors such as “non-lethal” or “less-than-lethal” are, strictly speaking, Orwellian constructs that mask their application as repressive tools for domination. Their primary purpose is not to “save lives” but to be used

as instruments of *social control*.

What other horrors are Pentagon contractors literally cooking-up? According to *Wired*, the [Wattre Corporation](#) has created an “active denial system” called Hyperspike. Sharon Weinberger [reports](#),

Imagine being hit by a nonlethal blast that seems to explode in front of you—a deafening and blinding combination of light and sound. As the battle for “sonic blasters” heats up, a number of companies are looking at innovative ways to combine light and sound into new, nonlethal devices. (“Sonic Blaster + Laser = New Weapon,” *Wired*, March 31, 2008)

According to Wattre’s president Curt Graber, Hyperspike combines a “collimated beam of sound” with corporate grifter Stellar Photonics “dynamic pulse detonation” laser to create a combined effect that Graber describes as a “psycho-acoustical event.”

The new weapon creates a “mid-air plasma ball” that that “basically ignites the air in front of the person,” Graber says. “It creates fireworks right in front of you.”

What will they think of next! A fireworks show just before the cops bash your head in. How’s that for American innovation and know-how!

With a multitude of uses in the coming period as the American economy tanks and “restless natives” in the “homeland” take to the streets in protest against endless imperial wars and assaults on our economic and social rights, Hyperspike seems just the thing to “keep the rabble in line.” As touted by Wattre Corporation, the Plasma Accoustic Shield System (PASS) “will eventually combine a dynamic pulse detonation laser with a high power speaker for hailing or warning, and a dazzler light source.”

But Keith Braun of the U.S. Army’s [Advanced Energy Armaments Systems Division](#), based at Picatinny Arsenal in New Jersey, told [New Scientist](#) last year that the PASS is not quite ready for prime time. According to David Hambling,

*Braun puts the maximum range of the system at around a hundred metres. But he says the PASS laser is unlikely to be used as a weapon, in its current format, since it lacks sufficient power. Unlike other high-power lasers which burn a target, the DPD relies on a shockwave. Braun says it would take several minutes to burn through a piece of paper using the laser.*

“It is fair to say that any stunning or disabling of a target individual would require additional force on target,” says Braun. “The current state-of-the-art in portable, rugged laser systems is not at the point of sufficient power.” (“Plasma Shield May Stun and Disorient Enemies,” *New Scientist*, April 26, 2007)

Indeed, PASS and other combinations such as Wattre’s Hyperspike “may be the first step towards a man-portable, tuneable laser weapon that could be used in both non-lethal and lethal modes.”

[Stellar Photonics](#), which has a \$2.7 million contract to build PASS for the Defense Department, is pitching a portable laser rifle “which would be lethal,” according to Army researchers. Hambling reports,

It would weigh about fifteen kilograms, would have a range of more than a mile, and could have numerous advantages over existing rifles—better accuracy and the ability to hit a moving target at the speed of light.

*It could also be used in non-lethal mode, “offering the individual soldier a first response non-lethal alternative, with the capability to go lethal should the situation call for that level of response”, says Braun. But extensive testing of its effects on humans would need to be carried out before it could be legitimately used as a non-lethal weapon.*

One shudders to think what “extensive testing of its effects on humans” would entail and what “metrics” would determine its “effectiveness.”

Fear not, the Defense Department is busily exploring this for us. According to its [website](#), Picatinny Arsenal, “the Home of American Firepower,” has a brief to “establish strong partnerships with many agencies...and academia that are exploring advanced technologies.” Some of the “advanced technologies” under development by Picatinny include:

Advanced Energy Weapons Systems employ advanced technologies that may completely change the way military missions are organized and executed in the future. These systems include, but are not limited to, charged particle beams, neutral particle beams, antiparticle beams, low and high energy lasers, high-power microwaves (HPM), acoustics, plasma, and substantial potential with nanotechnology. (“Products and Services,” Picatinny Arsenal, no date)

As we have seen in this brief descriptive overview, American militarism is extending the boundaries of “pacification” directly into the human body and mind, viewed by military planners and their corporatist paymasters as necessary accoutrements for dominating the “battlespace.” And in this brave new world, science and academia are playing pivotal roles in the development of “non-lethal” weapons systems for the American Empire’s “up-armored” war fighters and mercenaries.

According to researcher Nick Turse, since World War II academia has come to rely on Pentagon funding for research and development, a devilish relationship that has “the money and muscle to alter the landscape of higher education, to manipulate research agendas, to change the course of curricula, and to force schools to play by the rules.”

As Turse documents in his valuable book, [The Complex](#), one institution, MIT and its spun-off “not-for-profit” research powerhouse [The MITRE Corporation](#), brought in a cool \$883,832,277 in research and development dollars from the Pentagon. “Heavy-lifting” such as this “would move MIT out of the military-academic ranks and within striking distance of the military-corporate megagiant General Dynamics.”

Researcher and activist Frank Morales described the sinister convergence of science, corporate power and the military’s development of “non-lethal” weapons technology as one where “the Pentagon and Justice Department, along with their private and academic appendages are spearheading new ways to control, hurt, torture and kill people, here and abroad.” Indeed, Morales writes,

Within this context, a well-funded sadistic science, searching literally for the “magic bullet,” weaponizes anything that can “disable.” This new fascism

attacks the body utilizing bio-determinist ideology and advanced technical means, necessarily widening its potential targets with each new technological advance and/or political requirement. ... No longer content to withstand the annoying pressures of democracy, the corporate game plan calls for a more direct action approach, more repression and less concession. This is the context for so-called non-lethal weapons. ("Non-Lethal Warfare," in *Police State America*, edited by Tom Burghardt, Toronto/Montreal: Arm The Spirit/Solidarity, 2002, p. 120)

There is nothing "gee-whiz" about such appalling technologies. Serving as instruments for waging the American Empire's new class war, the well-paid "little Eichmanns" busily designing an uninhabitable world of corporatist nightmare and horror should be denounced—and their "research" shut down.

*Tom Burghardt is a researcher and activist based in the San Francisco Bay Area. In addition to publishing in Covert Action Quarterly, Love & Rage and Antifa Forum, he is the editor of Police State America: U.S. Military "Civil Disturbance" Planning, distributed by [AK Press](#).*

The original source of this article is [Antifascist Calling...](#)

Copyright © [Tom Burghardt](#), [Antifascist Calling...](#), 2008

---

[Comment on Global Research Articles on our Facebook page](#)

[Become a Member of Global Research](#)

Articles by: [Tom Burghardt](#)  
[http://antifascist-calling.blogspot.co](http://antifascist-calling.blogspot.com/)  
[m/](#)

**Disclaimer:** The contents of this article are of sole responsibility of the author(s). The Centre for Research on Globalization will not be responsible for any inaccurate or incorrect statement in this article. The Centre of Research on Globalization grants permission to cross-post Global Research articles on community internet sites as long the source and copyright are acknowledged together with a hyperlink to the original Global Research article. For publication of Global Research articles in print or other forms including commercial internet sites, contact: [publications@globalresearch.ca](mailto:publications@globalresearch.ca)

[www.globalresearch.ca](http://www.globalresearch.ca) contains copyrighted material the use of which has not always been specifically authorized by the copyright owner. We are making such material available to our readers under the provisions of "fair use" in an effort to advance a better understanding of political, economic and social issues. The material on this site is distributed without profit to those who have expressed a prior interest in receiving it for research and educational purposes. If you wish to use copyrighted material for purposes other than "fair use" you must request permission from the copyright owner.

For media inquiries: [publications@globalresearch.ca](mailto:publications@globalresearch.ca)