

THE MISUSE OF MICROWAVE WEAPONS BY CRIMINALS AND TERRORISTS

Dr. Reinhard Munzert, Germany, Erlangen

High Power Microwave (HPM) systems are among the most mature non-lethal weapons. They can be used effectively against electronic devices (anti-electronics) and/or persons (anti-personnel weapon). Microwave weapons (Directed energy weapons/Radio frequency weapons) damage or destroy computers, disable the electronics of cars, ignite airbags, and take down airplanes. They have strong effects and can be used for military and police as well as terrorist and criminal activities.

Microwave devices are easily to obtain and can be built by terrorists or criminals with basic knowledge in electronics. To quote Jim Lewis, director of technology at the Center for Strategic and International Studies in Washington DC.: "It is unfortunately true that people anywhere around the globe get access to technology almost as advanced as the Department of Defense [has it]."

Not only the good guys can apply non-lethal weapons: "...there is mounting evidence that home-brew HPM weapons are being used to attack people...The latest research and finding on this horrific trend in Europe is quite frightening" (News from Infowar, Volume I Number 6, August 28, 2002).

Through the illegal usage of innovative high-tech weapons, people are not "shot", rather their living quarters are bathed in (high frequency) electromagnetic waves. A hightech-gang in Germany is using and testing HPM-weapons that supply continuous or pulsed waves over long periods of time. They have magnetrons, microwave-generators, amplifiers and integrated systems. The (pulsed) waves of two or more transmitters interfere in the target zone and strengthen their effects. There are also parabolic antennas modified to transmitters. Besides this, intelligent (adaptive) antenna systems (numerous small transmitters connected, instead of few large ones; for example hidden in parked cars/vans or buildings around the target/person(s) are used. In addition they apply through wall imaging methods. - The effects of the HPM-beam on the victims include headache, irregular heartbeat, painful testis, burned skin, eye damage and cancer.

It would be an error to think that non-lethal weapons are not available for law-breakers. "Unless we are aware of the possibilities, and acknowledge

them, there is no way we can begin to defend ourselves" (News from Infowar) - It is better to inform and to tackle than to wait and ignore.

Targeting the Human with Directed Energy Weapons

Dr. Reinhard Munzert

6. Sept. 2002

New arms threaten and destroy lives in strange ways. Directed energy weapons are among the high-tech arms of the century. They hurt and kill with electromagnetic power. Microwave weapons can be aimed at computers, electronical devices and persons. They have strong physical and psychological effects and can be used for military and terrorist activities. These weapons are also part of crimes (in Europe) that almost nobody knows except the victims and the offenders. Until now they make the perfect crime possible. No doubt, these weapons have a terrible future.

Key Points

- Directed Energy Weapons (DEW)
- DEW and Crime
- Perfect Crime?
- DEW and Terrorism

Topic 1

- Manipulated Microwave Oven
- Magnetrons and Generators
- Intelligent Antenna Systems

Topic 2

- Anti-Electronics Weapon
- Anti-Personnel Weapon
- Psychological Effects

Topic 3

- DEW and Crime
- License to Kill
- Perfect Crime
- Mental Strength & Fighting Back

Topic 4

- DEW as Terrorist Weapon
- Unseen Terror Attack
- Prevention and Protection

Summary

- New Threats and Dangers
- Crime and Terrorism
- Recognizing and Knowing
- Prevention and Elimination
- Future Weapon! -Terrible Future?

MICROWAVE WEAPONS

New Technology in Crime

Activities and Sources

There is a new, effective weapon for criminals and terrorists. Law-breakers often misuse modern technology. Through the illegal usage of innovative high-tech weapons, people are not "shot", rather their living quarters are bathed in (high frequency) electromagnetic waves for a length of time.

Directed Energy Weapons (DEW) are mostly intended for military purposes (U.S. Air Force, Russian and Chinese armies). High-tech company Raytheon states about DEW: "We believe they are a critical element of how ultimately wars will be fought. HPM (High power microwaves) is the most mature right now" (in Fulghum & Wall 2002).

The renowned German newspaper "DIE WELT" acknowledges microwave weapons as arms of the 21st century. In another German newspaper,

Süddeutsche Zeitung, a weapons expert has recommended the police to procure microwave (MW) weapons for police use. Considering what certain criminals know about MW weapons, they have a significant advantage over the police until now. This puts the victims in extreme danger.

A primitive variation of a MW weapon would look like this: A microwave oven from the kitchen with the protective shielding removed from the door and replaced by a metal funnel. And then the waves can get through walls (Pictures 1, 2, 3).

The effects of the MW beam on the victims include extreme weariness, headache, irregular heartbeat, diarrhea, painful testis, damaged nervous system and internal organs, burned skin and eye damage. Later effects include blindness, heart attack, stroke and cancer. In the last months by some victims, cancerous tumors have been diagnosed.

In addition to that, victims (through intrigue and defamation) are seen as psychotic and dangerous; thus, they are completely helpless. At the same time, the new weapons (for certain contractors) are tested under ordinary circumstances and constantly improved.

HPM crimes are a new kind of crime with some very new characteristics. The International Union of Radio Science emphasizes in a resolution of 1999 on Criminal Activities using Electromagnetic Tools: "The fact that criminal activities using electromagnetic tools can be undertaken covertly and anonymously and that physical boundaries such as fences and walls can be penetrated by electromagnetic fields."

Expert Pevler stresses: "The development of high-power microwave (HPM) weaponry, and its proliferation into subversive organizations, offers the means to commit the 'perfect crime'. HPM attacks typically leave no residual evidence and their effects can range from nuisance to catastrophic" (1997).

The HPM-weapons that the high-tech gang uses supply continuous or pulsed waves over long periods of time - especially in the night - from cars or vans or buildings around the target/person(s). They use magnetrons, microwave-generators, amplifiers, integrated systems. In addition they apply through wall imaging methods. There are already over 40 known victims in Germany, some of them even have been attacked while in hospital. But the police doesn't understand these new weapons.

Besides this the criminals use tactics of information warfare: Know all about the victims, let them know nothing about you, information dominance, disrupt the communication systems of the victims.

The criminal network has at its disposal plentiful first class technical know-how and high quality equipment. That assures high efficiency and precision strikes and enables to operate from cars or vans. The MW generators/transmitters can be camouflaged in an attaché case or hidden in a small suitcase.

Only through cooperative work between electronic specialists and physicists have we been able to shine a revealing light on this special high-tech criminal activity. For experts: The (pulsed) waves of two or more transmitters [MW generators] interfere in the target zone, and through that, strengthen their effects. There are also parabolic antennas modified to transmitters. Besides this, intelligent (adaptive) antenna systems (numerous small transmitters connected, instead of few large ones; for example hidden in parked cars) will be used. Sometimes frequency hopping is employed. These methods work over several hundred feet, if everything is well adjusted.

We could find out where (electronic) components for highly potent MW weapons or whole systems (pictures 4, 5, 6) can be bought legally.

The criminals follow a double strategy: One way the victims are weakened, injured, tortured and intimidated. On the other side, the victims experience extreme, unbelievable things; almost no one can believe their reports. Most interpret the information from the victims as chimerical thinking. Some experts who work for the German Army or Nato know very well about MW weapons, but secrecy keeps them from talking too much about in public.

In several German cities there are complaints of serious physical injury. One attorney represents the interests of many victims. About 40 victims have built a community of interests. We are aware of many cases with amazing similarities that have been reported in the last few months. We have names and addresses of many victims and the circumstances of the cases. We also have the names and addresses of some perpetrators.

In some cases, the lifestyles of the criminals are well known to us. Similar to terrorists, many pretend good citizenship or student lifestyles to cover their crimes. Conventional criminal activities, (i.e. burglary) are undertaken by normal gangsters or former members of the Stasi (which was the secret service of former GDR). In this network, they have division of labor and a support structure that includes foreigners as well.

Terrorists could use MW as anti-electronics weapons too. With HP microwaves, they can attack the electronics of computers, cars, airplanes and so on successfully [see the other papers of the Workshop W8]. They can use microwave weapons (radio frequency weapons) to damage electronic systems in an unseen attack with all those bad consequences.

Additional points to be covered in the workshop: Detection of microwaves and protection against attacks.

All that has nothing to do with MW beam fright, but is criminal high-tech forced on the people. It is frightening that these weapons are being increasingly used by criminals and terrorists.

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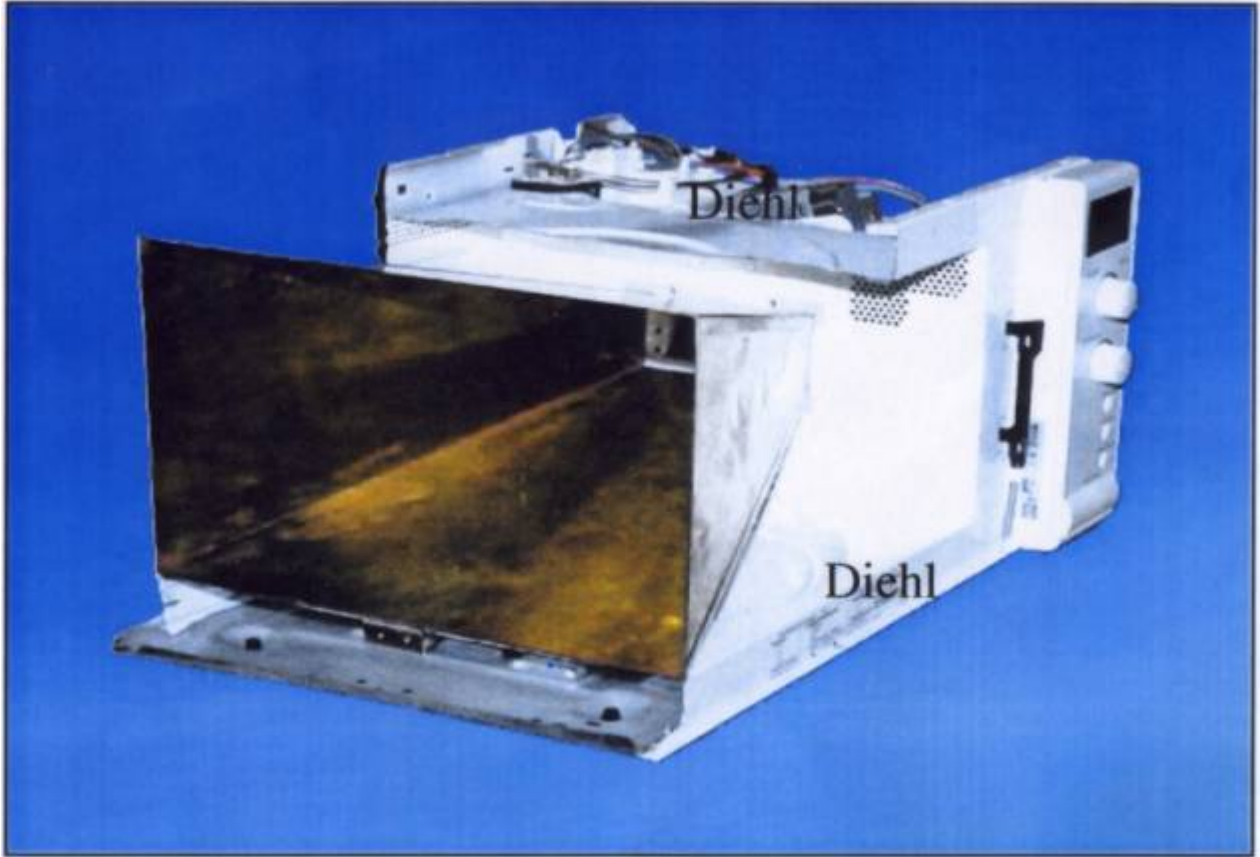
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Pictures



Picture 1: Manipulated Microwave Oven



Picture 2: Microwaves going through walls

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The Poor Man's Ray Gun - An Improvised Weapon
Price: \$11.95 s/h fee \$5.00

Description: By David Gunn. Now it is possible for just about anyone to build and use their own little piece of "star wars" weaponry. This very destructive and potentially lethal weapon uses inv... [read more](#)

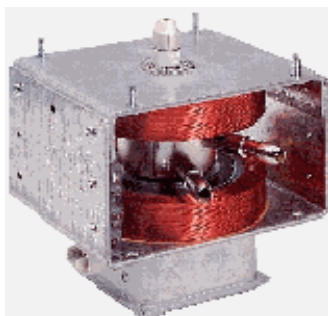
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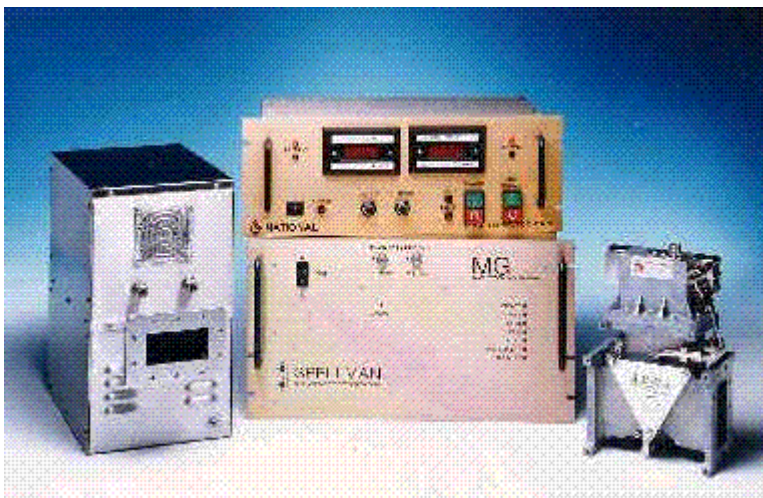
Picture 3: Book that describes the manipulation of a microwave oven to a ray weapon



Picture 4: Magnetron



Picture 5: Magnetron



Picture 6: Generator



Picture 7: Active Denial Technology



Picture 8: Neuronal Networks in the Brain

Terrorists and Synthetic Lightning

How Should We Decide What Hypothetical Threats to Worry About?

Concerns about how terrorists might attack in the future are central to the design of security efforts to protect both individual targets and the nation overall. In thinking about emerging threats, security planners are confronted by a panoply of possible future scenarios coming from sources ranging from the terrorists themselves to red-team brainstorming efforts to explore ways adversaries might attack in the future. This paper explores an approach to assessing emerging and/or novel threats and deciding whether — or how much — they should concern security planners by asking two questions:

(1) Are some of the novel threats “niche threats” that should be addressed within existing security efforts?

(2) Which of the remaining threats are attackers most likely to execute successfully and should therefore be of greater concern for security planners?

If threats can reasonably be considered niche threats, they can be prudently addressed in the context of existing security activities. If threats are unusual enough, suggest significant new vulnerabilities, or their probability or consequences means they cannot be considered lesser included cases within other threats, prioritizing them based on their ease of execution provides a guide for which threats merit the greatest concern and most security attention. This preserves the opportunity to learn from new threats yet prevents security planners from being pulled in many directions simultaneously by attempting to respond to every threat at once.

Source: [RAND](#)

[Summary \(PDF; 100 KB\)](#)

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[Excerpt]

The Variety of Emerging Threats Challenging Security Planning

Since the terrorist attacks of September 11, 2001, focused national attention on how terrorist operations could take advantage of previously unrecognized vulnerabilities in security or defensive measures, there has been significant focus in security analysis and planning on identifying and seeking to close other potential vulnerabilities. One part of this vulnerability-driven approach has been an effort to identify potential new attack modes or terrorist scenarios.

The nation's terrorist adversaries have been remarkably helpful and forthcoming in the search for these potential emerging threats. Enabled by the World Wide Web and the desire of a broader community of people—particularly among individuals sympathetic to al-Qaeda and jihadist-inspired terrorism—to feel like they are participants in a larger terrorist struggle, vast numbers of hypothetical terrorist plots flow through Internet chat rooms and message boards.

Examples include speculation about what infrastructures might be vulnerable to what kinds of attack, how various esoteric chemicals might be used to injure or kill, and even how electrical generators might be used to create lightning to use as a weapon. Emphasizing that even jihadist sympathizers explicitly engage in threat brainstorming, a 2009 contribution to an Internet posting board specifically asked its members to offer up potential scenarios for al-Qaeda targeting of U.S. corporations (“Jihadists Offer Hypothetical Scenarios, Targets for Attack,” 2009).

Whether the authors of the threats are truly putting them forward for consideration as actual attacks, are trying to mislead, or are simply engaging in the terrorist equivalent of creative writing is not clear, but the potential for such scenarios to result in scattering the nation's resources and scrambling security plans is real whatever their intent or motivation.

The open nature of this discourse has made it easy for us to see, and this pool of many possible attacks is supplemented by information gathered by intelligence agencies through other means. Though many (or most) of the operations detected during such activities are, in the words of John Pistole, Deputy Director of the Federal Bureau of Investigation, more “aspirational than operational” (“Alberto Gonzales Holds a News Conference on the Miami Terrorist Cell Arrests,” 2006), if nothing else, they provide a constant stream of novel potential attacks to challenge security planners. Reports of possible attack scenarios also sometimes appear in the press when they become of sufficient concern that collected information is shared outside intelligence and security organizations. Over the last few years, examples of such threats have included concern

about specific ways terrorists might conceal explosives, the use of remote-control toys in attack scenarios on airplanes (Transportation Security Administration, 2007), and heightened concern about attacks on specific targets as a result of intelligence information.

Beyond the myriad of threats—many fanciful, some more practical—that terrorists produce on their own, security planners' concern about the possibilities of unidentified, lurking vulnerabilities has led to a number of efforts to dream up new ways terrorists might attack.

These efforts often seek to identify novel or emerging threats by cross-pollinating the creativity of terrorism analysts with ideas from technology experts, novelists, and other creative personalities.

They have included government efforts such as the Department of Homeland Security Information Analysis and Infrastructure Protection Division's Analytic Red Cell program (Mintz, 2004) or the Defense Threat Reduction Agency's Thwarting an Evil Genius research effort (Advanced Systems and Concepts Office, undated), threat brainstorming within larger study or planning efforts, interactions between Hollywood writers and creative talent and security analysts or planners to jointly dream up new types of attacks (Calvo, 2002), the work of individual analysts or researchers examining single threats of potential concern (e.g., Baird, 2006; Deshpande, 2009; Bunker, 2008; Lockwood, 2008; see also discussion in McGill, 2008), and even unsolicited contributions by groups such as science fiction authors voluntarily acting as outside sources of creativity (Hall, 2007; Magnuson, 2008; Barrie, 2008).

The fruits of these brainstorming activities are frequently not disclosed outside of government out of concern of giving "bad guys good ideas." However, examples from some are available publicly. Scenarios examined in the Department of Homeland Security's red cell program reportedly included whether terrorists could take advantage of a hurricane in staging an attack and specific ways high-profile events might be targeted (Mintz, 2004). The science fiction writers group put forward that they thought there is "a strong possibility that Al Qaeda or someone else will set off five to ten nukes simultaneously around the country" (Andrews, 2007). Other analyses have looked at whether specific weapon systems could be used to attack particular targets of concern, such as the use of high-tech mortars in assassination operations (Bonomo et al., 2007) or bringing heat-seeking missiles to bear on high-temperature components of electric power grids (Committee on Science and Technology for Countering Terrorism, 2002, p. 181).

Individual analysts have contributed scenarios ranging from the idea that "a small terrorist cell could very easily develop an insect-based weapon"⁵ for transmitting disease to the use of laser weapons (Bunker, 2008; Elias, 2005) to "pyro-terrorism"—the use of large fires to cause terror (Baird, 2006; Deshpande, 2009).

These sorts of efforts to inject imagination into security planning are reinforced each time a successful, apparently unforeseen attack occurs; where the occurrence of the attack leads to the conclusion that past efforts to foresee new risks have involved insufficient—or the wrong kinds of—creativity.

[Excerpt]

Prioritizing Emerging Threat Scenarios

But what about attack scenarios that can't be treated as niches of more general threats?

Terrorists using lasers as weapons (Bunker, 2008) or building devices to produce synthetic lightning are unusual enough scenarios that they are difficult to treat as lesser included cases of other, more-common threats. But just because a threat is new does not mean security planners must worry about it. Given finite resources, security planners need approaches to help decide how much they should consider even genuinely novel threats and of those, which they should tackle first and how much should be spent doing so.

This problem is further complicated by the need to compare threats that are very different to make decisions regarding the allocation of limited security dollars. It is not easy to compare threats as diverse as laser attacks and **synthetic lighting**, [15 - SITE Intelligence Group translation of jihadist internet posting on the al Ekhlaas forum, "**Suggestion to ISI for Using Electricity as a Weapon**," translation dated June 13, 2008.] much less compare them to more pedestrian terrorist tactics such as bombings or armed attack. This difficulty in comparing threats can be a further pressure toward putting security measures in place for each of them individually, thereby sidestepping the need to compare them. But security planning undertaken in this manner can quickly get expensive. Common denominators are needed to make it possible to weigh different threat scenarios and make judgments about which merit customized security measures, which should be addressed by general measures like response and recovery, and which can most likely be ignored.

So how might security planners compare such disparate threats? One obvious element is some estimate of potential consequences of an attack, where higher potential consequences—many casualties or a high degree of damage—would make an emerging threat of greater concern.

But focusing on consequences alone provides only a partial picture, ignoring the other two components of risk—threat and vulnerability—that drive the likelihood of a terrorist attempting an attack via that mode and whether the potential targets would be damaged should such an attack be staged. However, for most emerging or hypothetical threats, a rigorous risk assessment is impossible because, almost by definition, planners cannot know the probability that such attacks will be attempted or what targets (vulnerable or not) they might be carried out against. To sidestep this problem, we use an approach that compares different terrorist operations by ranking them based on the estimated likelihood terrorist attackers will be able to carry them out successfully. This process includes asking questions about how easy or hard it would be for attackers to execute a specific attack scenario given its requirements and characteristics (an aspect of threat) and the potential effects of security measures on their likelihood of success (an aspect of vulnerability). To do so, we drill down into the details of each emerging threat scenario to uncover the practical elements of what would actually be involved in staging an attack using a novel weapon or tactic.

At a detailed level, some attack modes are simply more likely to encounter problems than others. For example, terrorists relying on improvised weapons (e.g., homemade mortars) would—in general—be more likely to encounter problems than groups using proven commercial weapons (e.g., mortars produced by an arms manufacturer). Similarly, very complicated operations (e.g., attacks dependant upon multiple events occurring in tight succession) would be more likely to break down than more-simple attack plans.

Sometimes terrorists can hedge against these risks; sometimes they cannot. In our work, we identified six general characteristics that affected the likelihood of a terrorist operation running into problems or failing entirely.

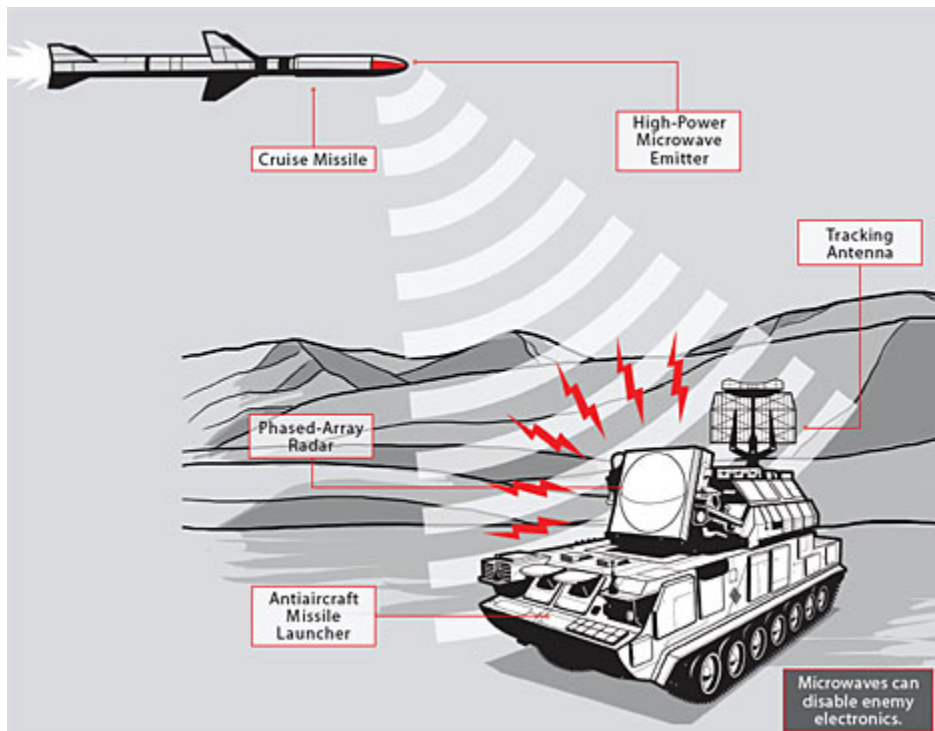
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See also: [Wicked: Energy Beams](#)

Microwave Missiles: High-Energy Weapons in the Air Force

June 2009

The High Power Microwave Technologies Branch of the Air Force Research Laboratory is looking for an innovative approach for non-lethal weapons technology that targets enemies' electronic systems. Here are projects looking to turn microwaves into technology-disabling weapons.



New research into high-power microwaves could make them a crucial tool of electronic warfare. The U.S. Air Force's newest directed-energy weapon program, the Counter-Electronics High-Powered Microwave Advanced Missile Project (CHAMP), would create a weapon that fires powerful bursts of HPM, frying the electronics of multiple targets without harming people or other infrastructure. CHAMP's microwaves could be delivered from pods on airplanes,

unmanned aerial vehicles or even retrievable cruise missiles programmed to safely land near their points of origin, says Doug Beason, a member of the Air Force's Science Advisory Board who has worked on directed-energy weapons. "You want to fly close to the target. You do not want to hit the target kinetically," Beason says. Hurdles to a usable system include miniaturizing the antennas and the power supply. According to Air Force documents, the winner of the \$40 million CHAMP contract, expected to be chosen this year, would have five years to demonstrate a working device.

+ High-Energy Research and Applications Program: The Air Force last year began the \$75 million HERA program to research aerial and ground-based HPM weapons. Researchers will focus on zappers that can generate peak power in the multi-gigawatt range and devices emitting on narrow- and wide-band microwave loads.

+ Active Electronically Scanned Array Radar: AESA radars are made to scan the horizon for threats. However, if radio energy is concentrated on one spot, the radar can scramble the electronics of targets. U.S. warplanes currently carry the AESA radar, but officials do not speak publicly about their electronic warfare capabilities.

+ Active Denial System: The ADS system, mounted on a Humvee, focuses a high-power, 95-GHz microwave beam at a target using a planar array antenna. The microwave energy penetrates up to 0.5 mm into human skin, producing an intolerable heating sensation but, designers say, no permanent damage. The Navy is looking into a similar system for ships.

from a comment:

Microwave Missiles: High-Energy Weapons in the Air Force

Open Letter to the American People We are citizens of Germany and want to inform you that new possibilities of terror may arise from Germany. We don't want that once more there could be terror in the U. S. or other countries coming from persons or weapons from Germany! The USA could be attacked with microwave weapons (directed energy weapons / radio frequency weapons) that are already used by perpetrators, and organized crime in Germany. Microwave weapons and e-bombs are a real threat to people and critical infrastructures like computer networks, power grids, literally anything that works with electronics or computers. They can take down airplanes. The German police and law enforcement don't do anything to stop the misuse and testing of these weapons by criminals. For more information see

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<http://www.mikrowellenterror.de/english/index>

Best wishes from Germany Dr. Reinhard Munzert, contact: RMunzert@t-online.de Diplom-Engineer Rudi Zotzmann, Diplom-Engineer Henriette Zotzmann and more than 200 other German citizens.

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Not only the good guys can apply non-lethal weapons: “...there is mounting evidence that home-brew HPM weapons are being used to attack people...The latest research and finding on this horrific trend in Europe is quite frightening” (News from Infowar, Volume I Number 6, August 28, 2002).

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E-Bombs And Terrorists: September 2001 Cover Story

<http://www.popularmechanics.com>

In the blink of an eye, electromagnetic bombs could throw civilization back 200 years. And terrorists can build them for \$400.

The next Pearl Harbor will not announce itself with a searing flash of nuclear light or with the plaintive wails of those dying of Ebola or its genetically engineered twin. You will hear a sharp crack in the distance. By the time you mistakenly identify this sound as an innocent clap of thunder, the civilized world will have become unhinged. Fluorescent lights and television sets will glow eerily bright, despite being turned off. The aroma of ozone mixed with smoldering

plastic will seep from outlet covers as electric wires arc and telephone lines melt. Your Palm Pilot and MP3 player will feel warm to the touch, their batteries overloaded. Your computer, and every bit of data on it, will be toast. And then you will notice that the world sounds different too. The background music of civilization, the whirl of internal-combustion engines, will have stopped. Save a few diesels, engines will never start again. You, however, will remain unharmed, as you find yourself thrust backward 200 years, to a time when electricity meant a lightning bolt fracturing the night sky. This is not a hypothetical, son-of-Y2K scenario. It is a realistic assessment of the damage the Pentagon believes could be inflicted by a new generation of weapons—E-bombs.

The first major test of an American electromagnetic bomb is scheduled for next year. Ultimately, the Army hopes to use E-bomb technology to explode artillery shells in midflight. The Navy wants to use the E-bomb's high-power microwave pulses to neutralize antiship missiles. And, the Air Force plans to equip its bombers, strike fighters, cruise missiles and unmanned aerial vehicles with E-bomb capabilities. When fielded, these will be among the most technologically sophisticated weapons the U.S. military establishment has ever built.

There is, however, another part to the E-bomb story, one that military planners are reluctant to discuss. While American versions of these weapons are based on advanced technologies, terrorists could use a less expensive, low-tech approach to create the same destructive power. "Any nation with even a 1940s technology base could make them," says Carlo Kopp, an Australian-based expert on high-tech warfare. "The threat of E-bomb proliferation is very real." POPULAR MECHANICS estimates a basic weapon could be built for \$400.

An Old Idea Made New

The theory behind the E-bomb was proposed in 1925 by physicist Arthur H. Compton—not to build weapons, but to study atoms. Compton demonstrated that firing a stream of highly energetic photons into atoms that have a low atomic number causes them to eject a stream of electrons. Physics students know this phenomenon as the Compton Effect. It became a key tool in unlocking the secrets of the atom.

Ironically, this nuclear research led to an unexpected demonstration of the power of the Compton Effect, and spawned a new type of weapon. In 1958, nuclear weapons designers ignited hydrogen bombs high over the Pacific Ocean. The detonations created bursts of gamma rays that, upon striking the oxygen and nitrogen in the atmosphere, released a tsunami of electrons that spread for hundreds of miles. Street lights were blown out in Hawaii and radio navigation was disrupted for 18 hours, as far away as Australia. The United States set out to learn how to "harden" electronics against this electromagnetic pulse (EMP) and develop EMP weapons.

America has remained at the forefront of EMP weapons development. Although much of this work is classified, it's believed that current efforts are based on using high-temperature superconductors to create intense magnetic fields. What worries terrorism experts is an idea the United States studied but discarded—the Flux Compression Generator (FCG).

A Poor Man's E-Bomb

An FCG is an astoundingly simple weapon. It consists of an explosives-packed tube placed inside a slightly larger copper coil, as shown below. The instant before the chemical explosive is detonated, the coil is energized by a bank of capacitors, creating a magnetic field. The explosive charge detonates from the rear forward. As the tube flares outward it touches the edge of the coil,

thereby creating a moving short circuit. “The propagating short has the effect of compressing the magnetic field while reducing the inductance of the stator [coil],” says Kopp. “The result is that FCGs will produce a ramping current pulse, which breaks before the final disintegration of the device. Published results suggest ramp times of tens of hundreds of microseconds and peak currents of tens of millions of amps.” The pulse that emerges makes a lightning bolt seem like a flashbulb by comparison.

An Air Force spokesman, who describes this effect as similar to a lightning strike, points out that electronics systems can be protected by placing them in metal enclosures called Faraday Cages that divert any impinging electromagnetic energy directly to the ground. Foreign military analysts say this reassuring explanation is incomplete.

The India Connection

The Indian military has studied FCG devices in detail because it fears that Pakistan, with which it has ongoing conflicts, might use E-bombs against the city of Bangalore, a sort of Indian Silicon Valley. An Indian Institute for Defense Studies and Analysis study of E-bombs points to two problems that have been largely overlooked by the West. The first is that very-high-frequency pulses, in the microwave range, can worm their way around vents in Faraday Cages. The second concern is known as the “late-time EMP effect,” and may be the most worrisome aspect of FCG devices. It occurs in the 15 minutes after detonation. During this period, the EMP that surged through electrical systems creates localized magnetic fields. When these magnetic fields collapse, they cause electric surges to travel through the power and telecommunication infrastructure. This string-of-firecrackers effect means that terrorists would not have to drop their homemade E-bombs directly on the targets they wish to destroy. Heavily guarded sites, such as telephone switching centers and electronic funds-transfer exchanges, could be attacked through their electric and telecommunication connections.

Knock out electric power, computers and telecommunication and you’ve destroyed the foundation of modern society. In the age of Third World-sponsored terrorism, the E-bomb is the great equalizer.

[image]

In the 1980s, the Air Force tested E-bombs that used cruise-missile delivery systems.

[image]

To ignite an E-bomb, a starter current energizes the stator coil, creating a magnetic field. The explosion (A) expands the tube, short-circuiting the coil and compressing the magnetic field forward (B). The pulse is emitted (C) at high frequencies that defeat protective devices like Faraday Cages.

MEETING MINUTES (various meetings) US MARINE CORPS (USMC) Joint Non-Lethal Weapons Directorate 1997 - 1998

http://www.governmentattic.org/USMC-NLW_MeetingMinutes.html

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[United States Marine Corps \(USMC\) Joint Non-Lethal Weapon \(JNLW\) Program JNLWD Service-Unique Review Status, 6/3/98 - \[PDF 137 KB\]](#)

[United States Marine Corps \(USMC\) Joint Non-Lethal Weapon \(JNLW\) Program Integrated Product Team Meeting, 13 Nov 98 - \[PDF 438 KB\]](#)

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7.8 MB



US warplanes, like this F-15C, carry active electronically scanned radar arrays in their noses that can be used as electronic warfare weapons.