

The future of U.S. anti-terrorism technology could lie near the end of a Moscow subway line in a circular dungeon-like room with a single door and no windows. Here, at the Psychotechnology Research Institute, human subjects submit to experiments aimed at manipulating their subconscious minds. Elena Rusalkina, the silver-haired woman who runs the institute, gestured to the center of the claustrophobic room, where what looked like a dentist's chair sits in front of a glowing computer monitor. "We've had volunteers, a lot of them," she said, the thick concrete walls muffling the noise from the college campus outside. "We worked out a program with (a psychiatric facility) to study criminals. There's no way to falsify the results. There's no subjectivism."

The Department of Homeland Security (DHS) has gone to many strange places in its search for ways to identify terrorists before they attack, but perhaps none stranger than this lab on the outskirts of Russia's capital. The institute has for years served as the center of an obscure field of human behavior study -- dubbed psychoecology -- that traces its roots back to Soviet-era mind control research.

What's gotten DHS' attention is the institute's work on a system called Semantic Stimuli Response Measurements Technology, or SSRM Tek, a software-based mind reader that supposedly tests a subject's involuntary response to subliminal messages.

SSRM Tek is presented to a subject as an innocent computer game that flashes subliminal images across the screen -- like pictures of Osama bin Laden or the World Trade Center. The "player" -- a traveler at an airport screening line, for example -- presses a button in response to the images, without consciously registering what he or she is looking at. The terrorist's response to the scrambled image involuntarily differs from the innocent person's, according to the theory.

"If it's a clean result, the passengers are allowed through," said Rusalkina, during a reporter's visit last year. "If there's something there, that person will need to go through extra checks."

Rusalkina markets the technology as a program called Mindreader 2.0. To sell Mindreader to the West, she's teamed up with a Canadian firm, which is now working with a U.S. defense contractor called SRS Technologies. This May, DHS announced plans to award a sole-source contract to conduct the first U.S.-government sponsored testing of SSRM Tek.

The contract is a small victory for the Psychotechnology Research Institute and its leaders, who have struggled for years to be accepted in the West. It also illustrates how the search for counter-terrorism technology has led the U.S. government into unconventional -- and some would say unsound -- science.

All of the technology at the institute is based on the work of Rusalkina's late husband, Igor

Smirnov, a controversial Russian scientist whose incredible tales of mind control attracted frequent press attention before his death several years ago.

Smirnov was a Rasputin-like character often portrayed in the media as having almost mystical powers of persuasion. Today, first-time visitors to the institute -- housed in a drab concrete building at the Peoples Friendship University of Russia -- are asked to watch a half-hour television program dedicated to Smirnov, who is called the father of "psychotronic weapons," the Russian term for mind control weapons. Bearded and confident, Smirnov in the video explains how subliminal sounds could alter a person's behavior. To the untrained ear, the demonstration sounds like squealing pigs.

According to Rusalkina, the Soviet military enlisted Smirnov's psychotechnology during the Soviet Union's bloody war in Afghanistan in the 1980s. "It was used for combating the Mujahideen, and also for treating post-traumatic stress syndrome" in Russian soldiers, she says.

In the United States, talk of mind control typically evokes visions of tinfoil hats. But the idea of psychotronic weapons enjoys some respectability in Russia. In the late 1990s, Vladimir Lopatin, then a member of the Duma, Russia's parliament, pushed to restrict mind control weapons, a move that was taken seriously in Russia but elicited some curious mentions in the Western press. In an interview in Moscow, Lopatin, who has since left the Duma, cited Smirnov's work as proof that such weaponry is real.

"It's financed and used not only by the medical community, but also by individual and criminal groups," Lopatin said. Terrorists might also get hold of such weapons, he added.

After the fall of the Soviet Union, Smirnov moved from military research into treating patients with mental problems and drug addiction, setting up shop at the college. Most of the lab's research is focused on what it calls "psychocorrection" -- the use of subliminal messages to bend a subject's will, and even modify a person's personality without their knowledge.

The slow migration of Smirnov's technology to the United States began in 1991, at a KGB-sponsored conference in Moscow intended to market once-secret Soviet technology to the world. Smirnov's claims of mind control piqued the interest of Chris and Janet Morris -- former science-fiction writers turned Pentagon consultants who are now widely credited as founders of the Pentagon's "non-lethal" weapons concept.

In an interview last year, Chris Morris recalled being intrigued by Smirnov -- so much so that he accompanied the researcher to his lab and allowed Smirnov to wire his head up to an electroencephalograph, or EEG. Normally used by scientists to measure brain states, Smirnov peered into Morris's EEG tracings and divined the secrets of his subconscious, right down to intimate details like Morris' dislike of his own first name.

"I said, 'gee, the guys back at home have got to see this,'" Morris recalled.

The Morrises shopped the technology around to a few military agencies, but found no one willing to put money into it. However, in 1993 Smirnov rose to brief fame in the United States when the FBI consulted with him in hope of ending the standoff in Waco with cult leader David Koresh. Smirnov proposed blasting scrambled sound -- the pig squeals again -- over loudspeakers to persuade Koresh to surrender.

But the FBI was put off by Smirnov's cavalier response to questions. When officials asked what would happen if the subliminal signals didn't work, Smirnov replied that Koresh's followers might slit each other's throats, Morris recounted. The FBI took a pass, and Smirnov returned to Moscow with his mind control technology.

"With Smirnov, the FBI was either demanding a yes or a no, and therefore our methods weren't put to use, unfortunately," Rusalkina said, taking a drag on her cigarette.

Smirnov died in November 2004, leaving the widowed Rusalkina -- his long-time collaborator -- to run the institute. Portraits of Smirnov cover Rusalkina's desk, and his former office is like a shrine, the walls lined with his once-secret patents, his awards from the Soviet government, and a calendar from the KGB's cryptographic section.

Despite Smirnov's death, Rusalkina predicts an "arms race" in psychotronic weapons. Such weapons, she asserts, are far more dangerous than nuclear weapons.

She pointed, for example, to a spate of Russian news reports about "zombies" -- innocent people whose memories had been allegedly wiped out by mind control weapons. She also claimed that Russian special forces contacted the institute during the 2003 Moscow theater siege, in which several hundred people were held hostage by Chechen militants.

"We could have stabilized the situation in the concert hall, and the terrorists would have called the whole thing off," she said. "And naturally, you could have avoided all the casualties, and you could have put the terrorists on trial. But the Alfa Group" -- the Russian equivalent of Delta Force -- "decided to go with an old method that had already been tested before."

The Russians used a narcotic gas to subdue the attackers and their captives, which led to the asphyxiation death of many of the hostages.

These days, Rusalkina explained, the institute uses its psychotechnology to treat alcoholics and drug addicts. During the interview, several patients -- gaunt young men who appeared wasted from illness -- waited in the hallway.

But the U.S. war on terror and the millions of dollars set aside for homeland security research is offering Smirnov a chance at posthumous respectability in the West.

Smirnov's technology reappeared on the U.S. government's radar screen through Northam Psychotechnologies, a Canadian company that serves as North American distributor for the Psychotechnology Research Institute. About three years ago, Northam Psychotechnologies began seeking out U.S. partners to help it crack the DHS market. For companies claiming innovative technologies, the past few years have provided bountiful opportunities. In fiscal year 2007, DHS allocated \$973 million for science and technology and recently announced Project Hostile Intent, which is designed to develop technologies to detect people with malicious intentions.

One California-based defense contractor, DownRange G2 Solutions, expressed interest in SSRM Tek, but became skeptical when Northam Psychotechnologies declined to make the software available for testing.

"That raised our suspicion right away," Scott Conn, CEO and president of DownRange, told Wired News. "We weren't prepared to put our good names on the line without due diligence." (When a reporter visited last year, Rusalkina also declined to demonstrate the software, saying it wasn't working that day.)

While Conn said the lack of testing bothered him, the relationship ended when he found out Northam Psychotechnologies went to SRS Technologies, now part of ManTech International Corp.

Semyon Ioffe, the head of Northam Psychotechnologies, who identifies himself as a "brain scientist," declined a phone interview, but answered questions over e-mail. Ioffe said he signed a nondisclosure agreement with Conn, and had "a few informal discussions, after which he disappeared to a different assignment and reappeared after (the) DHS announcement."

As for the science, Ioffe says he has a Ph.D in neurophysiology, and cited Smirnov's Russian-language publications as the basis for SSRM Tek.

However, not everyone is as impressed with Smirnov's technology, including John Alexander, a well-known expert on non-lethal weapons. Alexander was familiar with Smirnov's meetings in Washington during the Waco crisis, and said in an interview last year that there were serious doubts then as now.

"It was the height of the Waco problem, they were grasping at straws," he said of the FBI's fleeting interest. "From what I understand from people who were there, it didn't work very well."

Geoff Schoenbaum, a neuroscientist at the University of Maryland's School of Medicine, said that he was unaware of any scientific work specifically underpinning the technology described in SSRM Tek.

"There's no question your brain is able to perceive things below your ability to consciously express or identify," Schoenbaum said. He noted for example, studies showing that images displayed for milliseconds -- too short for people to perceive consciously -- may influence someone's mood. "That kind of thing is reasonable, and there's good experimental evidence

behind it."

The problem, he said, is that there is no science he is aware of that can produce the specificity or sensitivity to pick out a terrorist, let alone influence behavior. "We're still working at the level of how rats learn that light predicts food," he explained. "That's the level of modern neuroscience."

Developments in neuroscience, he noted, are followed closely. "If we could do (what they're talking about), you would know about it," Schoenbaum said. "It wouldn't be a handful of Russian folks in a basement."

In the meantime, the DHS contract is still imminent, according to those involved, although all parties declined to comment on the details, or the size of the award. Rusalkina did not respond to a recent e-mail, but in the interview last year, she confirmed the institute was marketing the technology to the United States for airport screening.

Larry Orloskie, a spokesman for DHS, declined to comment on the contract announcement. "It has not been awarded yet," he replied in an e-mail.

"It would be premature to discuss any details about the pending contract with DHS and I will be happy to do an interview once the contract is in place," Ioffe, of Northam Psychotechnologies, wrote in an e-mail. Mark Root, a spokesman for ManTech, deferred questions to DHS, noting, "They are the customer."