

By the late morning of 9/11, many of America's counterdrug resources were quickly redirected to prevent a second wave of terrorist attacks. The role of advanced technology was crucial at our nation's borders as the primary focus shifted from stopping drug smugglers to blocking any attempt by terrorists to bring weapons of mass destruction into our country. Over the past decade, CTAC had helped federal law enforcement agencies develop high tech detectors, including VACIS, the Customs Service's Vehicle and Cargo Inspection Systems, and the handheld Mini-Buster secret compartment detector.

White House Drug Control Policy Director John Walters noted that both of those anti-smuggling technologies can lead investigators to guns, explosives or a canister of biological agents hidden behind a car panel or inside a truck tire as easily as they can direct inspectors to hidden narcotics.

[Counterdrug & Counterterror]



A Report from

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The deployment of those technologies at border crossings made it tougher for anyone attempting to bring any contraband into our country. As proof, the government's intensified efforts resulted in a dramatic increase in seizures of drugs along the southwest border.

High tech drug crime fighting tools we've provided to state and local police since 1998 under our Technology Transfer Program were quickly adapted for counterterrorism shortly after the 9/11 attacks. Our Wireless Interoperability System had its first counterterrorism mission in Denver within days of the World Trade Center and Pentagon attacks. System performance met our high expectations, smoothly connecting the radios of responding federal, local law enforcement units, and fire department crews in response to a credible bomb threat at Denver's Federal Center. These emergency real-time communications would not have been possible prior to the installation of our system because federal, state and local law enforcement agencies typically use different, incompatible radios that can neither send nor receive across agency lines. CTAC provided wireless interoperability to Denver and its suburbs to facilitate interagency drug surveillance operations

in the metro area. The system is accomplishing that mission routinely today, while it stands ready to respond to any future homeland security needs.

Even before 9/11, these were already challenging times for those of us who are applying science to the fight against drug abuse and drug crime.

Congress created CTAC to coordinate the diverse federal law enforcement research and development program in 21 agencies and to undertake independent R&D. We invested carefully, putting relatively small amounts of money into the hands of innovative scientists whose work held the promise of breakthroughs in our quest for more effective law enforcement, prevention, and treatment.

I came to this post from the Defense Department's Advanced Research Projects Agency (DARPA) where I managed research into Counterdrug, Counterterror, and Special Operations. Since then, a number of previously classified systems developed at DARPA have been adapted for state and local police by CTAC sponsored scientists.

Helping Local Police

Since 1998, our Technology Transfer Program has been putting advanced systems and devices



into the hands of state and local law enforcement agencies in all 50 states. They are some of the same technologies used by the DEA and the FBI. Thus far, more than 3800 of America’s roughly 18,500 police and sheriffs’ departments have received one or more of the CTAC-selected and tested technologies including night vision, contraband detectors, digital wiretap, wireless interoperability, and video stabilization systems, plus a collection of covert devices and systems.

It’s great to watch smart cops undergo our mandatory training, grab a piece of high tech gear like the Mini-Buster hidden compartment detector and quickly begin doing damage to drug traffickers. It is even more gratifying to know that the same officer using the same gear could find a bomb and ruin a terrorist’s plan.

“The Mini-Buster helps us find lots of drugs coming in from Mexico and cash heading back. We are also on the lookout for possible terrorist devices concealed inside innocent looking vehicles.” reports Chief Carlos Garcia in Brownsville, Texas. The photos at the top of this page show his officers taking down a drug courier’s pickup after a Mini-Buster read unexplained differences in density under the same panel.

Tomorrow’s Technologies

CTAC-sponsored researchers are at work right now on next generation systems including experimental non-intrusive cargo inspection technology which, if it works, will not only reveal the presence of contraband in a shipping container, but will also identify the contents—dope, explosives, or the harmless cargo described in the manifest—without going through the expense and delay of having to open containers and examine contents by hand.

Another powerful new piece of advanced police technology we are field testing would make a wide range of investigative information available to narcotics officers in their vehicles and on their laptops as they arrive at crime scenes or surveillance locations.

CTAC’s Federal Partners

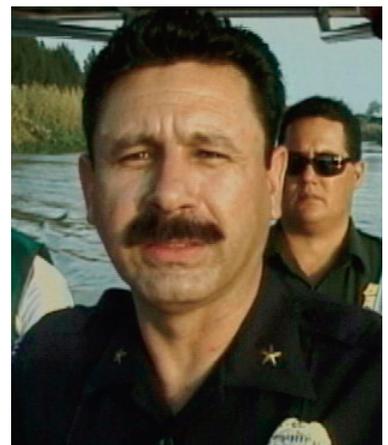
Much of our law enforcement R&D work is done in collaboration with other agencies. The DEA is our partner in the development of the Wireless Interoperability System in Colorado and the FBI had the tactical lead in the creation of our Video Stabilization System which electronically converts otherwise useless, unstable surveillance video into clear, court presentable evidence.

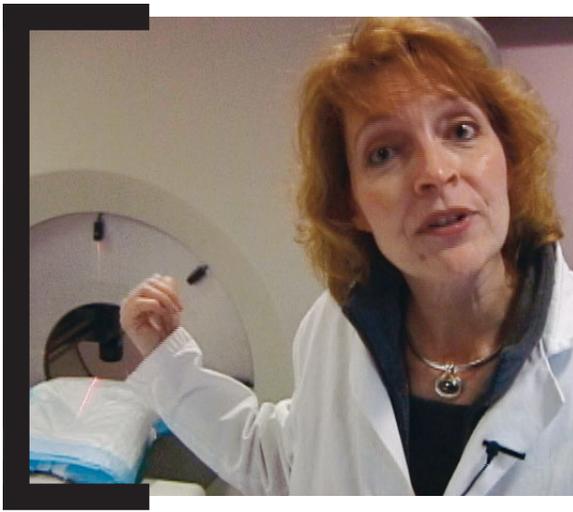
Helping Medical Researchers

Another important part of CTAC’s mission is to provide advanced neuroimaging systems to America’s brain researchers focused on drugs of abuse issues. Today, CTAC-funded medical research is underway to help scientists who work with the National Institute on Drug Abuse (NIDA) to discover all they can about the brain and its role in the processes of addiction. Our goals in building a national network of a dozen state-of-the-art brain imaging centers is the same as our investment in police technology: help save lives and protect the nation’s quality of life.

These Functional Magnetic Resonance Imaging (fMRI), Positron Emission Tomography(PET), and Single Photon Emission Computed Tomography (SPECT) cameras we are providing are being used to unlock mysteries of the brain that have long stood in the way of the development of medications and therapies for preventing and treating drug abuse. We’re intensely focused on finding a

Brownsville PD Chief Garcia working with US Border Patrol agents





Dr. Childress with her new CTAC-provided PET camera at the University of Pennsylvania in Philadelphia

cocaine vaccine or at least a way to reduce the impact of cocaine addiction with a medication that does for cocaine addicts what methadone does for heroin addicts: blocks the high and gives them the opportunity to live decent lives.

At the University of Pennsylvania's Addiction Treatment Research Center in Philadelphia, a team led by Dr. Anna Rose Childress is using a CTAC-sponsored PET brain camera to find out how to turn down the intense craving some people have for drugs. In her initial imaging studies, Dr. Childress found that videos of cocaine triggered craving and activity in the brain's circuits, which usually respond to the promise of normal rewards like food and sex. With support from a grant from the National Institute on Drug Abuse, Dr. Childress is currently testing whether Baclofen, a common anti-spasm drug, can dramatically blunt both the craving and the brain activation to cocaine cues.

Encouragingly, a paraplegic cocaine user who takes Baclofen for his paraplegia-induced muscle spasms, found the medication also dramatically reduced his cocaine craving. PET scans with this patient showed elimination of his brain's response to the cocaine video when he was taking Baclofen. The CTAC sponsored camera, which is designed to meet the requirements of this specialized research, is expected to tell the Childress team if the neurotransmitter dopamine is released during cue-induced craving in humans—critical information for developing effective anti-craving medications.

Not only do their institutions promise to conduct drugs of abuse research (which always had low prestige because of the stigma of drug abuse), but they also pledge to train the next generation of researchers.

New Knowledge, New Warning

One of the first CTAC-provided brain cameras went to a team of medical scientists led by Dr. Nora Volkow at Brookhaven National Laboratory in Upton, New York. They have used the machine to examine the brains of former methamphetamine addicts. The recovering drug abusers had been off meth for as long as 11 months and may have believed that their bodies and brains had escaped lasting injury, but what Dr. Volkow and her team discovered is chilling. Reported in the American Journal of Psychiatry, their study, funded by NIDA, says the brains of long term meth users appear permanently changed, leaving the recovering addicts with impaired memory and reduced physical coordination. Dr. Volkow told us her team was surprised to see from the PET camera images, that the subjects' brains showed the same kind of swelling normally associated with physical trauma, like the effect of radiation used to treat a tumor.

CTAC's advanced technology initiatives are supporting the courageous work of law enforcement officers, the genius of medical scientists, and the creativity and dedication of drug abuse prevention educators and treatment experts.

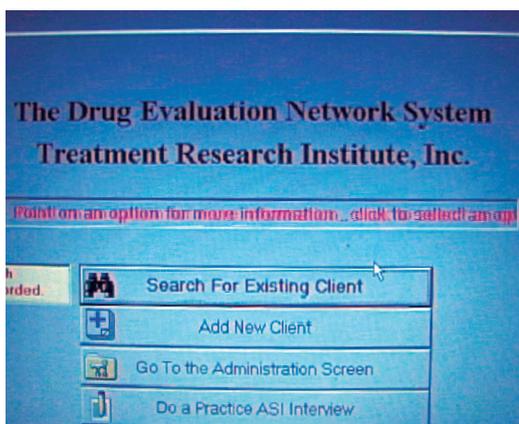
Helping Treatment Providers

One of the most interesting information technologies we've supported is DENS, the Drug Evaluation Network System, a computer connection to treatment center admissions and drug court intake data from around the country.



Dr. Volkow with brain images of long-term meth users, Brookhaven National Laboratory, Long Island, NY

DENS is designed to give policy makers early warning of drug abuse trends and also offers treatment center operators intake methods that sharpen their ability to serve their patients—helping them to quickly surface and respond to patients' issues that contributed to their decision to abuse drugs. This means more positive impact in the time allotted for treatment.



Helping Educators

Next year our state-of-the-art, interactive traveling education exhibits will present some of the hard science on drug abuse and drug crime to junior and senior high school students. These mobile exhibits are designed to help students see the negative effects of drugs of abuse and help them make conscious choices not to get involved with drugs.

Answering the Skeptics

During my nearly 11 years at ONDCP's CTAC, friends outside government have often asked me, if the persistence of the drug crisis didn't make me doubt the focus of our efforts. When I would reply by describing some of our technologies and our R&D programs and goals, they would say something to the effect of, "Well, let's see if it ever works in the real world."

I understood their skepticism but knew that with the right leadership and support, we could make advanced technology an even more effective partner in this struggle. I am pleased to report that the federal government's investment in counterdrug research and development is paying off across the horizon of science: we've deployed systems that locate drugs or bombs hidden in trucks, cars, trains and shipping containers; we have night vision cameras and other devices that reduce the risks for cops working drug cases; and we provide doctors with technology, enabling them to delve deeper than ever into the workings of the human brain to develop counterdrug medications. Their collective efforts hold the promise of a better future.



Since 1996, CTAC has been hosting State and Local Advanced Technology Workshops for police across America. At first we listened to city, county, and state law enforcement officers and learned about their technology needs. Then, we reported our findings to Congress. Congress then directed CTAC to arm local law enforcement with advanced technology to fight drug crime. We crafted the turnkey program of high tech assistance, training, and followup called the Technology Transfer Program. Our Workshops continue today but are largely recast as a way to help state and local agencies apply for the systems and devices. The program continues to evaluate new, fully tested technologies, adding some available technologies each year. Below is a scene from a Workshop in St. Louis.