Defence

Mexican physicist seeks ban of 'ineffective' detector

A physicist in Mexico has called for the Mexican government to ban a widely used drugs detector because he claims it does not work. The GT200 molecular detector made by UK company Global Technical is currently used by the Mexican government to detect narcotics in the fight against organized crime. However, in September physicist Luis Mochán, former head of the Institute for Physical Sciences of the National Autonomous University of Mexico (UNAM), spoke before members of the Mexican senate's science and technology commission saying the device is "totally ineffective" for detecting weapons and narcotics.

The Mexican government has bought more than 900 GT200 detectors over the last 10 years, paying around $25 000 for each. Most of them are used by the Mexican army to search for weapons and narcotics. On its website, Global Technical says it specializes in explosives and narcotics detection devices based on "paramagnetic technology". The company says the GT200 has been developed to search large areas, which can then be reduced to small locations "that can then be searched using other methods such as the canine". It says that GT200 can be used for searches at buildings, check points, port control and air operations, and can detect everything from cocaine to semtex explosives.

Speaking out Physicist Luis Mochán says the GT200 molecular detector, of which the Mexican government has bought more than 900, should not be used as a device to detect weapons and narcotics.

However, at the senate meeting on 13 September, Mochán said he had studied the detector's data sheet and concluded that it is "incompatible with scientific knowledge". He says the device is just an "empty box with a wire" that is totally ineffective for detecting weapons and narcotics.

After a BBC investigation into bomb-detector technology in 2010, the UK Department for Business, Innovation and Skills issued a statement saying "Tests have shown that the technology used in the ADE651 and similar devices is not suitable for bomb detection", although it did not specifically name the GT200 detector.

Despite such warnings, the Mexican army continues to use the device. Arturo Menchaca, president of the Mexican Academy of Sciences, says that the Secretariat of National Defence has refused to carry out scientific tests, stating that the purchase contract explicitly forbids this. Alejandro Frank, director of the Nuclear Sciences Institute at the UNAM, says the scientists who are calling for the ban are not trying to "question the morals of the members of the army". "The important thing is to stop using the device," he says.

Global Technical, which says the GT200 is in use in 25 countries around the world, had not provided any comment as *Physics World* went to press. However, on its website it states "We can say that previous tests carried out by independent bodies, and the experience of the large number of users of this product all over the world, confirms that the GT200 is effective."

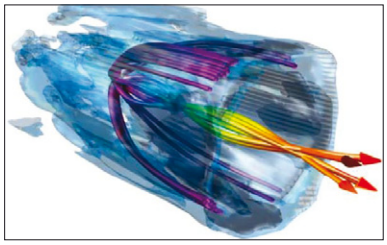
Gabriela Frías Villegas
Mexico City

Facilities

Researchers move towards 'CERN-on-a-desktop'

Scientists in Russia have built a prototype of a compact plasma accelerator, raising the prospect of "desktop" accelerators that could exceed the power of CERN's Large Hadron Collider (LHC) at a fraction of the size and cost. As well as providing basic research in high-energy physics and plasma research, the new generation of accelerators could also have a broad range of applications from proton therapy for the treatment of cancers to the detection of explosives.

The prototype was built at the International Laser Centre at Moscow State University as part of a collaboration between the Lebedev Physical Institute of the Russian Academy of Science in Moscow and the University of Bordeaux in France. It works by using a short, low-powered laser pulse to create a plasma on the surface of melted gallium. The researchers then use a terawatt-class titanium–sapphire laser to send pulses of 800 nm wavelength light through the plasma. This generates a high-charge separation between the positively charged atomic nuclei from the electrons in the plasma to leave a wake of plasma waves in its path on which the electrons "surf" and pick up energy.



APS

Accelerating ahead Physicists in Russia are planning to establish a high-energy-physics laser centre that will use lasers to generate electron energies in excess of 1 GeV.

Project leader Andrei Savel'ev-Trofimov from the International Laser Centre told *Physics World* that the prototype can create an acceleration field of 1 GeV/cm, exceeding that obtained by the LHC "by 3–5 times". "This means you can accelerate electrons in the space of a centimetre or less so our laser system is also comparatively small, occupying only 20–30 m^2," says Savel'ev-Trofimov.

The team now plans to establish a high-energy-physics laser centre at the Lebedev Institute by 2012, where they will install a new laser operating at several hundred terawatts. The facility is set to cost around €5m and is expected to generate proton energies of 300 MeV and electron energies in excess of 1 GeV.

The Russian breakthrough comes just weeks after researchers at the Lawrence Berkeley National Laboratory in the US announced they had generated 1 GeV beams over just 3.3 cm, equalling the expected performance of the Russian facility (*Nature Physics* 10.1038/nphys2071). The US team hopes to increase this to energies of 10 GeV over 1 m.

Simon Perks