

# Australian cryptologists concerned by restrictive exports law

Other scientists also say the need to get a permit for applied 'dual-use' research may constrain academic freedom.

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Researchers in Australia are worried that an unusually restrictive 'export controls' law that comes into force in April could constrain their academic freedom.

The law, called the Defence Trade Controls Act, will require academics who are working on applied research that is classified as 'dual-use' — that which may have both military and non-military applications — to apply for a permit from Australia's Department of Defence before they can write to colleagues overseas about their work. The dual-use list includes fields from electronics to microorganisms research. By 2 April, which marks the end of a one-year grace period since the act was passed, affected academics risk jail terms or fines if they communicate their research outside Australia without seeking a permit.

**"It's hard to see dramatic prosecutions but it's much more plausible to see a chilling effect on research"**

Researchers working in cryptology, artificial intelligence and microbiology have all said they are worried about the impacts of the legislation. "I think we're all concerned that because it appears to be a very blunt instrument, there is the potential for it to be used clumsily with potentially serious effects," says Jon Iredell, a microbiologist at the University of Sydney.

The [United States](#) has long had similar laws, but they contain exemptions for academics working on basic and applied research. Australia's version exempts only basic research.

As a result, says Vanessa Teague, a cryptologist at the University of Melbourne, much university-based applied research in cryptology in the United States is free from restriction — but in Australia, communicating the same type of research overseas may soon require a permit, and even then collaboration would be limited to an approved list of researchers or institutions. Another permit could be needed for new research relationships; the law seems to allow Australia's Department of Defence free rein to restrict communication around any technology it deems to have potential military applications. Just the time taken to process permit applications could disadvantage Australian researchers, Teague says.

## Unclear legislation

Cryptologists have been particularly vocal with their concerns, in part because their field has historically had an uneasy relationship with defence and national security bodies. In July 2015, Teague was one of 229 Australian and international members to sign an online petition from the International Association for Cryptologic Research, claiming that the legislation would cut Australia off from the international cryptologic research community by imposing "unclear, potentially severe, export controls".

The situation is worrying academics in part because no one is clear on how the law will work in practice, Teague adds — for example, which kinds of research will actually require permits, and how swiftly the Department of Defence will grant them.

The legislation also allows the defence minister to veto communication of dual-use research if the minister believes that it would prejudice Australia's security or international obligations, notes Jen Tsen Kwok, a policy specialist at the National Tertiary Education Union in Melbourne, which represents people working in higher education in Australia. "The Minister for Defence can come up with an excuse to stop research which may damage or constrain or compromise diplomatic relations with another country," he says. "The potential scope in the way the legislation is written is arbitrarily wide."

The legislation is reminiscent of a mistake the United States made in the 1990s, says Anna Lysyanskaya, a cryptography researcher at Brown University in Providence, Rhode Island. At that time, cryptography was classified as military technology and subject to the US Arms Export Control Act. But the restrictions were challenged both by academic researchers and corporate investors (who wanted to export encryption technology for use in e-commerce). After several years of searching for ways to control the export of encryption technology, the government of then-President Bill Clinton relented and moved oversight of encryption to the US Department of Commerce.

## Inappropriate application

Radar researcher Bill Moran at RMIT University in Melbourne says that he was baffled to discover that at least two of his current research projects were designated as 'controlled' by an online defence-department questionnaire designed to give researchers a quick 'yes' or 'no' about whether their research falls under the legislation. He subsequently was told that the research in question didn't need a permit after all. "I have done classified work in the past and I appreciate that some work has to be secret," says Moran, who is a former director of the Defence Science Institute at the University of Melbourne. But he says that the incoming legislation is being inappropriately applied to non-military academic work.

A spokesperson for the Department of Defence did not elaborate on the full reach of the legislation, but stated in an e-mail to *Nature* that for any technology to be assessed as 'controlled' under the new law, it would have to meet specific and high thresholds. "These mean the technology is not readily available, would usually require specific skills to develop, produce or use, and has application in a military context or a weapon of mass destruction program," the spokesperson said.

Others say that the law will cause academics few problems. It has already been amended from a 2012 version (which was never implemented), making it much more workable for researchers, points out Les Field, the secretary for science policy at the Australian Academy of Science in Canberra. Those amendments, introduced in April 2015, mean that affected academics won't need permits for verbal communications (such as talking on the phone or speaking about research at overseas conferences) or for e-mailing data or draft papers to overseas journals before publication, says Field, who was involved in the negotiations led by Australia's then-chief scientist Ian Chubb.

Despite the amendments, Teague says she's still concerned about the vague but heavy-handed threat of the legislation. "On the one hand, these are very heavy penalties — at least in theory — and on the other hand, the kind of activities we're talking about are sharing new cryptology ideas with researchers overseas," she says. "It's hard to see dramatic prosecutions but it's much more plausible to see a chilling effect on research."

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## Corrections

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**Corrected:** The original article wrongly stated that UK export-control laws contain exemptions for academics working on applied, as well as basic, research.

## 1 comment

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Adam Kor · 2016-03-29 01:10 PM

Hello Bianca Thanks for the article. It is a very interesting topic. The example of USA in the 1990's proves how technology updates laws rather than vise versa. The free flow of knowledge can in my opinion not be restricted. Rgds Adam <http://marine-electronics.eu/>

