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The risks of exclusion

Recently one of our editorial colleagues, an Australian citizen working in *Nature's* New York office, set out on what should have been a one-day trip to Montreal for a prearranged visa interview. He found himself unable to reenter the United States for nine weeks. The reason for this unexpected delay: he was born in Malaysia, one of 26 countries on the U.S. State Department's 'watch list' in the wake of the 9/11 attacks. Incidents like this are becoming increasingly common, and the National Academy of Sciences (NAS) has recently warned that the new immigration policies may have unintended detrimental effects on scientific research in the US.

In a statement issued last December, the NAS reported as a result of these restrictions that "...ongoing research collaborations have been hampered; that outstanding young scientists, engineers, and health researchers have been prevented from or delayed in entering this country; that important international conferences have been cancelled or negatively impacted; and that such conferences will be moved out of the United States in the future if the situation is not corrected." In one example cited by the NAS, 90% of recent visa applications for young Pakistanis already accepted for graduate work by US universities were denied.

The problem seems to be widespread, and is not confined to scientists from 'high risk' countries. Obtaining a US visa typically involves two steps. The first step, processing the visa application, used to take only a few weeks but now involves a fairly predictable wait of 4 or 5 months. The second stage, which involves obtaining an entry stamp at a consulate outside the US, is much less predictable; this is partly because consular officials—who can face criminal penalties for admitting someone who subsequently commits a terrorist act—have wide latitude to decide what background checks are required for entry. As a result, applicants can be left stranded outside the US for an open-ended period, sometimes in the middle of their research programs. Delays of several months are not uncommon, and this can lead to serious disruption of career plans; one Swiss scientist with a visiting scholar position at UC Berkeley was delayed for so long that he was forced to cancel the position.

Some of these delays reflect a general clampdown in security procedures for all visitors to the US, but additional concerns arise for scientists with special expertise that could be misused for terrorist purposes. The Bush administration has created a new panel to screen foreign researchers who apply for visas to study 'sensitive topics'. This panel, called the Interagency Panel on Advanced Science Security (IPASS), will be composed of representatives from the Departments of State, Justice and Commerce, as well as representatives from the major science agencies. Meanwhile, in a sweeping response to the terrorist threat, the US Department of Agriculture has already announced that it will cease to apply

for visas for foreign students and scientists to work in its labs, and that it will not apply for any extensions of current visas.

The need for tighter security seems indisputable in the wake of the 9/11 attacks, which were perpetrated by terrorists who had entered the US on temporary visas. But in designing countermeasures, it is also important not to undermine the openness that has made the US the world's leading scientific destination. The US scientific enterprise is substantially dependent on the contribution of foreign researchers. For example, according to 2000 figures from the National Science Foundation, 58% of all biology postdocs were on temporary visas; similarly, 23% of biology PhDs in 2001 were awarded to foreign students. Given the extent of this reliance, policies that adversely affect the ability of US labs to compete for foreign scientists could have lasting effects on scientific output.

The NAS statement suggested three mechanisms that could streamline the visa process for foreign scientists without compromising security concerns: reinstating a pre-clearance procedure for scientists with appropriate credentials; instituting a special visa category for established scientists; and involving the U.S. scientific community in identifying areas of research that raise special security concerns. These suggestions are now under discussion with the State Department, and the NAS describes the talks so far as "very useful and productive". Meanwhile, the NAS has also created a new web site (<http://www7.nationalacademies.org/visas/index.html>) to provide information for foreign scientists applying for visas; the site also includes a survey, intended to collect more accurate data and to assess the extent of the current problems.

Scientific self-interest should be a sufficient argument for seeking a carefully balanced solution. But there is another argument, which in the long run is perhaps even more compelling. The countries that represent the primary breeding grounds for terrorism are to a large extent excluded from the world scientific community. (For example, of the 1872 submissions received by *Nature Neuroscience* last year, only six came from countries on the State Department's list.) This isolation can only increase if researchers from these countries are systematically denied contact with the West. Science is a potential liberalizing force for these countries; it offers an outlet for ambitious and talented people, a stimulus for contact with other countries, and a framework of shared values and beliefs that transcend national politics. Many commentators agree that the threat of terrorism will only disappear when there is substantial reform in the countries from which it originates. Science has the potential to contribute to this process, and it would be a shame if this were to be prevented by excessively stringent restrictions on international scientific exchange.