SPECIAL REPORT

Changing course

Science and technology have not always gone down well at the US Department of Homeland Security. **Geoff Brumfiel** reports on a retired Navy admiral trying to turn around the troubled research wing.

Thankfully, Jay Cohen's job did not begin with a bang. He assumed his post as undersecretary for science and technology at the US Department of Homeland Security (DHS), on 10 August 2006 — the day that British authorities reported a plot to smuggle liquid explosives aboard US-bound aircraft.

In the aftermath, the DHS rushed to restore international air travel and restrict liquids on flights. Any newcomer could have easily become lost in the shuffle, but Cohen is no shrinking violet. Within a day, he had organized a rapid-response team, tasked his scientists with understanding liquid explosives and briefed staffers and others on Capitol Hill. "By 11 August," he jokes, "my shyness had waned."

DHS

"I came into the job with my eyes wide open." — Jay Cohen

Shyness has little place at the science and technology (S&T) directorate, which has struggled for identity and purpose since its inception in 2003. In theory, it is the part of the department that comes up with new gizmos that allow border agents and customs officials to catch explosives or biological agents smuggled into the country. In practice, critics say, it has worked poorly with other divisions of the DHS and failed to account for its dollars. This year, a frustrated Congress slashed its budget by more than 25%, to $848 million (see bar chart).

The challenge for Cohen — a retired admiral who spent six years at the helm of the Office of Naval Research — is to restore a sense of purpose and productivity. Supporters say he is a welcome force for change. "I'm optimistic," says Congressman David Wu (Democrat, Oregon), who chairs the subcommittee overseeing DHS for the House Committee on Science and Technology. "Admiral Cohen's a breath of fresh air."

But others wonder whether Cohen will be able to turn around the directorate during his two-year appointment. "There is still no settled view on mission priorities," says Elizabeth Grossman, a former staffer on the committee now with the Washington DC-based lobbying firm Lewis-Burke Associates.

The DHS was officially born in January 2003, created by President George W. Bush as a response to the terrorist attacks of 11 September 2001 (see 'Counting the chemicals'). For the most part, Congress formed the $43-billion department — the third-largest in the federal government — by cobbling together existing agencies, such as the Coast Guard and the Secret Service.

An exception was the S&T directorate, which was created from scratch. In 18 pages of legislation, Congress laid out a plan for an S&T division to research future terrorist threats and support other directorates within the DHS. The scheme included plans for establishing university research centres and for collaborating with other agencies, notably the national labs run by the Department of Energy. "I think the directorate got off to a very good start," says Parney Albright, a former assistant secretary for science at the department from 2003 to 2005.

But as the directorate took over research efforts from some other large agencies — such as the customs service and the Transportation Security Administration, which oversees security at airports — it became ostracised from other divisions. It was slow in evaluating scientists' proposals and releasing funding (see *Nature* **424,** 986; 2003). And its honeymoon with Congress quickly soured, in part because it failed to produce documents that justified its spending.

Not everyone agrees on what led to these breakdowns. Albright attributes them to what he calls the lack of leadership from Cohen's predecessor, Charles McQueary (*Nature* **423,** 106; 2003). Other congressional staff and former departmental advisers point to the S&T division's newcomer status and high staff turnover.

The loss in faith was soon matched by an erosion of the directorate's power. In the spring of 2005, it lost control of research into the prevention of nuclear attacks, an area that was split off into a separate, roughly $300-million Domestic Nuclear Detection Office. "That took a big part of the portfolio away," says William Happer, a physicist at Princeton University, New Jersey, who served on a now-defunct scientific advisory committee to the department.

Rupture repair

Meanwhile, Congress and the Bush administration were saddling the directorate with other very specific projects, such as to investigate antimissile systems for commercial aircraft. In addition to diminishing the directorate's independence, the mandatory programmes gave it a piecemeal appearance. "It was potentially more ad hoc than one would wish," says Wu.

In March 2006, McQueary left to become chief of testing new weapons at the Pentagon. Later that spring, members of Congress released a damning appraisal of the S&T directorate, saying they were "extremely disappointed" by the agency's justifications of its programmes and "dismayed" by its bookkeeping.

Enter Cohen. "I came into the job with my eyes wide open," he says. His first priority was to realign basic research with the needs of homeland security's seven major agencies. He organized panels that included representatives from

Counting the chemicals

While the science directorate is getting its act together, the rest of the infant Department of Homeland Security (DHS) is busy irritating research chemists. Proposed new standards would force many universities to complete detailed inventories of the chemicals in their laboratories, and may eventually require 'site security plans' involving checks on employees and perimeter security.

Several research and education groups have already objected, saying the proposal is unsuitable for academic laboratories. The regulations require that any institution with certain quantities of specific chemicals complete a top-to-bottom inventory of chemical holdings. The American Chemical Society notes that some of the chemicals that would trigger the inventory, even in minute quantities — such as triethanolamine, carbon monoxide and hydrogen sulphide — are ubiquitous in research labs. The groups further argue that chemicals at universities are typically spread out in small quantities over a number of labs, making them less of a security threat but a bigger headache to count.

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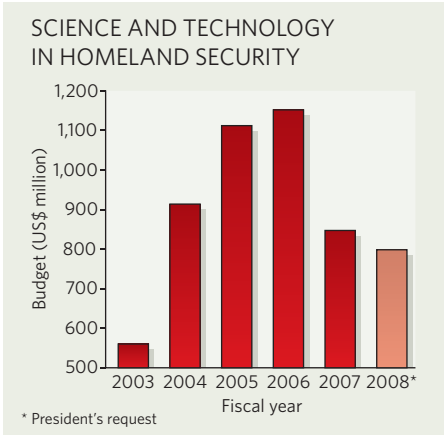
Jay Cohen's science wing plans to support homeland security missions, such as emergency management.



SOURCE: DHS

the 'gang of seven' and asked them to look at specific technical problems. He also reorganized the directorate, replacing the mission-oriented offices — such as for antimissile technology — with six subject-oriented divisions, such as infrastructure protection. Finally, he realigned the Department of Energy labs and directorate-funded university centres so that their research had a clear relationship to agency needs. "There must be an output," Cohen says. "Otherwise we're a self-licking ice-cream cone."

At a meeting last week designed to bring together universities, labs and department members — the first of its kind — representatives from the seven divisions generally praised his approach. Marko Bourne, director of policy at the Federal Emergency Management Agency, says that Cohen's office has helped unify research. Bourne's team is to develop new geospatial information tools that can help them to better plan disaster response. "Our interactions have been much more robust," Bourne says. "This works a lot better for us."

Cohen's other mission has been to repair relations with Capitol Hill. Prior to his stint as head of Naval Research, the talkative admiral served as a congressional liaison for the Navy and is well-known for his ability to work with Congress. "The one thing I'll say about Cohen — the guy's accessible," says one senior congressional staffer. "When you're in a meeting with him, you're in a meeting with him."

With his realignment complete and relations with Congress on the mend, Cohen says he now hopes to begin producing real results for the rest of the DHS. He wants to invest heavily in research on the psychology and sociology of terrorism. He also says that he would like to develop further technologies to detect improvised explosive devices and advance the use of composite materials in Coast Guard ships — two programmes he promoted heavily at the Office of Naval Research.

Cohen also plans on increasing basic research at the DHS. Through reprogramming, he has already doubled basic research from 5 to 10% of the agency's budget, and he has bigger plans for the future. "The goals are 20% in basic research sustained," he says.

Devil in the detail

Lofty goals aside, observers of the directorate say Cohen still has plenty of mundane problems to deal with. Proposals still take up to 90 days to wind their way through the directorate's acquisitions branch, says Jill Hruby, director of homeland security programmes at Sandia National Laboratories in Livermore, California. "It's still a long way from being a well-oiled production," she says.

The directorate also draws regular fire from Congress for management shortcomings — most recently earlier this month , when the House Committee on Science and Technology blasted the directorate for neglecting a radiological lab in Manhattan. Congress is impatiently awaiting a five-year plan, and Wu says that he would also like to see a more comprehensive assessment of how it determines the greatest national risks.

The clock is ticking, says Grossman. Cohen is a political appointee, and his two-year term will end in 2008, when a new president is elected. Given the number of problems facing the directorate, she says, expectations should be realistic. "If Cohen just gets started," she says, "it will be a good use of two years." ■

The rules were proposed in December 2006, but it wasn't until 9 April — when the list of chemicals covered by the regulations was released — that safety officers realized that most mid-sized and large universities would have to complete the inventory, called 'Top-Screen'. Many universities estimate that doing so will take thousands of hours, says Peter Reinhardt, co-chair of the government relations committee at the Campus Safety Health and Environmental Management Association in Itasca, Illinois.

"The DHS spent a great deal of time writing these rules with the chemical industry," says Reinhardt. "If it wants to make appropriate rules for colleges and universities, it should spend just as much time with us."

Russ Knocke, a spokesman for the department, is unsympathetic to complaints that the Top-Screen will be onerous. "It comes down to the reality that we do live in a post-9/11 world," he says. "I don't think anyone wants to find themselves in the position where having articulated a desire not to cooperate there is then an incident or an attack."

A public-comment period ends on 8 June, and final rules are likely to be finalized soon after that. Institutions would then have 60 days to complete their Top-Screens.

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