

Attack on Japan's engineering education

[TOKYO] Japanese universities urgently need to introduce a system for evaluating engineering and technology departments if they are to produce internationally competitive engineers, according to leading industrialists and engineers in Japan.

Japanese companies say the quality of education in university engineering departments is often unclear, and that there should be a system for evaluating the standard of engineering graduates.

Takeshi Owa, chief fellow at Toshiba Research and Development Centre, says universities and companies have different objectives for education in engineering. "While industry wants highly trained engineers with technical skills, universities are aiming to create researchers," he says. "As a result, we are not entirely satisfied with the content of engineering programmes at universities."

Many are keen to see a body created to judge the quality of university curricula similar to the American Accreditation Board for Engineering and Technology (ABET) in the United States. However, such a move would be difficult to implement given the general reluctance of Japanese universities to endorse external evaluation.

An accreditation body would employ specialists to assess factors in university

departments such as the quality of teaching and the academic levels attained, as well as facilities and equipment. The aim would be to set a standard of education and training for engineers that would be a clear indicator to those seeking to employ engineers.

In the United States, where most universities have been evaluated by ABET, companies are required to employ engineers from ABET-approved universities in order to participate in public works projects.

Last year, the Ministry of International Trade and Industry (MITI) and the Japan Federation of Economic Organizations (Keidanren) joined the Japanese Society for Engineering Education and the Japan Federation of Engineering Societies to study ways of improving the standard of university engineering and technology departments.

"We are studying the system employed by accreditation bodies in the West, such as ABET in the United States, as a possible model for a similar organization in Japan," says MITI's Hideo Suzuki. According to Suzuki, MITI is keen to make such a body a significant part of its programme for improving Japan's ailing economy. "What we need most to rebuild our economy are people who are capable of making technical contributions to create new industries."

Officials at the Ministry of Education, Science, Sports and Culture (Monbusho), whose council on university education is compiling a report on an external evaluation system, say they support the idea of an independent assessment body for engineering. At the same time, they emphasize the importance of creating an evaluation system covering all university departments.

But engineers feel that a more rigorous step is needed to produce engineers of international standard. Their feelings are especially strong because the Asia Pacific Economic Cooperation forum is discussing the possibility of introducing an international qualification for engineers.

Itsuo Onaka, a professor of engineering at Osaka University, admits that the quality of engineers in Japan is poor.

"Universities seem to lack a clear objective for education in engineering and technology, and this makes engineering courses unappealing for many students," says Onaka.

He says the adoption of the system proposed by MITI would stimulate universities to improve their standards, and this would be particularly important if there were eventually to be an international qualification for engineers.

Asako Saegusa

South Africa's truth commission reveals bioweapons plot

[CAPE TOWN] South African researchers were involved in a sinister but bizarre effort to develop biological and chemical weapons under the previous government, according to evidence presented during the past two weeks at hearings of the country's Truth and Reconciliation Commission.

The research effort was carried out by the South African Defence Force. Some of its goals remain obscure. Johan Koekemoer, for example, former professor of organic chemistry at the Rand Afrikaans University in Johannesburg, said he was bewildered about plans to use a quantity of the drug Ecstasy worth one billion rand (US\$185 million).

The drug was manufactured in 1992, two years after the release of President Nelson Mandela and the lifting of the ban on the African National Congress (ANC). Some of it, along with Mandrax tablets, was used in experiments to create drug-laced tear gas. But the intended effect on rioters is unclear.

Uncertainty remains about what happened to the vast quantities of stockpiled drugs. Former surgeon-general of the South African Defence Force, Niel Knobel, giving evidence before the commission last week, said that hundreds of kilograms of chemical agents, including Mandrax, were dumped



off the southern Cape coast by the South African Air Force in early 1993. But Zenzile Khoisan, an investigator for the commission, suggested they might have been supplied, through gangster connections, to communities that were active in the struggle against apartheid.

The former head and chief architect of the weapons programme, Wouter Basson, faces multiple criminal charges, including instigating murder and the possession of drugs. Basson was due to appear before the commission last week, but has applied to the High Court to have his subpoena deferred

on the grounds that it would prejudice his criminal trial.

Basson was retired early from the South African Defence Force by President F. W. de Klerk in 1992, after an investigation into alleged illegal activities of the defence establishment — only to be re-employed by the Minister of Defence, Joe Modise, after Mandela's government was elected in 1994.

Basson liaised with researchers through a front company, Roodeplaat Research Laboratories, headed by former University of Pretoria veterinarian Daan Goosen, who became involved in the programme after being asked to supply snake venom intended to kill ANC members. Goosen was briefed to develop research projects including the selective poisoning of people on the basis of their skin pigmentation, producing a vaccine to reduce black fertility, and cultivating cholera and anthrax organisms.

It is unclear which of the programme's products were effective and which remained in the realms of morbid fantasy. Poison manufactured at Roodeplaat was used in an unsuccessful assassination attempt on the Minister of Justice, Dullah Omar. But anthrax spores were planted in the food of three Russian advisers to the ANC, one of whom subsequently died.

Michael Cherry