

# SILEX EXPOSED

**REGISTERED NAME:** SILEX SYSTEMS LIMITED

**TYPE OF BUSINESS:** Research and Development Company in the area of semi-conducting materials, diagnostic materials and electricity production through nuclear fuel

**AUSTRALIAN BUSINESS NUMBER:** 69 003 372 067

**REGISTERED ADDRESS:** 95-99 Epping Road,  
NORTH RYDE NSW 2113

**OPERATING ADDRESS:** 95-99 Epping Road,  
NORTH RYDE NSW 2113

**ADMINISTRATION / LABORATORY:** Building 64  
Lucas Heights Science and Technology Centre  
New Illawarra Road,  
LUCAS HEIGHTS NSW 2234

**POSTAL ADDRESS:** PO Box 75  
MENAI CENTRAL NSW 2234

**TELEPHONE NUMBER:** (02) 9855 5555 (North Ryde)

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**MOBILE:** 0417 773 077 (Christopher Wilks)

**WEBSITE ADDRESS:** [www.silex.com.au](http://www.silex.com.au)

**EMAIL ADDRESS:** [cdwilks@aol.com](mailto:cdwilks@aol.com)

**CHANGE OF NAME:** Incorporated as AUSTRALIAN NUCLEAR ENTERPRISES PTY LTD with current name commenced 7<sup>th</sup> September, 1995

**DATE OF INCORPORATION:** Incorporated 9<sup>th</sup> September, 1987 in NSW

**SECRETARY:** **WILKS, Christopher David**  
Observatory Tower Appmnt 1205,  
168 Kent Street,  
SYDNEY NSW 2000

**EMPLOYEES:** Not determined with outside sources failing to reveal current number of employees

**PARENT COMPANY:** Nil

**ULTIMATE PARENT COMPANY:** Not provided

**SUBSIDIARIES:** Not provided

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## Timeline Of Events

- Silex Systems Limited (Silex) was established in 1988 as the research subsidiary of Sonic Healthcare Limited (Sonic), an Australian publicly listed company. After being separated from Sonic in February 1996, Silex listed on the Australian Stock Exchange in May 1998.
- The stated focus of the Company's current activities is the development of Uranium Enrichment technologies through the Agreement with the United States Enrichment Corporation (USEC), the world's largest supplier of enriched uranium.
- In November 1996, an exclusive Licence and Development Agreement for the application of SILEX Technology to uranium enrichment was signed with the USEC. The deal involved an immediate payment of US\$7.5 million to Silex.
- Formerly part of the US Department of Energy, USEC was privatised in 1998 through a listing on the New York Stock Exchange. The privatisation was one of the largest in the US in the last 10 years. USEC has annual revenues of approximately US\$1.5 billion.
- 25/05/2000 A bi-lateral agreement was ratified by the Australian and United States governments to cover the transfer of laser enrichment technology.
- 20/06/2001 Silex Systems Ltd (Silex) announces that SILEX uranium enrichment technology has been **officially classified** by both the U.S. and Australian governments.
- 21/08/2002 the US Nuclear Regulatory Commission (NRC) approves licenses allowing the transfer of "sensitive nuclear technology and Restricted Data to conduct the necessary R& D to determine whether the [SILEX] process is commercially viable<sup>1</sup>."
- "The decision to classify the technology reflects the U.S. and Australian governments' determination that the SILEX process has the potential to separate practical quantities of uranium isotopes, and therefore should be classified in order to support nuclear non-proliferation objectives<sup>2</sup>."
- 30/04/2003 USEC announces the end of its funding for SILEX and states that continuing to pursue this technology "would not be a prudent investment for its shareholders."<sup>3</sup>
- 04/06/2003 SILEX announces that it is "pressing ahead with the SILEX uranium project without USEC's involvement," and that there is "no dispute regarding SILEX's rights to the SILEX technology."<sup>4</sup>

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<sup>1</sup> NRC license approval XSNMO31 13

<sup>2</sup> <http://www.silex.com.au/new/public/uploads/announce/20th%20June%202001.pdf>

<sup>3</sup> USEC media release

<sup>4</sup> ASX announcement, A letter from the CEO (SILEX) to shareholders. Greenpeace, September 15, 2003

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## HOW THE SILEX PROCESS WORKS

**Because the details of the technology are classified, no-one really knows, but some background can be provided on uranium enrichment in Australia:**

### ENRICHMENT

Nuclear power reactors require natural uranium to be upgraded or 'enriched' prior to use. Natural uranium contains two types of isotopes which differ slightly in their mass U-238 (99.3% of total) and U-235 (0.7% of total).

For power reactors the concentration of the 'active' U-235 isotope is increased from 0.7% to approximately 3% - 5%.

The same technology used to enrich uranium to low levels can be used to raise it to concentrations suitable for the construction of nuclear weapons. Nuclear weapons mostly contain uranium enriched to over 90%

A nuclear bomb or a "dirty bomb" can also be made with uranium of lower enrichment. According to the Swedish International Peace Research Institute (SIPRI), one could in theory even make a bomb with 10% enriched uranium.

Signatories to the Nuclear Non-proliferation treaty agree to safeguards that are designed to ensure that information and materials required for uranium enrichment are kept from terrorist organisations, or countries pursuing nuclear weapons.

Internationally, covert enrichment programs being conducted by rogue nations in the pursuit of nuclear weapons have been developed under the cover of the "peaceful uses" of the atom, such as power reactors or medical isotope production. It is acknowledge that these programs are often used to disguise more sinister objectives.

For example, on the 21<sup>st</sup> of September, A. Norman Schindler, deputy director of the Central Intelligence Agencies Non-proliferation Center told a US Senate Governmental Affairs subcommittee that Iran was "seeking nuclear-related equipment, material, and technical expertise from a variety of foreign sources, especially in Russia" and has developed "an elaborate system of covert military and civilian organizations to support its acquisition goals."<sup>5</sup>

Iran earned its reputation as a member of the "axis of evil", amongst other things, because it began a laser enrichment program in the late 1970s, based on imported lasers from the US.<sup>6</sup> It is worth noting that the Argentine company INVAP, currently constructing a 20 megawatt reactor at Lucas Heights is also reported to have participated in the trade of nuclear materials with Iran.

South Africa, Iraq, India, Pakistan and France are among other countries that have conducted research into laser enrichment. As recently as the 1980s it was against government policy for any Australian company to be involved in uranium enrichment because it was a proliferation concern.

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<sup>5</sup> [http://www.armscontrol.org/act/2000\\_10/iranoc00.asp](http://www.armscontrol.org/act/2000_10/iranoc00.asp)

<sup>6</sup> <http://www.antenna.nl/wise/502/4948.html>

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## THE SILEX PROCESS

The full technical details of the SILEX process are kept highly confidential. It is based on enriching uranium hexafluoride (UF<sub>6</sub>), and is described as very low energy and low overall capital costs. There have been reports that some countries have conducted research into using lasers to enrich plutonium from reactor grade to weapons grade.

The legal and political detail on how Silex plans to prevent use of the technology for military purposes is unknown, based on the information provided in the public domain.

Even if one accepts that the technology is being developed to enrich uranium for power reactors legal questions remain. Under the ARPANS Act 1998, Section 10: **Prohibition on certain nuclear installations, (1) (a) nothing in this act is to be taken to authorise the construction or operation of the following nuclear installations, (c) an enrichment plant.**

## THE HISTORY OF LASER ENRICHMENT IN AUSTRALIA

### ANSTO AND URANIUM ENRICHMENT

ANSTO's precursor, the Australian Atomic Energy Commission (AAEC) undertook research into laser enrichment in 1970-71. According to Clarence Hardy, author of *Enriching Experiences: Uranium Enrichment in Australia, 1963-1996* many AAEC staff had concerns about the proliferation risks if the new laser processes proved viable.

In the early 1980s, after Labor came to power, all of the uranium enrichment research at the AAEC laboratories was closed down according to government policy, including both the centrifuge and laser research. Some staff continued to undertake research on the non-uranium applications of laser enrichment, with others re-deployed to the CSIRO.

The laser uranium enrichment project was resurrected less than 2 years after the AAEC was renamed ANSTO on 27 April 1987. One sentence in the 1988-89 ANSTO Annual Report mentions the resumption of this work. In 1990, SILEX Systems began contracting staff and facilities from ANSTO for laser enrichment research.

The degree of subsidies provided to SILEX through access to ANSTO research, technical experts and facilities is unclear based on publicly available information. However it is clear from their annual report that they pay a small rent for a large building on the Lucas Heights site every year.

### HOW AUSTRALIA HANDLES NUCLEAR RESEARCH AND DEVELOPMENT

- ❑ Australia is a member of the International Atomic Energy Agency (IAEA) and became a party to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) on January 23, 1973.
- ❑ The Australian Safeguards Agreement with the IAEA, pursuant to the NPT, entered into force on July 10, 1974.
- ❑ Australia signed and ratified the South Pacific Nuclear Free Zone Treaty (the Treaty of Rarotonga) which prohibits the manufacture, production and acquisition of nuclear explosive devices, research and development relating to their manufacture or production, stationing of such devices in Australia, and testing of such devices.

Exemptions occur in all of these treaties to allow for the development of nuclear technologies for peaceful purposes.

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## SILEX AND THE NATIONAL INTEREST

The existing Australia-US Agreement Concerning Peaceful Uses of Nuclear Energy does not apply to transfers of "sensitive nuclear technology", unless specifically provided for by amendment of that Agreement or by a separate agreement.

For the SILEX technology transfer to take place a US-AUST bi-lateral agreement was required.

A national interest analysis conducted by the international security division of the Department of Foreign Affairs and Trade (DFAT)<sup>7</sup> determined that it would be necessary to amend the Nuclear Non-proliferation (Safeguards) act of 1987 to add to the list of "prescribed agreements" and to make similar amendments to the Australian Radiation Protection and Nuclear Safety Act (ARPANSA) 1998.

In the Joint Committee on Treaties hearing of 3 April, 2000, Mr Anthony Byrne MP (ALP) posed a question about public consultation in regard to the SILEX agreement.

"Just a quick question with respect to the national interest analysis and the research that will be carried out at Lucas Heights. Could someone detail the community consultation process that occurred with respect to that?"

Ms Dietz—To the research being conducted at Lucas Heights?

Mr Byrne—Yes.

Ms Dietz—Silex is a publicly listed company. It leases a site at the Lucas Heights Research and Development Centre, and it is from there that it conducts its research and development. I am not sure about the public consultation that would be required to rent a site on the facility.<sup>8</sup>

The fact that the Australian Government is allowing a privately listed company to conduct research into dual use technologies, using a facility that publicly claims to be a medical research facility raises serious security issues.

It may contrast poorly to the claims that Iraq was conducting secret weapons programs, but only had decade-old centrifuges. Our preparedness to criticise Iran and North Korea based on claims that those countries are pursuing covert nuclear weapons programs is hypocritical given the protection and support provided to SILEX.

Should the pre-emptive military strike on North Korean enrichment facilities threatened by the US eventuate, it could be argued that Lucas Heights could become a legitimate military target.

As extreme as this sounds, such attacks have occurred in the past: in 1981 the Israeli military bombed the Osirak reactor in Iraq. The Osirak reactor operated behind the guise of medical research.

It may also not be beyond the realms of possibility that terrorist groups angered by military cooperation between the US and Australia could target the operations of ANSTO given that organisations involvement and support of the SILEX project.

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<sup>7</sup> <http://www.austlii.edu.au/au/other/dfat/nia/2000/5.html>

<sup>8</sup> [http://parlinfoweb.aph.gov.au/piweb/view\\_document.aspx?id=33864&table=COMMJNT](http://parlinfoweb.aph.gov.au/piweb/view_document.aspx?id=33864&table=COMMJNT)

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## COMMUNITY RIGHT TO KNOW

The operations of SILEX raise several questions, not least of which are those relating to the security implications of conducting sensitive, classified research at Lucas Heights.

Another issue is the transportation of nuclear materials for use by SILEX.

Silex and other private companies that utilise facilities at the tax-payer funded Luca Heights reactor operated by ANSTO should be open and accountable.

As an example of issues that need closer scrutiny in the public domain, Greenpeace discovered in public documents that on October 21, 1999, Edlow International Company, on behalf of USEC, applied to the US Nuclear Regulatory Commission for a license to export to Lucas Heights 3.358 kilograms of uranium- 235 contained in 33.5 kilograms of uranium enriched to a maximum of 9.938 percent in the form of uranium hexafluoride for use by SILEX.

The NRC subsequently issued license XSNM03113-01 on August 21, 2002, which expires on the 28th February 2005.

At the time of writing it is unknown whether this transfer of nuclear material has taken place or if it has not, the proposed method of the transfer.

Greenpeace is concerned that SILEX has already obtained uranium hexafluoride for use in its research and that this material may have been flown in through Mascot airport in Sydney. In a letter available on the NRC the office of the Australian Safeguards and Non-proliferation office (ASNO) confirms that a licence (number PNI44) has been issued for SILEX to possess 15 kilograms of depleted uranium UF<sub>6</sub> and refers to notification received from SILEX that this shipment is about to arrive.<sup>9</sup>

Greenpeace has on several occasions been contacted by whistleblowers with reports of nuclear materials being imported through Mascot airport in Sydney, even on-board domestic flights.

There are complicated and far-reaching issues relating to SILEX's liability and compensation that deserve serious attention.

## CONCLUSION

Should the Non-Proliferation Legislation Amendments bill be passed it will be unlikely that issues such as these will be addressed. Individuals, Non Government Organisations, Local Governments, media and emergency services will risk two years imprisonment for publicly communicating information that could prejudice the security of nuclear material or associated items. Under the proposed amendments not only will it be illegal for individuals or groups to publicly discuss these issues, ARPANSA will also be restricted from communicating information relating to these activities.

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<sup>9</sup> Letter to NRC from J Bellingher (DFAT) informing that DFAT has been advised by Australian company SILEX Systems of shipment they expect to receive shortly from USEC of about 15 kilograms of UF<sub>6</sub> enriched to 10% U-235. NRC website