

9 September 2009

## Chem-Bio News

**1. U.S. SAYS IRAN NEARING ATOMIC BOMB CAPACITY:** *"The United States said on Wednesday Iran was nearing the ability to make atom bombs by stockpiling enriched uranium and, with EU allies, prodded Tehran to engage in talks now on its nuclear ambitions."*

**2. BILL WOULD SET LAB SECURITY STANDARDS:** *"Security standards for the U.S. biotechnology industry would be overhauled and strengthened under legislation expected to be introduced Tuesday by Senate Homeland Security and Governmental Affairs Chairman Joseph Lieberman, I-Conn., and ranking member Susan Collins, R-Maine."*

**3. AHMADINEJAD DECLARES END TO DEBATE OVER IRAN'S NUCLEAR AMBITIONS:** *"Barack Obama's hopes of persuading Iran to renounce its nuclear ambitions appeared to have been dashed yesterday after the UN watchdog admitted that it had reached a stalemate with Tehran, and President Ahmadinejad declared the nuclear debate over."*

**4. NUCLEAR NOTEBOOK: PAKISTANI NUCLEAR FORCES, 2009:** *"Pakistan is enhancing its nuclear weapon capabilities across the board by developing and deploying new nuclear-capable missiles and expanding its capacity to produce fissile materials for use in weapons."*

**5. NEW BIOSENSOR CAN DETECT BACTERIA INSTANTANEOUSLY:** *"A research group from the Rovira i Virgili University (URV) in Tarragona, Spain, has developed a biosensor that can immediately detect very low levels of Salmonella typhi, the bacteria that causes typhoid fever."*

# CB Daily Report

## Chem-Bio News

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### U.S. SAYS IRAN NEARING ATOMIC BOMB CAPACITY

By Mark Heinrich

Reuters

September 09, 2009

"The United States said on Wednesday Iran was nearing the ability to make atom bombs by stockpiling enriched uranium and, with EU allies, prodded Tehran to engage in talks now on its nuclear ambitions."

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"We have serious concerns that Iran is deliberately attempting, at a minimum, to preserve a nuclear weapons option," U.S. envoy Glyn Davies told the 35 nations on the International Atomic Energy Agency's Board of Governors.

"Iran is now either very near or in possession already of sufficient low-enriched uranium to produce one nuclear weapon if the decision were made to further enrich it to weapons-grade ... (This) moves Iran closer to a dangerous and destabilizing possible breakout capacity," Davies said."

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"An August 28 IAEA report said Iran had somewhat improved cooperation with U.N. inspectors by approving tighter monitoring of its Natanz enrichment plant and restoring limited IAEA access to a heavy-water reactor site of proliferation concern.

But it also said Iran had increased its number of installed centrifuge machines by 1,000 to 8,300, boosting potential enrichment capacity, and was still blocking an IAEA inquiry into allegations it has tried to "weaponize" the enrichment process."

The full article can be found at: <http://www.reuters.com/article/politicsNews/idUSTRE58821S20090909>

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## **BILL WOULD SET LAB SECURITY STANDARDS**

By Chris Strohm

CongressDaily

September 04, 2009

"Security standards for the U.S. biotechnology industry would be overhauled and strengthened under legislation expected to be introduced Tuesday by Senate Homeland Security and Governmental Affairs Chairman Joseph Lieberman and ranking member Susan Collins.

The legislation would, for the first time, create a comprehensive framework, including risk tiers, to regulate security for federal and private laboratories that work with the world's deadliest biological agents and toxins."

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"At the heart of the issue is concern over securing biological pathogens that have dual-use purposes, meaning they have scientific and medical value when properly used but also could be turned into weapons to kill or sicken people.

The legislation was written largely in response to findings of the congressionally chartered Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism, which was led by former Sens. Bob Graham, D-Fla., and Jim Talent, R-Mo.

The commission concluded last December that security at U.S. labs was inadequate and predicted that a bio-terrorism attack is likely to occur somewhere in the world within five

years.”

The full article can be found at: [http://www.nationaljournal.com/congressdaily/cd\\_20090904\\_3262.php](http://www.nationaljournal.com/congressdaily/cd_20090904_3262.php)

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## **AHMADINEJAD DECLARES END TO DEBATE OVER IRAN'S NUCLEAR AMBITIONS**

By Catherine Philp

TimesOnline.co.uk

September 08, 2009

“Barack Obama’s hopes of persuading Iran to renounce its nuclear ambitions appeared to have been dashed yesterday after the UN watchdog admitted that it had reached a stalemate with Tehran, and President Ahmadinejad declared the nuclear debate over.

Mr Ahmadinejad’s show of defiance came as the board of the International Atomic Energy Agency (IAEA) gathered in Vienna to discuss the failure of Tehran to answer questions about an alleged military dimension to its nuclear programme.

The Iranian leader vowed to forge ahead with uranium enrichment, even as a deadline of the end of this month, set by Mr Obama for Iran to resume negotiations, approaches. “From our point of view, Iran’s nuclear issue is over,” Mr Ahmadinejad said during the first press conference he has given since he was sworn in for a second term as President.”

The full article can be found at: [http://www.timesonline.co.uk/tol/news/world/middle\\_east/article6825132.ece](http://www.timesonline.co.uk/tol/news/world/middle_east/article6825132.ece)

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## **NUCLEAR NOTEBOOK: PAKISTANI NUCLEAR FORCES, 2009**

By Robert S. Norris & Hans Kristensen

Bulletin of the Atomic Scientists

September-October 2009

“Pakistan is enhancing its nuclear weapon capabilities across the board by developing and deploying new nuclear-capable missiles and expanding its capacity to produce fissile materials for use in weapons.”

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“Pakistan has an estimated arsenal of about 70 –90 nuclear weapons and is busily enhancing its capabilities across the board. A new nuclear-capable ballistic missile is being readied for deployment, and two nuclear-capable cruise missiles are under development. Two new plutonium production reactors and a second chemical separation facility also are

under construction.”

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“Following the example of other nations that have developed nuclear weapons, Pakistan is improving its weapon designs, moving beyond its first-generation nuclear weapons that relied on HEU. For at least a decade, Pakistan has been pursuing plutonium-based designs. Central to that effort is the 40–50-megawatt heavy water Khushab plutonium production reactor, which was completed in 1998 and is located at Joharabad in the Khushab district of Punjab. Six surface-to-air missile batteries surround the site to protect against air strikes. As a sign of its confidence in its plutonium designs, Pakistan is building two additional heavy water reactors at the Khushab site, which will more than triple the country’s plutonium production.<sup>5</sup>

In anticipation of this increased plutonium production capacity, Pakistan also is expanding its capabilities to reprocess it. The Pakistan Institute of Nuclear Science and Technology near Rawalpindi was Pakistan’s original pilot chemical separation facility where plutonium from the first Khushab reactor was separated. Satellite images show a second under-construction separation facility adjacent to the original that could handle the plutonium produced in the two new Khushab reactors. Work also may have resumed on a partially built separation plant that dates from the 1970s. This plant is located at Chasma, where Pakistan operates a 300-megawatt commercial reactor (CHASNUPP-1) and plans to build three more, one of which is under construction. Additionally, Pakistan is expanding its facilities at Dera Ghazi Khan, in southern Punjab, where uranium hexafluoride and uranium metal are produced.<sup>6</sup>

All of these efforts suggest that Pakistan is preparing to increase and enhance its nuclear forces. In particular, the new facilities provide the Pakistani military with several options: fabricating weapons that use plutonium cores; mixing plutonium with HEU to make composite cores; and/or using tritium to “boost” warheads’ yield (loading the reactors’ targets with lithium 6 will produce tritium). Absent a successful full-scale thermonuclear test, it is premature to suggest that Pakistan is producing two-stage thermonuclear weapons, but the types of facilities under construction suggest that Pakistan has decided to supplement and perhaps replace its heavy uranium-based weapons with smaller, lighter plutonium-based designs that could be delivered further by ballistic missiles than its current warheads and that could be used in cruise missiles. Pakistan has repeatedly stated that it won’t break the testing moratorium that has been in place in South Asia since 1998, yet if its neighbor India tested a weapon, Pakistan would likely follow suit for political and technical reasons.”

The full article can be found at: <http://thebulletin.metapress.com/content/f828323447768858/fulltext.pdf>

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September 09, 2009

"A research group from the Rovira i Virgili University (URV) in Tarragona, Spain, has developed a biosensor that can immediately detect very low levels of *Salmonella typhi*, the bacteria that causes typhoid fever. The technique uses carbon nanotubes and synthetic DNA fragments that activate an electric signal when they link up with the pathogen."

"We have developed a new biosensor that can detect extremely low concentrations of bacteria immediately, easily and reliably", F. Xavier Rius, lead author of the study and a professor in the Chemometrics, Qualimetrics and Nanosensors research group in the Analytical Chemistry and Organic Chemistry Department of the URV, tells SINC.

Rius' team, jointly led by Jordi Riu, has come up with a technique that can detect extremely low levels of the bacteria *Salmonella typhi*, which causes typhoid fever. This new biosensor functions using a method, described this month in the scientific journal *Angewandte Chemie International Edition*, which involves carbon nanotubes with inbuilt aptamers providing electrochemical readings.

The aptamers are small fragments of artificial DNA or RNA designed to attach themselves specifically to a particular molecule, cell or micro organism, in this case *Salmonella*. If the bacteria are not present, the aptamers remain on the walls of the carbon nanotubes. However, if they detect bacteria, they become activated and stick to it, and the carbon nanotubes generate an electric signal that is picked up by a simple potentiometer connected to the biosensor.

"The presence of the bacteria sparks a change in the interaction between the aptamers and the nanotubes, which takes place in a few seconds and creates an increase in the voltage of the electrode", says Rius."

The full article can be found at: <http://www.physorg.com/news171626999.html>

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