

# NUCLEAR MONITOR

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## MONITORED THIS ISSUE:

## HOT PARTICLES AT DOUNREAY

The Dounreay nuclear complex, situated on a remote part of the north coast of Scotland, was once home to a variety of experimental nuclear facilities including two prototype fast breeder reactors, a reprocessing plant and a materials test reactor. Nearly all of these are now closed, but the legacy of their waste, pollution and accidents lives on. One of the main areas of concern is the radioactive particles found near the complex. The latest radioactive fragment found on Sandside beach is one of the hottest yet detected.

**(660.5826) WISE Amsterdam** - The particle of cesium-137 picked up during a sweep of the beach on September 7 was the third recovered since monitoring resumed on August 5 after a lengthy gap. This brings the legacy of pollution from the nearby Dounreay plant to 97 used reactor fuel particles and an unidentified radioactive object.

After being taken back to a lab at the former fast-reactor complex, the September 7 particle was found to have an activity count of 380,000 becquerels (Bq). That compares to the most active 500,000 Bq particle which was recovered in February this year. The discovery led to Scotland's pollution watchdog reviewing whether to close off the four-mile stretch of beach to the public. The next highest since monitoring of the beach started 23 years ago have been 480,000 and 396,000 Bq finds in January 2007 and June 2006 respectively. The majority unearthed at Sandside have been below 100,000 Bq but most of the higher-active finds have come in the past couple of years.

In September 1999, as another radioactive particle was found on the Sandside beach three kilometers from Dounreay, the operators admitted that vast quantities of similar highly active particles have been discharged into the sea - at the very same day reprocessing started on July 9 1958 - and continued until the 1980s. The radioactive particles were discharged into the sea after entering the site's low-level waste drains.

They entered the drains, which should have carried only low-active waste waster, either from the reprocessing plant or from a controversial waste shaft. The highly radioactive particles were known as 'swarf' -the outside cladding from spent fuel assemblies which are cut off at the very start of the reprocessing procedure to expose the fuel rods. These are some of the most highly radioactive wastes from spent fuel reprocessing.

In February, UKAEA, the operator of the nuclear complex in Caithness has been fined £140,000 (US\$280,000 or 200,000 euro) for illegally dumping waste. The UK Atomic Energy Authority pleaded guilty to four charges under the Radioactive Substances Act at Wick Sheriff Court earlier this month. They related to activities at Dounreay between 1963 and 1984. UKAEA's court appearance followed a report to the procurator fiscal by the Scottish Environment Protection Agency (SEPA). The company admitted illegally dumping solid nuclear waste in a landfill site at Dounreay and three charges of allowing fragments of irradiated nuclear fuel to enter the plant's liquid effluent discharge pipe into the Pentland Firth. UKAEA's director of safety, Dr John Crofts, said: "We accept that mistakes were made and regret those mistakes." UKAEA operates Dounreay under contract to the Nuclear Decommissioning Authority (NDA), established by the Energy Act 2004

### Decommissioning

Restoring the 140-acre Dounreay site on

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the north coast of Scotland is one of the most complex nuclear decommissioning tasks in the world. The site's history in fast reactor and fuel cycle development presents significant decommissioning challenges. Key projects include:

- Dealing with liquid metal coolants from the Dounreay Fast Reactor (DFR) and Prototype Fast Reactor (PFR);
- Managing liquid and solid radioactive waste, including liquors from fuel reprocessing and material from the intermediate level waste shaft and silo.

The main Dounreay decommissioning program will be completed by 2033. The only buildings remaining after this will be waste stores, which will themselves be decommissioned once a national waste strategy has been implemented. The sphere of the Dounreay Fast Reactor will be preserved as a monument. The clean-up program will cost around £2.9 billion (US\$5.8 bn or 4.2Bn Euro)(well, at least, that is the current number), and consists of five phases.

1- Hazard reduction and waste management (present day-2025).

This phase will remove the main radioactive and chemical hazards at the site. Work involves removing alkali metals, immobilising liquid wastes, retrieving and treating

historic wastes and decommissioning a range of facilities. A range of plants will be constructed to support this work.

- 2- Decommissioning and remediation (2025-2033). Site decommissioning will then be completed. Final decommissioning will be carried out on facilities including the Dounreay Fast Reactor and Prototype Fast Reactor. Waste will either be transferred off-site or held in interim storage. Areas of contaminated land will be restored and landscaped.
- 3- Interim storage (2036-2047). The remaining waste will be held securely on site until a UK disposal facility is available.
- 4- Off-site transfer and demolition (2047-2066). Waste will be moved to authorised disposal facilities elsewhere in the UK (assuming that a national facility is in place). Waste stores and other infrastructure will be decommissioned and demolished.
- 5- Care, surveillance and site closure (2066-2366). An extended period of monitoring before the site is finally closed and released for alternative use.

**Sources:** *John O'Groat Journal and Caithness Courier*, 12 September 2007 / *WISE Nuclear Monitor* (569), June 5 2002 / *WISE NM* 518, September 24, 1999 / BBC, 12 July 2007 / BBC, 15

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## ILLEGAL TRAFFICKING: INCREASE INCIDENTS INVOLVING THEFT OR LOSS

Established in 1995, the Illicit Trafficking Database (ITDB) is the IAEA's information system on incidents of illicit trafficking and other unauthorized activities involving nuclear and radioactive materials. The scope of the ITDB information is broad and includes, but is not limited to, incidents involving the illegal trade and movement of materials across borders. The Database tracks events that occurred intentionally or unintentionally, with or without crossing international borders, as well as unsuccessful or thwarted acts.

**(660.5827) Laka Foundation** - The ITDB facilitates the exchange of authoritative information on incidents of illicit trafficking and other unauthorized activities involving nuclear and radioactive materials. Currently, 96 States participate in the ITDB Program. In some cases, non-participating Member States have provided information to the ITDB.

In September an overview of incidents reported in 2006 was published. This is an update of the

preliminary ITDB statistics published on 1 February 2007. The numbers slightly differ because of some additional reporting.

A total of 252 incidents were reported to the ITDB in 2006, of which 150 occurred in 2006 and the remaining 102 had taken place prior to that year, mainly in 2005. Please note that the comparison of the ITDB 2005 data with the 2006 data should take into account the fact that a significant number of cases were reported in 2006, which had

occurred in 2005, and therefore this number should be added to the numbers in the 2005 report.

### **Unauthorized possession and related criminal activities**

Of the 150 incidents that occurred in 2006, fourteen involved unauthorized possession and related criminal activities. Incidents included in this category can be described as "illicit trafficking." They contain common "illicit trafficking" elements such as

illegal possession, movement, or attempts to illegally trade in these materials. The majority of these incidents involved sealed radioactive sources, such as Cesium-137, Cobalt-60, Americium-241, Strontium-90 and a number of other radionuclides. Nuclear materials involved included natural uranium, depleted uranium, and thorium. In January 2007, Georgia reported to the ITDB an incident that occurred in February 2006 and involved the seizure of 79.5 g of 89%-enriched uranium.

### Thefts and losses

Eighty-five incidents occurred in 2006 that involved thefts, losses, or misrouting of nuclear or other radioactive materials, which is (again) a substantial increase compared to 2005 (see Table). Thefts of such materials are of particular concern because such thefts can be an upstream evidence of an illicit

trafficking activity and are indicators of vulnerabilities in control and security systems. In about 73% of cases, the lost or stolen materials have not been reportedly recovered. These incidents primarily involved sealed industrial radioactive sources such as 137 Cs, 241 Am, and 192 Ir and a number of other radionuclides, including those used in medicine, such as 125 I, 131 I, 99 Mo, 99m Tc, 103 Pd, etc. Eight of these incidents involved high-risk "dangerous" radioactive sources that are classified as Category 2 and 3, according to the IAEA *Categorization of Radioactive Sources* IAEA Categorization of Radioactive Sources, RS-G-1.9. Radioactive sources belonging to Categories 1, 2 and 3 are considered 'dangerous,' i.e. as having potential to cause deterministic health effects if uncontrolled or used for malicious purposes.

### Other unauthorized activities

Fifty-one reported incidents involved other unauthorized activities. Incidents included in this category primarily involved various types of material

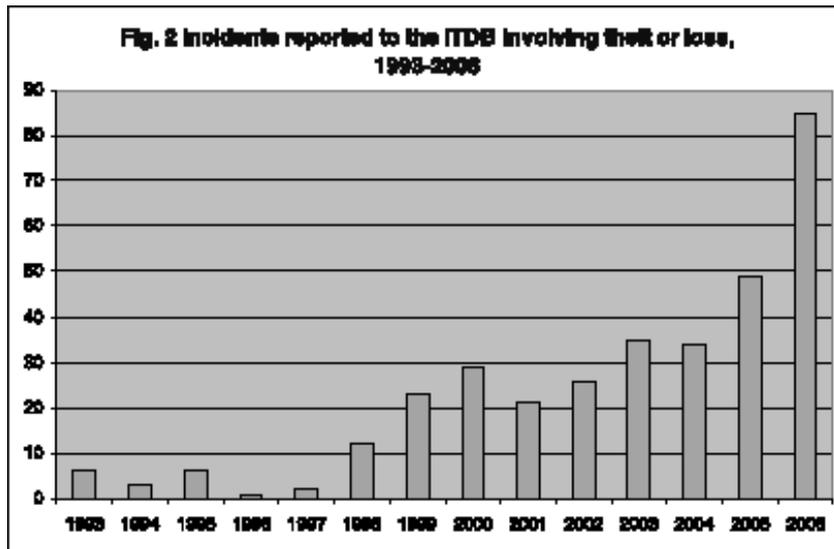
recovery showing no direct evidence of criminal behavior, such as recovery of sources, discovery of orphan sources, detection of materials disposed of in an unauthorized way, etc. Uncontrolled nuclear and other radioactive materials also are evidence of weaknesses in control and security measures. These could be exploited by those with a malicious intent.

The majority of these incidents involved the detection of radioactive sources and radioactively

seizures of kilogram quantities of weapons-usable nuclear material, but most have involved very small quantities. In some of these cases, there is a possibility that seized material was a sample of larger quantities available for illegal purchase or at risk of theft. If so, these materials pose a continuous potential security threat.

Incidents involving illicit trafficking in nuclear or other radioactive materials, especially those

where materials are offered for sale, indicate that there is a perceived demand for such materials on the illegal market. The majority of these incidents have been supply-driven with no pre-identified buyer. Buyers and repeat offenders have been identified in some cases. Where information on motives is available, it indicates that



contaminated materials disposed of in an unauthorized way. In a significant number of reported incidents, the detections occurred at national borders during international transport.

### Unauthorized possession and related criminal activities, 1993-2006

About 27% of the 275 incidents involving unauthorized possession and related criminal activities reported to the ITDB during 1993-2006 occurred in 1993-1994. After 1994, the number of reported cases per year dropped to a lower level. This has remained more or less stable over the years, averaging at about 16 incidents per year. About 45% of incidents of unauthorized possession and related criminal activity involved radioactive sources, and 55% involved nuclear materials. Of the eighteen incidents involving HEU and Pu reported to the ITDB during 1993-2006, fifteen involved unauthorized possession; some of these incidents involved attempts to sell these materials and their smuggling across national borders. Past incidents of illicit trafficking in HEU and Pu involved

profit seeking is the principal motive behind such events. Some cases, however, showed an indication of malicious intent.

However, although it is important to keep track of illicit trafficking of nuclear materials, the (not necessarily illegal) spreading of nuclear technology, of know-how, has to be the main concern nowadays. And the IAEA is part in spreading exactly that technology.

**Sources:** IAEA Illicit Trafficking Database Releases Latest Aggregate Statistics, Staff Report IAEA, 11 September 2007

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# SLEBOS CASE REVEALS FAILURE OF DUTCH AND EU NUCLEAR NON-PROLIFERATION POLICIES

The case of nuclear trader Henk Slebos, which comes to the Amsterdam Appeals court on 18 September, highlights the failure of Dutch and EU nuclear proliferation policies, according to the new report released early September '*Project Butter Factory: Henk Slebos and the A.Q. Khan nuclear network*'.

(660.5828) **Campagne tegen Wapenhandel** - '*Project Butter Factory*', written by Frank Slijper with a foreword by Zia Mian, is a comprehensive account of how the drive for profit, competing political interests and weak regulations in the Netherlands allowed the export of dual-use nuclear components to continue over a 30 year period. The report compiles publicly available data, including materials obtained under the Dutch Freedom of Information Act, to reveal:

\* The full story of Henk Slebos's role in the A.Q Khan nuclear network. Khan is widely acknowledged to be the 'father of the Pakistani nuclear bomb', with this same network implicated in nuclear proliferation to Iran, Libya and North Korea. Slebos has been Khan's close friend and business partner for three decades.

\* The repeated failure of Dutch security services in stopping Slebos's trading in nuclear components, and the inability of Dutch authorities to prosecute these activities. The only successful prosecution thus far has resulted in a minor fine. Often action was undertaken only after foreign security services or investigative journalists revealed sensitive information.

\* The trade in nuclear technology and components originating from Dutch and multinational companies, including Philips and Urenco.

With the current ease in exporting nuclear components across European borders, the report recommends that firm action be taken at EU level to reform export controls.

Project Butter Factory builds on the earlier report "A.Q.Khan, Urenco and the Proliferation of Nuclear Weapons Technology" (Greenpeace, 2004) to tell an important part of A.Q.Khan 's story, in particular how he was able to set up a uranium enrichment program that produced highly enriched uranium for making nuclear weapons, and how he tried to help other countries do the same. It details how his path to

becoming a 'national hero ' relied on personal relationships, especially with his college friend Henk Slebos, and how they benefited from the drive for profit in perhaps a thousand different companies and corporations, and were not stopped because of competing political and bureaucratic self-interests at work in many countries. It also reveals how those involved justify what they do by a belief in nuclear weapons as an acceptable basis for national security.

Over a hundred Pakistani scientists were trained in the US as part of Atoms for Peace. One of them went on to become the Chairman of Pakistan 's Atomic Energy Commission and was responsible for the nuclear weapons program at the time A.Q. Khan (who was not part of this program) returned from the Netherlands and set up the Kahuta uranium enrichment facility. More direct help has come from China.

In turn, Pakistan has helped those it chose to for whatever reason. A.Q.Khan has been complicit in the nuclear efforts in Iran, Libya and North Korea, and offered to help Iraq and perhaps others (Khan is even mentioned in the recent Syria raid by Israel) . Like his friend and partner, Henk Slebos, A.Q.Khan has not paid a high price for spreading nuclear technology. After Pakistan was officially confronted with information about his activities, and his subsequent televised public confession, taking all responsibility for his activities, in 2004 A.Q.Khan was confined to one of his palatial homes in Islamabad. In July 2007, some restrictions were lifted. He is now allowed to entertain friends and to travel to see his relatives.

Project Butter Factory tries to draw some larger lessons from the story of A.Q.Khan, Henk Slebos, and the failed international effort to control nuclear proliferation. It makes some useful recommendations. But it recognizes, wisely, that if we are to do more than just slow down the effort by states to become nuclear armed, we need to move purposefully towards ending the

nuclear age. (which includes the 'civil' or 'peaceful' use of nuclear energy)

**Source:** '*Project Butter Factory: Henk Slebos and the A.Q. Khan nuclear network*' is published by the Transnational Institute and the Campagne tegen Wapenhandel (Campaign Against Arms Trade). The full report can be downloaded at: [www.tni.org](http://www.tni.org) and [www.stoparmstrade.org](http://www.stoparmstrade.org)  
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# RECORD URANIUM PRICE - WHAT IS BEHIND AND WHAT ARE THE CONSEQUENCES

The nuclear lobby envisions a bright new dawn for nuclear power based on increasing fossil fuel prices and, ironically, on increasing public concern for the security of energy supply. Much is written elsewhere addressing nuclear power plant design and security. In the present article, though, we take a look at cost and supply issues of the fuel itself, uranium.

(660.5829) INFORSE - Potential nuclear energy investors must look carefully. What, for instance, is the actual security of supply that they will get with nuclear power? On top of the well known problems with waste handling and the high safety demands that increase the risk of shutdowns in cases of smaller incidents, problems of nuclear fuel supply seem to emerge. The spot-market prices of uranium jumped to a historical height of \$139/pound of U3O8 during some weeks of June and July, 2007. This was the end of a continuous increase from \$10/pound at the end of 2002. From July to September the spot market price has decreased to below \$100/pound.

## Supply Covered by Stockpiles

The reason for the sharp price increase in uranium is a steady demand, combined with flooding of two uranium mines in, respectively, Canada and Australia. Such high price fluctuations show a market with a limited supply and with little price-elasticity. When expected supply ceases, the price jumps high. Of course these are spot market variations and many nuclear plants buy uranium on various kinds of long-term contracts. Eventually, though, most uranium users will be affected, as uranium is becoming a seller's market. Behind all this is a global uranium market where only about 63% of the supply comes from mines and 37% comes from uranium stockpiles. These stockpiles were mainly made for nuclear weapons; but are now used for civilian nuclear power. The largest of the conversion programs of weapons uranium ends in 2013: the "Megatons to Megawatts" program, converting Russian nuclear warheads to reactor uranium. Then uranium could be in short supply, leaving new reactors without fuels. 2013, however, might not be the crucial year, as there are other

stockpiles that could be brought into the market, postponing the end of the "stockpile market" until about 2020.

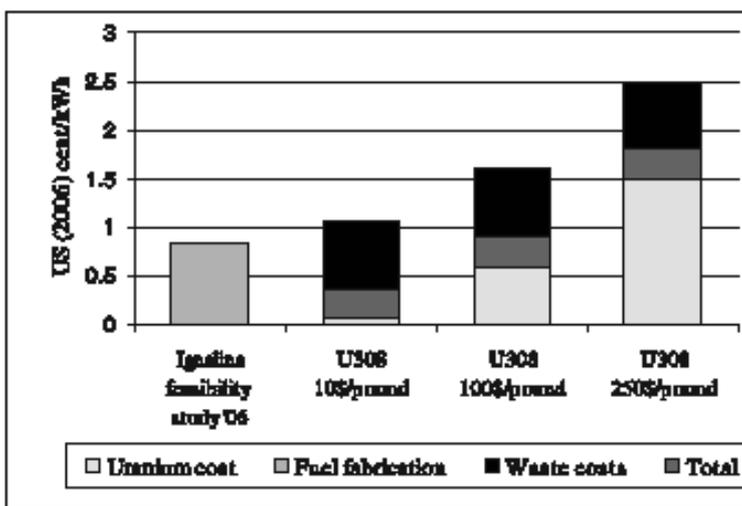
## Uranium Mining: Dirty and Unpredictable

The ordinary way of increasing supply of a metal is to increase mining. During

start of operations was postponed from 2005 to 2011 because of above-mentioned unexpected flooding.

## Further High Costs & Effects

These are the main reasons why some analysts foresee higher uranium prices in the future, as high as \$250/pound U3O8, at least for a period. While uranium costs of \$10/pound only contributed to the nuclear electricity price with 0.06 cent/kWh (this and other costs estimated with the Wise Uranium calculator with a burn-up of 42 GW-days/t U and 34% electric efficiency), uranium costs of \$100/pound contributes of 0.6 US c/kWh and \$250 /pound 1.5 c/kWh, making nuclear power less competitive.



Graph: Nuclear Fuel Cost Comparison per kWh electricity

the last few years, prospecting for uranium mines has been booming in many countries, including traditional producers as Canada, Australia, and Kazakhstan, as well as "new" countries such as Sweden and Finland. There is potential to mine more uranium; but uranium mines take time to establish and are very often dirty affairs.

Environmental NGOs are increasingly trying to stop uranium mining, and with some success, such as the "Nej till Uranbrytning" network in Sweden.

In that country uranium mines need a municipal permit, and if the local municipality prefers to keep their environment clean and to live from cleaner and often more income-intensive activities, they can simply say no. Experience from current mining developments also shows delays and cost-overruns in the construction of mines. A particular unlucky case (from the point of view of the investors) has been the largest mine under construction in the world today, the Cigar Lake mine in Canada, where the

The graph shows the effects of these higher costs on the electricity price. It provides a more comprehensive picture by showing fuel-fabrication and enrichment costs (0.3 c/kWh) as well as an assumption of waste management costs (0.7c/kWh). The results are compared with the total fuel cost estimate used in the 2006 feasibility study for a new Ignalina Nuclear Power plant in Lithuania, a study that is currently used as a basis for decisions about a new nuclear power-plant project. The graph clearly shows the very inaccurate economy created by this too low cost estimate and, further, by under estimating major expenses such as waste handling and disposal. Future electricity users will have to pay the difference. With the uranium cost of \$100/pound, the total cost of nuclear fuel becomes equal to the cost of biomass used in efficient CHP (Combined Heat & Power) plants in places like the Baltic countries that have large supplies of biomass. Efficient biomass CHPs are often considerably less costly investments than nuclear power plants. They are also more

flexible in their fuel needs, and, of course, they are immeasurably safer.

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**Sources:** [wise-uranium.org/upeur.html](http://wise-uranium.org/upeur.html), [www.uranium.info](http://www.uranium.info) (spot prices), [www.marketoracle.co.uk/Article1074.html](http://www.marketoracle.co.uk/Article1074.html), [www.energiekrise.de/uran/docs2006/REO-Uranium\\_5-12-2006.pdf](http://www.energiekrise.de/uran/docs2006/REO-Uranium_5-12-2006.pdf)

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## HEAVY SUBSIDIES IN HEAVY WATER: ECONOMICS OF NUCLEAR POWER IN INDIA

Little is publicly known about the efficiency and economics of heavy water production at the Department of Atomic Energy 's facilities. A new study estimates the cost of producing heavy water at the Manuguru plant by analyzing the available budget figures and assuming reasonable values for other factors that affect the cost and whose values are not publicly available. The results suggest that the production costs significantly exceed the price charged under even extremely favorable and unrealistic assumptions. Nuclear power in India, therefore, is being subsidized through the provision of cheap heavy water.

**(660.5830) M.V. Ramana** - Heavy water reactors need heavy water initially to attain criticality, once they start operating, they need heavy water periodically to make up for losses. It has long been conjectured that the Department of Atomic Energy (DAE) subsidizes the nuclear power cycle through providing cheap heavy water. For example in 1988 Muralidharan (in: 'Birth of Nuclear Power Corporation ') has argued that "in addition to cheap finance, the nuclear power program enjoys, in all probability, another implicit subsidy in the form of the cost and lease rate borne for its heavy water supplies". This new study attempted to try and quantify the extent of the subsidy. The results show that as per standard and required accounting practices, a subsidy of over Rs 12,000 (US\$ 295 or Euro 216) per kg is being offered.

The price at which the DAE is leasing the heavy water to the Nuclear Power Corporation, their chief customer, changes every year and currently is probably closer to Rs. 16,000 or more, already higher than international market rates. The DAE will not be under any pressure to match international rates since the NPC cannot acquire heavy

water from the international market. The study also highlights the various factors that contribute to the high cost of heavy water: high capital costs, high O&M (Operations and maintenance) and fuel expenditures, and low capacity factors. The last factor cannot be changed by running the plants at higher capacity because there is no corresponding demand, itself a result of the DAE's failure to plan appropriately and implement those in time. Finally, the study briefly described the many ways in which the DAE has sought to defeat attempts by other government agencies to assess the performance of Heavy Water Plants (HWP), mostly by refusing to be open and by adopting dubious accounting procedures, thereby not allowing a fair price for heavy water to be estimated.

Given this lack of transparency in the operations and costs at HWPs, the estimates made here is necessarily approximate. For a better and more reliable estimate, the DAE should provide full and complete operating records and expenditures at all heavy water related facilities for public scrutiny. Partial releases of information would be unsatisfactory because it opens up the possibility of releasing data that are favorable to the

economics of heavy water and suppressing unfavorable figures. The cost of the initial loading of heavy water, which is subsidized both through a low price and by leasing heavy water at a low rate, constitutes over 15 per cent of the initial capital cost of the reactor, which in turn is the dominant contribution to the cost of producing electricity. Studies of the relative economics of nuclear power would therefore depend strongly on what is assumed for the heavy water cost.

The conclusion in this study, in combination with earlier work, implies that atomic energy is unlikely to be economically competitive if the true cost of producing heavy water is taken into account.

**Source:** The study "*Heavy Subsidies in Heavy Water: Economics of nuclear power in India*" is conducted by M.V. Ramana and is published in the August 25 2007, issue of 'Economic and Political Weekly'. And private email 17 September 2007

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# "IN TIME OF HYPE, TELLING THE TRUTH BECOMES A REVOLUTIONARY ACT"

The war of words over Iran's nuclear ambitions has escalated recently, with the French Foreign Minister Bernard Kouchner warning the world to "prepare for the worst, and the worst is war" (although later withdrawn), and especially a spate of articles in the US print media targeting El-Baradei and the IAEA after agreeing on a time-schedule with Iran to answer outstanding questions about Iran's nuclear program.

(660.5831) Laka Foundation - Since admitting to a nearly two-decade old covert nuclear program in 2003, Iran has struggled to provide enough information about its activities to alleviate Western fears that the nation is seeking to develop nuclear weapons. However, the IAEA concluded in its latest report (IAEA INFCIRC 711, 27 August 2007): "*The Agency has been able to verify the non-diversion of the declared nuclear materials at the enrichment facilities in Iran and has therefore concluded that it remains in peaceful use.*" The report cites several contentious issues that have been resolved recently through a renewed dialogue with Iran and the work program that Iranian and U.N. officials agreed to in a series of meetings in July and August. The report suggests that if Iran adheres to the program and timelines, the agency could resolve its remaining questions about the nature of the country's nuclear program by the end of the year and close the file.

ElBaradei reacted to the Kouchner (founding father of '*Medicins sans frontiers*') statement about preparation for war with Iran as follows "What I see right now is a lot of hype, it reminds me of a paraphrase of George Orwell's quotation: 'In time of hype, telling the truth becomes a revolutionary act.'"

## Iran and its Safeguards Agreement

But why again is there so much upset about Iran? And is ElBaradei telling the truth, the whole truth and nothing but the truth (as a true 'revolutionary act'?) or is he player in the 'hype' about Iran and it's nuclear program (especially it's enrichment program)?

On May 15, 1974, Iran entered into an agreement with the IAEA - to remain in force as long as Iran remained a party to the Treaty on Non-Proliferation of Nuclear Weapons - wherein all Iranian

"source or special fissionable materials" and activities involving them were to be made subject to IAEA Safeguards "with a view to preventing diversion of nuclear energy from peaceful purposes."

It is true that Iran *voluntarily* suspended certain activities in 2003 when it signed an Additional Protocol to its Safeguards Agreement, and offered to begin complying with the Additional Protocol, immediately, in advance of its formal ratification. And, in 2005, offered to *permanently* suspend certain other activities, in return for certain security guarantees by the European Union. But that offer to the EU was never even acknowledged, no NPT-illegal sanctions on Iran were ever lifted, and no security guarantees were ever provided to Iran. So, Iran resumed some of the activities it had voluntarily suspended. Furthermore, Iran's Parliament decided *not* to ratify the Additional Protocol and ordered the Iranian Atomic Energy Agency to cease complying with it. Since then, the official mission and role of the IAEA in Iran is once again totally proscribed by the original Safeguards Agreement and its Subsidiary Arrangements.

Nevertheless, on February 4, 2006, under extreme pressure by the US, the IAEA Board of Governors adopted a resolution in which it concluded that for "confidence" to be built "in the exclusively peaceful nature of Iran's nuclear program" it was "deemed necessary" for Iran to :

- \* *re-establish full and sustained suspension of all enrichment related and reprocessing activities, including research and development, to be verified by the Agency;*
- \* *reconsider the construction of a research reactor moderated by heavy water;*
- \* *ratify promptly and implement in full*

*the Additional Protocol;*

\* *pending ratification, continue to act in accordance with the provisions of the Additional Protocol which Iran signed on 18 December 2003;*

\* *implement transparency measures, as requested by the Director General, including in GOV/2005/67, which extend beyond the formal requirements of the Safeguards Agreement and Additional Protocol, and include such access to individuals, documentation relating to procurement, dual use equipment, certain military-owned workshops and research and development as the Agency may request in support of its ongoing investigations.*

Now, it is certainly within the Board's purview to ask Iran to resolve those legitimate "outstanding questions" concerning Iran's implementation of its Safeguards agreement, chronicled in the Director-General's report of September 2, 2005. But nowhere does the UN Charter, the IAEA Statute or the NPT, itself, even suggest that the Board needs to satisfy itself that any country's nuclear program is exclusively peaceful. For the Board to "deem it necessary" for a sovereign state to promptly ratify the Additional Protocol to its existing Safeguards Agreement - a treaty - is a stunning violation of the IAEA UN-proscribed charter. And for the Board to "report" Iran to the Security Council as a "threat to the peace" for Iran's failure to comply with the Board's illegal and outrageous demands is beyond the pale.

According to its own primary mission, the IAEA Board should have censured US President Clinton for his successful attempts in 1995 to prevent Russia from supplying Iran a turn-key gas-centrifuge uranium-enrichment plant and China from supplying Iran a turn-key uranium-conversion plant. Or his

unsuccessful attempts to prevent Russia from completing the nuclear power plant at Bushehr. (all perfectly legal under all treaties and the main reason why Iran is building an indigenous uranium enrichment plant in the first place). Today, the IAEA Board should be (again, according to its mission) doing all it can to facilitate the coming on-line of Bushehr and completion of the uranium-enrichment plant at Natanz.

But as said, IAEA and Iran reached an agreement and in his speech at the IAEA Annual Conference on September 17, the IAEA Director General once again reiterated Iran's cooperation with the IAEA and the IAEA's conclusion that it had verified that of the declared nuclear materials by Iran none had been diverted; even as El Baradei continued to bemoan the fact that Iran has shown no inclination to stop production of its Heavy Water facility at Arak and there were still outstanding

issues the IAEA had with Iran. He referred to the positive development of the time bound agreement between the IAEA and Iran to resolve all outstanding issues.

As to "outstanding" issues that are relevant to Iran's Safeguards agreement; on the matter about plutonium experiments there were some remaining questions, but Iran provided clarifications that were "consistent with the Agency's findings, and thus the matter is resolved." They agreed to try to resolve questions concerning the production of minute quantities Polonium-210 and the source of the enriched-uranium micro-contamination found at "a technical University in Tehran."

The Iranians agreed to try to document all attempts to procure, manufacture and operate so-called P2 (second generation) gas centrifuges.

**Media attack on El-Baradei and IAEA**  
Since the IAEA-Iran agreement we have begun to see a spate of articles targeting IAEA and ElBaradei in the US and US-controlled print media. Some have been downright abusive with the *Washington Post* labeling him a "rogue" regulator; that word which has become so central to the Bush era in the US. If one is not falling in line with the US, then one is a "rogue" of one form or another. Some UN Secretary Generals also had to suffer a similar fate, but the language now being used by the US media for ElBaradei goes further than earlier slander of international personalities. What has bothered the US is the fact that the IAEA under its present leadership has proactively sought to resolve this issue peacefully by dialoguing with Iran instead of supporting the American position of seeking confrontation through provocation so that a pretext can be provided for US military action. Remember Iraq and the WMD issue?

## El-Baradei and the IAEA

Mohamed El-Baradei is an unexpected thorn in Washington's side. The US backed the American-educated Egyptian lawyer's rise to the top job at the International Atomic Energy Agency in 1997. In the run-up to the Iraq invasion, however, he flatly (and correctly as it turned out) contradicted US assertions about Saddam Hussein's supposed nuclear program. The Bush administration attempted to have Mr El-Baradei ousted from his position, but his international support was much too solid following the Iraq debacle.

Since winning the Nobel prize in 2005, the 65-year-old IAEA chief has become virtually unassailable but his critics say that the award has gone to his head. Mr El-Baradei has indeed been increasingly outspoken. In a recent BBC interview, for example, he remonstrated against the "new crazies", a clear reference to US hawks pushing for military action in Iran. He is also on record saying that the nuclear-weapon state really should start to get rid of the nuclear weapons.

But, although he seems to be the most independent director general in the history of the IAEA, he is leading the organization responsible for an enormous pro-offensive in favor of nuclear energy, he is a firm believer of the possibilities to use nuclear fission for peaceful purposes and believes the military use of it is something completely different. And he defends the US-India 123 Agreement.

In a recent interview with the German magazine *Der Spiegel* El-Baradei he makes that very clear again.

**Spiegel:** India never joined the NPT, and it tested a nuclear weapon in 1998. The IAEA is not even allowed to inspect India's civilian plants, not to mention its military ones. And yet the United States now wants to supply Delhi with new nuclear technology and fuel. Why didn't you object to this deal?

**El-Baradei:** I was even in favor of it. I am not a purist or a dreamer. India became a nuclear power, and it was ostracized internationally for a time as a result. This no longer makes any sense. We would consider it progress if we could monitor India's civilian nuclear power plants in the future, and we will likely begin negotiations on this issue with Delhi soon, provided the deal isn't cancelled as a result of domestic political disagreements first.

(...)

**Spiegel:** What would you like to see as your legacy?

**El-Baradei:** I am in favor of a multinational procedure in matters of uranium enrichment and reprocessing. Ultimately, no single country should be in a position to independently produce nuclear material.

So, if there is a shift in the policy of the IAEA since El-Baradei became Director General it could be this: "Ultimately, no single country should be in a position to independently produce nuclear material." Already in March 2004 El-Baradei appointed an international group of experts to consider possible multinational approaches to the civilian nuclear fuel cycle. The report was published ("*Multilateral approaches to the Nuclear Fuel Cycle*") in 2005 and suggests 5 approaches. This however, is totally in line with the US policy and it's GNEP-initiative to monopolize the fuel cycle (although of a later date and not mentioned in the report).

Worse still, this time a newly resurgent rightwing leadership in countries like France are supporting the policy. "We have to prepare for the worst, and the worst is war," the French Foreign Minister Bernard Kouchner said in a broadcast interview in which he described the current tensions as "the greatest crisis" (although a few days later he said he was misinterpreted by the media) Even the EU (in a speech at the General Conference on September 11) did not give the agreement the diplomatic backing expected, which led to EIBaradei actually walking out of the meeting for some time. And, also most ironic, India, which had championed an anti-imperial stance and a non-

discriminatory approach to international relations has now become a symbol of such a discriminatory approach through its dubious nuclear deal with the US. Such are the ironies of international politics!

So for the first time there is a time-schedule for the remaining "outstanding" issues (even outstanding issues that are not relevant to Iran's Safeguards agreement), and still, the chances of war looking larger than ever.

**Sources:** *Global Security Newswire*, 17 September 2007 / *The News* (Pakistan), 19 September 2007 / *Nuclear Monitor* 659, 6 September 2007 / Director

General's Statement to IAEA 51st General Conference, at [www.iaea.org](http://www.iaea.org) / *The Guardian* (UK), 18 September 2007 / *Der Spiegel*, 3 September 2007 / *Rogue Regulator?* 8 September 2007 at [www.antiwar.com](http://www.antiwar.com) / *IAEA-Iran Resolving Outstanding Questions*, 1 September 2007 at [www.antiwar.com](http://www.antiwar.com)  
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**The genius doctor who diagnosed nuke power's deadly disease**

*Dr. John Gofman M.D., Ph.D. born in 1918, died August 15, at his home in San Francisco, California.*

Dr. John Gofman was a medical doctor, nuclear chemist, Manhattan Project scientist, co-discoverer of isotopes of uranium and protactinium and the first to separate plutonium in usable quantities but also an environmental activist who fought till the end policies to disperse plutonium and other radioactivity from the nuclear power/weapons fuel chain into the environment and out of control. He repeatedly stood up to government pressure to suppress the truth about radiation health dangers and set an example of scientific integrity.

One of Gofman's most powerful and influential moments came in 1974, when he agreed to defend a civil disobedient named Sam Lovejoy in the small town of Montague, Massachusetts. A member of a communal organic farm, Lovejoy had manually knocked over a 500-foot weather tower erected as a precursor to the building of a large twin reactor complex. Gofman agreed to testify in Lovejoy's defense, arguing that building two nuke reactors constituted a lethal threat to the health and safety of the community. In a monumental moment for the rise of the anti-nuclear movement, Lovejoy was acquitted. Gofman's pivotal pronouncements appear in the award-winning Lovejoy's Nuclear War ([gmpfilms.com](http://gmpfilms.com)), which has been shown all over the world. As a pivotal struggle over a "bailout in advance" for new reactor

construction rages in Congress, Gofman's words resonate with a renewed critical importance: "The decision to build nuclear power plants may very well be, for the first time, a decision that can result in the desecration of the Earth with respect for life for all future generations. Why do we want to put every city and hamlet of the United States at risk by building a thousand of these plants? We can get the power from sunshine, very easily and economically."

His important contributions to radiation science are well documented, and his insights are needed now, more than ever, to challenge new and old nuclear facilities. Much of it can be accessed at the website of the Committee for Nuclear Responsibility at [www.ratical.org/radiation/CNR/](http://www.ratical.org/radiation/CNR/). His radiation discoveries and revelations have not been refuted, rather ignored by the nuclear power promoters and many of his conclusions have been confirmed decades later by the radiation establishment.

Some of Gofman's key scientific contributions include the finding that there is no safe threshold for ionizing radiation exposure. His 1981 *Radiation and Human Health* and 1990 *Radiation-Induced Cancer from Low Dose Exposures: An Independent Analysis*, disproved a safe dose of radiation, justifying his statement that "Nuclear power is mass, random, premeditated murder." He adamantly challenged the permissible doses created to legalize nuclear poisoning of the public and environment. By estimating the number of cancers from "legal" exposures he forced the Atomic Energy Commission to make its own estimates thus admitting harm from radiation. The national and international

radiation committees have had to concur that there is no safe threshold. Another major contribution to the scientific community was his work on the other health effects of radiation in addition to cancer. As early as 1970, Gofman predicted that ionizing radiation can break chromosomes-- causing deletions, translocations and double strand DNA breaks causing fatal diseases and birth defects. (See his 1992 paper at [www.ratical.org/radiation/CNR/RICI.html](http://www.ratical.org/radiation/CNR/RICI.html)). Gofman's 1981 *Radiation and Human Health* (pp. 788-791) indicates that ionizing radiation causes 6 to 100 times more heart disease, cancer, diabetes, anemia, schizophrenia, ulcers and many other killers (referred to as "Irregularly Inherited Diseases") than assumed by the self-appointed radiation committees. His 1993 paper, "Asleep at the Wheel" [www.ratical.org/radiation/CNR/Asleep@Wheel.html](http://www.ratical.org/radiation/CNR/Asleep@Wheel.html), explains how the Hiroshima and Nagasaki follow-up studies were not designed to find genetic health effects in future generations.

According to Gofman's only son, his father died "feeling that he had made some positive differences, ...he died with a grateful heart for having enjoyed his long life intensely... for at least 85 years of good health" and for his family, friends, colleagues, supporters, and the "many dedicated grassroots activists in our democracy."

**Sources:** H. Wasserman in 'The Free Press', September 7, 2007, and Diane D'Arrigo, NIRS, September 16, 2007  
**Contact:** NIRS

## IN BRIEF

**Vietnam, Czech Republic return HEU fuel to Russia.** Conversion of Vietnam's only civilian research reactor to low-enriched uranium (LEU) fuel has been completed, with the return of unused high-enriched (HEU) fuel to Russia. Vietnam's Dalat research reactor has been converted from using HEU fuel at 36% uranium-235, to fuel made from LEU, enriched to under 20%. The LEU fuel for the reactor, a 500 kWt pool-type reactor of Russian VVR-M design, was manufactured by TVEL of Russia at Novosibirsk. In the process, approximately 4.5 kg of unused HEU fuel was returned to Russia, where it will be permanently downblended to LEU. The reactor was the 50th to be converted under the Russian-American Reduced Enrichment for Research and Test Reactors (RERTR) program which seeks to increase global security by reducing the number of facilities using HEU, which at some enrichment levels could be used in nuclear weapons. The US National Nuclear Security Administration (NNSA) provided \$2.4 million in funding for the operation and is also providing physical protection upgrades at Dalat and at other Vietnamese facilities with radiological sources. According to the NNSA, a total of 500 kg of fresh and used HEU fuel have been returned to Russia so far under the Global Threat Reduction Initiative.

Meanwhile, the Czech Republic is preparing to send spent HEU back to Russia under the same program. Officials from the Czech Republic and the USA have signed a non-proliferation agreement providing a legal framework for NNSA to carry out similar work there. NNSA is to provide \$35 million for the Czech government to transfer 2 tons of used HEU fuel from a research reactor at Rez, near Prague, to Russia for reprocessing. The NNSA is currently helping to convert the Rez reactor to LEU fuel. **World Nuclear News, 18 September 2007**

**Israeli strike on Syria.** Many analyses and rumors about the purpose of a September 6 Israeli air strike inside Syria, and media reporting it as a possible attack against a nuclear installation receiving equipment from North Korea or a practice run for a strike against Iran. An unidentified U.S. expert on the Middle East told the Washington Post that the attack targeted a facility labeled as an agricultural research center located near the country's border with Turkey along the Euphrates River. The source said that the strike was connected to a North Korean shipment labeled as cement that had arrived three days earlier. The expert has spoken with Israeli officials involved in the raid. They said the belief was that the ship was carrying nuclear equipment. Israel believed that Syria was using the facility to extract uranium from phosphates and had carefully monitored the site, the expert said

South Korean Foreign Minister Song Min-soon said that there was no firm evidence supporting reports of North Korean involvement in a Syrian nuclear weapons program, AFP reported. "If Syria received nuclear materials from North Korea, it must have a facility to store them. As far as I know, Syria has no nuclear (storage) facility"

**Global Security newswire, 17 September 2007**

**No-one knows how much Pu stored at LANL.** An U.S.-government audit has found that a stockpile of plutonium and other nuclear weapons materials stored at Los Alamos National Laboratory (New Mexico) hasn't been fully accounted for in 13 years or more. The lab's workers have done regular, partial inventories of the material, which the government considers to be at high risk of theft, the audit by the Energy Department's inspector general, Gregory Friedman, found. Yet an inventory of all the material hasn't been done. Not even when the lab's management contract changed last year, investigators noted in the report made public on September 12. Friedman said he is concerned because the lack of complete inventories means that lab workers likely haven't physically accounted for all of the material in more than a decade. "The capability to deter, detect and assist in the prevention of theft or diversion of this material is critical," he wrote. Yet, he added: "We were unable to find anyone with knowledge or documentation of the last time the vault was completely inventoried. (...) Under the circumstances, the nuclear material could have been diverted without any record showing that it had ever existed."

The lab is responsible for maintaining stores of plutonium, enriched uranium and depleted uranium as well as other materials used in the nation's nuclear weapons program. Los Alamos has been plagued by security lapses over the years - from missing data storage devices to the discovery of classified data during a drug bust at a former lab contract worker's trailer.

**The Guardian (UK), 13 September 2007**

**UK Minister: Industry must pay for waste.** UK energy minister Malcolm Wicks has stated the nuclear industry will have to pay for all the waste management and site decommissioning costs. This is the first time a Government minister has given this commitment - previously ministers only spoke of the industry paying its 'fair share' of the costs. In an interview with the Financial Times Mr Wicks said operators would have to make regular contributions to a waste and decommissioning fund. No subsidies would be given to the industry, "the starting principle is that if we go for nuclear, the private sector have to pay for it and that includes this area of nuclear waste".

Meanwhile, officials at the Department for Business, Enterprise and Regulatory Reform are working on plans for the UK's energy supply that do not include nuclear energy. The Government is currently consulting on plans for new reactors but DBERF said they were looking at alternative strategies in case the nuclear option was eventually rejected. The leading environmental groups have withdrawn from the Government's public consultation on whether new nuclear reactors are needed and should be built, calling it "a farce". The environmental groups are considering new legal moves challenging this second consultation being held after the High Court ruled earlier this year that the initial consultation was seriously flawed.

**N-Base Briefings, 5 & 12 September 2007**

**March against Areva, but what does it mean?** Hundreds of people in Niger marched on September 8 to demand the departure of French nuclear giant Areva, which they accuse of backing a rebellion in the uranium-rich north of the former French colony. The Tuareg-led Niger Movement for Justice (MNJ) has killed at least 45 government soldiers and taken dozens hostage since launching a campaign in February to demand more development for the region around the ancient Saharan trading town of Agadez. (see NM 658: Nomadic Rebels in Niger attacked uranium mining firms)

Niger's authorities have accused Areva of helping to fund the rebels and earlier this year declared the company's country director persona non grata. The French firm denies the allegations. "We are asking President Mamadou Tandja and the government purely and simply to expel Areva and to nationalize its subsidiaries operating here," said Nouhou Arzika, president of the "Citizens' Movement" which staged the march.

Niger's north contains some of the world's largest reserves of uranium and Areva, which has for decades enjoyed a monopoly in the country, has two mines in the region which supply France's nuclear industry. Niger's government policy is to increase the number of foreign firms mining uranium in the north, part of an effort to break the French monopoly and win better terms for the exploitation of its mineral resources. The government has awarded dozens of exploration permits to Chinese, Canadian, European and other foreign firms in recent months.

**Reuters Africa, 8 Sept. 2007**

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## The NUCLEAR MONITOR

The Nuclear Information & Resource Service was founded in 1978 and is based in Takoma Park, Maryland. The World Information Service on Energy was set up the same year and is housed in Amsterdam, Netherlands. NIRS and WISE Amsterdam joined forces in 2000, creating a worldwide network of information and resource centers for citizens and environmental organizations concerned about nuclear power, radioactive waste, radiation, and sustainable energy.

The Nuclear Monitor publishes international information in English 20 times a year. A Spanish translation of this newsletter is available on the WISE Amsterdam website ([www.antenna.nl/wise/esp](http://www.antenna.nl/wise/esp)). A Russian version is published by WISE Russia, a Ukrainian version is published by WISE Ukraine and a Japanese edition is published by WISE Japan (latter two available at [www.nirs.org](http://www.nirs.org)). Back issues are available through the WISE Amsterdam homepage: [www.antenna.nl/wise](http://www.antenna.nl/wise) and at [www.nirs.org](http://www.nirs.org).

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<http://www.nirs.org/southeast/sehome.htm>

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