

NUCLEAR MONITOR

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JAPAN GOES OK WITHOUT NUKES!

To the surprise of all Tokyo and surroundings, one of the largest electricity-consuming capitals in the world obviously can do without all its nuclear-generated power. The Tokyo Electric Power Company Inc. (TEPCO) shut down all its 17 nuclear power plants for maintenance purposes on 15 April. This shutdown, due to defects in the reactors and revelations about falsified tests, however has not caused an electricity supply crisis.

(587.5513) CNIC - TEPCO operates 17 reactors with a total output capacity of 17,308 MW, including Fukushima No. 1 (6 BWRs, 4,698MW), Fukushima No. 2 (4 BWRs, 4,400MW), and Kashiwazaki-Kariwa (5 BWRs, 5,500MW and 2 ABWR, 2,712MW). The first two NPPs are in Fukushima Prefecture and the latter in Niigata Prefecture.

The first TEPCO reactors were halted in September 2002 due to defects in reactor components and revelations about falsified tests (see also *WISE/NIRS Nuclear Monitor* 582.5487: "Update on TEPCO scandal").

The detailed account for each suspended reactor is as follows: the Ministry of Economy, Trade and Industry (METI) has ordered a one-year temporary suspension because of misconduct during a containment vessel leak-rate inspection; four

reactors are currently under inspection due to the revelation of defects in the reactor vessel shrouds; one reactor was forced to shut down because other problems were found; and there are three reactors under periodic inspection.

On 15 April, there emerged a situation where virtually every TEPCO-owned NPP ceased generating electricity. TEPCO said that they would not restart operation without "obtaining the consensus of local residents in the electricity generation area". So far both Fukushima and Niigata Prefecture have maintained a negative stance to restarting the plants in their area.

Dr. Sunsuke Kondo, a professor at the Tokyo University and a well-known nuclear proponent, called this situation a "simultaneous breakdown"

(showing the danger of several NPP's failing at one time). In a recently published article, he asserts that, "it is true that the managers of electricity power companies started to suspect nuclear energy, which have the 'fall down risk', as a pillar of electric supply in the age of electricity restructuring." The "simultaneous breakdown" has been regarded as a risk posed in the event of an accident. The risk comes about when an accident in one NPP necessitates a comprehensive investigation of the other stations, leading to the failure of all suspected reactors.

The whole situation proved that the revelation of malpractice in nuclear reactors created the "fall down risk". Thus, we know that relying too much on nuclear power as a basis for a steady electric supply is a risky course. It also threatens the management of electricity companies, as Prof. Kondo pointed out.

Speaking of ensuring a stabilized electric supply system, the current nuclear fall down has not caused an electricity supply crisis. There have not been any blackouts anywhere in TEPCO's 40,000 square-km electricity supply area, despite the fact that all of TEPCO's NPPs were shut down. Since other power companies have excessive power generating capacity, it is apparent that the electricity supply can be secured while all NPPs are shut down.

IN THIS ISSUE:

Japan goes okay without nukes!	1
Fight against Finnish new reactor to continue	2
Australia: planned waste dump faces opposition	5
French energy debate: "false" debate	6
UK: Plutonium Working Group report	7
U.S.: strontium-90 in baby teeth near Florida reactors	8
In brief	10

MONJU LICENSE CASE IN COURT

In a civil suit regarding the Japanese Monju experimental fast breeder reactor operated by the state-run Japan Nuclear Cycle Development Institute, the Kanagawa branch of the Nagoya High Court handed down a ruling on 27 January that nullified the government's initial approval of the reactor's construction. This means that the 280 MW reactor had operated without a proper construction license.

The reactor experienced a serious sodium-leak accident in December 1995 and was shutdown since then (see also *WISE News Communiqué* 444.4392: "Monju shut down after sodium leak").

After the ruling, the Ministry of Economy Trade and Industry (METI) appealed the Court decision to the Supreme Court on 27 March with the following arguments:

-The High Court on 27 January ruled that "illegal misconduct in the government measures like the pre-construction approval of the reactor's construction could result in the great threat to local residents. In such case, the government's approval would not be justified on the ground that there were no evident errors at the time of the government's safety assessment." In responding to this statement, the METI cited a Supreme Court precedent which says "in order to nullify the government measures, it is necessary to verify the seriousness of illegality and the strong degree of such evidence" and it claimed that the ruling by the High Court was against this particular precedent.

-The High Court ruling sought to ensure the safety of the plant under the unrealistic assumption that all the multiplex safety system failed to work properly. The METI claimed that this argument is against the Nuclear Reactor Regulation Law.

It is highly unlikely that the Supreme Court admit METI's justification to appeal the higher court. Decision to be take soon!

Even in the peak load demand during summer time, it would be possible to shut down all the nuclear reactors if more efforts were put into the reduction of electricity demand which would also downplay the risks - going together with the choice for nukes - for the companies. And at the same time help stabilize energy supply.

The situation of TEPCO's 17 reactor suspensions ended on 7 May, when Kashiwazaki-kariwa-6 restarted. TEPCO managed to put so much pressure on politics and regulatory bodies that it was enabled to restart the Kashiwazaki-kariwa-6 reactor, a 1356 MW Advanced BWR (ABWR).

The company repeatedly emphasized the difference between the ABWR and BWR. Stressing the differences makes it harder at the same time to ensure the public that restarting of the older BWR's can be done safely.

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FIGHT AGAINST FINNISH NEW REACTOR TO CONTINUE

The project for a fifth nuclear reactor in Finland, after more than two decades of plans, has proceeded to a point where the power company Teollisuuden Voima (TVO) has received tenders from possible suppliers. TVO has announced that it will do its best to choose the reactor type and supplier (or suppliers) by the end of the year.

(587.5514) **Greenpeace Finland** - TVO hasn't itself announced which companies have bidden for the project but the main competitors are known to be Framatome ANP (France), General Electric (USA), and Atomstroyexport (Russia).

Soon after the bidding round was launched one of the expected most potential vendors, Westinghouse, stated that they would not be handing in a tender. The reason they

gave was that "nuclear reactors should be built in series" and it is uneconomical to build just one reactor.

Before the bidding round was closed, TVO stated that it looks like there's no company that could supply the whole plant (reactor system, buildings, electricity system, etc.), so it is probably forced to buy the reactor in parts.

Anti-nuclear government will show green light

The Finnish Nuclear Energy Act passed in 1987 requires that if an energy company gets a political permit, a decision-in-principle for a new nuclear facility, it still needs to apply for a construction permit and also an operating license from the government.

Since the decision-in-principle made in May 2002 (see *WISE/NIRS Nuclear*

25 YEARS AGO

NIRS and WISE both celebrate their 25th anniversaries this year. This is the seventh article in a series, "25 years ago", comparing anti-nuclear news "then" and "now", to mark our first quarter-century of anti-nuclear campaigning.

Then

In issue 2 of *WISE Bulletin* we wrote about the struggle against the planned Bataan NPP in the Philippines: "At Morong, in Bataan Province, Philippines, Westinghouse is building a 620 MWe nuclear power plant that is a model of how to sell nukes to the third world. [...] In the Bataan province, 25,000 people signed a petition against the plant, but martial law under the Marcos dictatorship prevents effective opposition. On April 27 1978 there was an international day of protest against the Philippine reactor, with demos in San Francisco, New York, Tokyo and in the Netherlands". (*WISE Bulletin* 2, July 1978)

Now

Dictator Marcos' plans for nuclear energy started in 1973, which would consist of at least 11 reactors of 600 MW each. Construction work at Bataan started in 1974. There was broad opposition against the Bataan reactor both in the Philippines as well as in other countries. Over 50,000 Pilipinos dared, in the face of martial law, to sign a petition demanding the plant's cancellation. In the US, the US Nuclear Regulatory Commission was asked to deny Westinghouse's application for an export license of the reactor. This failed however and Westinghouse was granted a license in May 1980. (*The Nuclear Fix; a Guide to Nuclear Activities in the Third World*, WISE, 1982)

After the 1979 Harrisburg accident, construction work on Bataan was halted and an inquiry on safety issues showed 4,000 defects in the reactor under construction. Two months after the Marcos regime had fallen the Chernobyl disaster in 1986 meant another setback for the project. The new Aquino administration mothballed the project in August 1986.

But in 1992 Aquino developed new plans to finish Bataan and proposed to settle a number of financial issues with Westinghouse. These proposals were rejected by the Philippine Senate and House of Representatives later. Next president Ramos even tried to revive the whole nuclear energy option, when he announced plans in May 1995 to construct several new NPPs with projections of up to 25,000 MW in 2020. (WISE News Communique 499/500.4935: "The continuing struggle for a nuclear-free Philippines")

Successful opposition prevented the opening of the Bataan reactor. But campaigning work of Philippines' anti-nuclear groups continue as their government is still continuing with the 1995 adopted plan to build new reactors in the future.

Monitor 569.5409: "Finland: parliament approves new reactor, greens resign") the government in Finland has changed. Now the majority of the ministers are anti-nuclear.

This, however hardly makes any difference if the operation license is applied since the decision is considered just a formal procedure. So the ball is now on the hands of TVO's shareholders.

Economically profitable or not?

The profitability of the whole project has been one of the discussion topics both before and after the political decision. The calculations of profitability that were presented in TVO's application for the decision-in-principal and which were used then in public discussions were based solely on a study made by Lap-peenranta University of Technology.

The study is in serious conflict with international cost-estimates. While the OECD assessment made in 1998 for example estimates that the output of a new reactor in Finland would cost 3.1 eurocents/kWh, TVO claims the costs to be 2.2 eurocents/kWh (US\$ 0.03/kWh).

A partial explanation for the differences in estimations can be found in basic assumptions of the studies in question. The study ordered by TVO makes a number of unrealistically optimistic assumptions. Although some of these assumptions would come to be true, it is very unlikely that it would hold true with all of them.

In addition to this, TVO's reactor would be the first reactor built in a liberalized electricity market, which alone definitely brings uncertainties to the project. Not to mention the

uncertainties, that will follow if TVO chooses a reactor type that hasn't been built before.

TVO has announced that a large portion of the project's finances would be loans from financing

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institutions, "special financing institutions" (without explaining whom they mean) as well as from the capital market.

This would raise TVO's loans up to 2 - 2.9 billion Euro (US\$ 2.33 – 3.37 billion), which could lower company's equity ration dangerously low, as certain financial estimates have concluded.

In the preliminary finance plan TVO explained the great portion of loans by "the commitment of the 'electricity users' to use the electricity produced throughout its entire lifespan". This lifespan in TVO's plans is up to 60 years. In the current Nordic electricity market a contract of more than a few years is long lived.

Who will invest?

TVO has both private and public owners. The share of private owners is 56.9 % and there the biggest players are forest companies UPM-Kymmene and Stora Enso. In the public side (43.1%) the biggest single players are energy company Fortum and Mankala, which is a company owned by the city of Helsinki.

Next autumn, the shareholders will be asked to make investment decisions on their part. Fortum, which is one of the leading energy companies in the Nordic countries owns 26.6 % of TVO.

The CEO of Fortum, Mikael Lilius has stated in many occasions that it is not clear at all whether the project is economically wise and whether Fortum itself will invest in it.

In the city council of Helsinki, Greens are the second biggest party, so the investment decision of Helsinki won't be a walkover either. Mankala owns 8.1% of the TVO shares.

How about the public?

When TVO got the political permit from the parliament in May 2002, meaning a victory for nuclear lobby that had been campaigning for the

fifth reactor for almost two decades, the anti-nuclear movement more or less stagnated. The disappointment was huge.

The nuclear lobby instead hasn't hidden its joy. Just like the anti-nuclear movement predicted, they have already started to talk about a sixth reactor.

Nuclear power is simply displayed as an energy form with no environmental or social problems what so ever. Pro nuclear indoctrination in Finland is easy since majority of the newspaper editorials are in favor of more nuclear.

...encouraging people to buy eco-labeled electricity that is produced by renewable energy. It is a means to anybody to "vote with ones electricity bill".

The quiet life of the anti-nuclear movement doesn't however mean that people would have accepted the idea of a new reactor. The surface is calm but underneath there is a storm.

The problem for the anti-nuclear movement is however that the wide anti-nuclear coalition of different organizations and individuals 'Valtavirta' came out from nowhere – since there practically wasn't an organized anti-nuclear movement at a time when TVO made its political application in November 2000 - and it was formed for the particular purpose of getting the parliament to reject the application.

Consequently the coalition now lacks the elements of a permanent NGO, which gives it little possibilities of being strong and vivid as a large movement. The only NGO that has an employed person for anti-nuclear work in Finland nowadays is Greenpeace.

What is there to do?

As mentioned above, there are many public companies and even municipalities involved in the nuclear project.

What anti-nuclear movement can and will do now is try and influence especially these public owners and get them not to invest on the fifth reactor.

The disadvantages of nuclear will be highlighted once again and reasoning of the so-called profitability will be demanded.

Greenpeace has been campaigning to get people to switch to green electricity; in other words encouraging people to buy eco-labeled electricity that is produced by renewable energy. It is a means to anybody to "vote with ones electricity bill".

Nuclear opponents in Finland will also try to get pressure on TVO's owners from abroad. The names of those owners of TVO that are making business also outside Finland will be made highlighted.

All the support from to Finnish anti-nuclear movement from NGOs outside Finland will be more than precious in the coming months.

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AUSTRALIA: PLANNED WASTE DUMP FACES OPPOSITION

The Australian government is planning a national low-level radioactive waste disposal site in South Australia. On 9 May the government announced to have chosen a final site near Woomera, after 10 years of site selection procedures. The search for a waste dump has faced a lot of resistance from various groups. Irati Wanti (“the poison, leave it”) is the name of the campaign of the Kungka Tjuta aboriginal leaders in South Australia.

(587.5515) Irati Wanti - “We are the Kupa Piti Kungka Tjuta - Senior Aboriginal Women of Coober Pedy, South Australia. We are Aboriginal Women. Yankunytjatjara, Antikarinya and Kokatha. We know the country. The poison the Government is talking about will poison the land. We say NO radioactive dump in our ngura - in our country. Its strictly poison and we don't want it.”

Comprising senior women from the South Australian desert, the Kungka Tjuta, came together in the early 1990s with a commitment to pass on their traditional cultural knowledge and look after their country.

The Kungka Tjuta follow their Tjukur, variously translated as 'Dreaming' or 'Law'. The Tjukur tells the story of the Seven Sisters who travelled across the country, creating it.

Similarly, the Kungka Tjuta have travelled tirelessly across Australia to protect and care for their ngura - their country, now threatened by the Australian Government plans to construct a radioactive waste dump in the South Australian desert.

The Kungka Tjuta spearhead a national environmental campaign in opposition to the waste dump. Their campaign is called Irati Wanti, “the poison, leave it”. To the Kungka Tjuta their country is not a remote wasteland, suitable for the dumping of highly dangerous nuclear waste; “Never mind our country is the desert” state the Kungka Tjuta, “that's where we belong”.

Last week the Federal Government has given its choice for the location of the disposal site.

Significantly, 2003 also marks the fiftieth anniversary of Australia's entry into the global nuclear industry. Between 1953 and 1963 the Australian Government acquiesced to a series of British nuclear weapons tests in the South Australian desert, with devastating implications for Indigenous and Non-Indigenous communities in the region.

Many members of Kungka Tjuta are survivors of this nuclear testing program. Eileen Kampakuta Brown vividly recalls the day a black radioactive mist filled the desert skies, “The smoke caught us, we tried opening our eyes in the morning, but we couldn't open them, our eyes were sore, red and shut”.

“All of us were living when the Government used the country for the bomb”, says Mrs. Eileen Wani Wingfield. “Everybody got sick. When we were young, no women got breast cancer or any other kind of cancer. We were people without sickness”.

The Federal Government is threatening to override public opinion, State Government opposition and most importantly, the rights of the traditional Aboriginal owners of the country.

The nuclear legacy lives on today, affecting the health of Aboriginal communities across the region.

Based on this extraordinary history, the Kungka Tjuta point to the deadly connection between past experiences and the present radioactive waste

dump proposal. Mrs. Wingfield argues, “When they let the bomb off nobody knew anything about it. They are doing the same thing here. They told us you could eat the kangaroo, the emu, but ... that was a lie. The water had been poisoned and [the animals] died”.

The Kungka Tjuta are concerned about the risk of radioactive contamination in the underground water of the Great Artesian Basin that maintains life in South Australia, the driest state in Australia; “Listen to us. The desert lands are not as dry as you think! Can't the Government plainly see that there is water here? Nothing can live without water. There's a big underground river here. We know the poison from the radioactive waste dump will go under the ground and leak into the water”.

This beautiful arid region's water sources have sustained Aboriginal people for thousands of years. The Federal Government's own data admits that the proposed design will not prevent this type of leakage in all possible climatic conditions.

The proposed national radioactive waste dump would predominantly take waste from an existing nuclear research reactor Lucas Heights in suburban Sydney and its new multi-million dollar replacement reactor.

Radioactive waste would be transported across the vast Australian continent - through suburban Sydney and regional communities.

The proposed shallow burial waste dump is designed to store radioactive waste for up to three hundred years.

despite only having an institutional control period of 100 years.

The Irati Wanti campaign continues to grow. Despite the fact that English is their second language the Kungka Tjuta have communicated their articulate opposition to numerous government officials, and the Australian public. "I've got the knowledge", says Mrs Brown. "Never mind that I don't speak English ... I speak strong".

From their isolated outback town, where many of the Kungka Tjuta live in poverty, the Kungkas have travelled long distances to the 2000 Sydney Olympics, Parliament House in Canberra, and conducted speaking tours in Melbourne and Adelaide. This is in addition to their local commitments as community leaders, family carers and spokespersons.

Today, the Kungka Tjuta have achieved national recognition and widespread support for their opposition to the dump. Last month they received international acclaim when two Council members, Eileen Kampakuta Brown and Eileen Wani Wingfield, were awarded the prestigious Goldman Environmental Prize (see *WISE/NIRS Nuclear Monitor* 586: "In brief").

The South Australian Government have banned waste dumping and transportation, and eighty-seven per cent of South Australians polled oppose construction of the dump.

Inconceivably, the Federal Government is threatening to override public opinion, State Government opposition and most importantly, the rights of the traditional Aboriginal owners of the country.

In 2003 the Federal Government will spend A\$300,000 (US\$201,000) on a "communication strategy" designed to overcome vocal community opposition to the dump.

The Kupa Piti Kungka Tjuta do not need a "communication budget" to make their story look good; their words are strong enough. "Don't waste our country. Don't waste our future".

[This article was written by Nina Brown and Eve Vincent of the Irati Wanti Campaign and edited by WISE Amsterdam]

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FRENCH ENERGY DEBATE: "FALSE" DEBATE

In the spring of 2003 (April-May), the French government has initiated in several cities a series of official debates on the future of France's energy policy. The debate was meant to demand for public input to governmental choices on energy production and consumption in the next decades. From this point of view, France is at a crucial moment concerning its future.

(587.5516) Réseau Sortir du nucléaire - Réseau Sortir du nucléaire (Network for a Nuclear Phaseout; a federation of 650 associations and 15,000 individual adherents) has chosen to stay outside in front of each official debate's site and to beat on drums (marked with the radioactive sign) for hours long with the slogan "Non au débat bidon" ("No to the false debate": bidon is a french wordgame meaning at the same moment "drum" and "false") .

Sortir du nucleaire could have been inside but many problems made us understand that it was not our place:

Already in September 2002, the French Industry minister Mrs. Fontaine has declared about future public debates that: "Time has come for choices and if we explain it clearly, I believe this is a great

opportunity for the nuclear industry".

Prime Minister Mr. Raffarin had said before, in July 2002: "In the energy field, a large public debate will be opened and followed by an orientation law project that will confirm a recognized place for nuclear energy".

In other words, you can come and tell everything you want; we will act as if we listen to you but in fact, one year before, the choices already have been made (see *WISE/NIRS Nuclear Monitor* 581.5478: "French "new nuclear year" begins with energy debate").

In fact, many people believe that it has almost been decided (and be announced next fall) to build a new nuclear power plant. The new design of the European Pressurized Water Reactor (EPR) would be located in the

north (Penly) or north-west (Flamanville) of France.

The nuclear lobby has been pushing strongly since months for this decision. But it could have been indecent to announce it during or even before the public energy debate.

It is not to forget that these debates are exclusively consultative, the government is absolutely not obliged to act in consequence of the citizen's main public opinion. An opinion poll in the fall of 2002 has revealed that 61 % of the french population would prefer to phase out nuclear energy.

The debate really looked like a parody of democracy. It was held during the week, when most people work or study. Sometimes in remote places, the casino of Bordeaux as an example. And with a selective

registration, just on Internet at the beginning.

In other nearby countries, it is possible to sit down with a calm reasonable attitude, comparing the inconvenients and advantages of nuclear energy. But not in France, because the military and civilian nuclear choices were always done over the head of the population, in the greatest absence of democracy and with the help of many lies (as an example, the calculations on the costs for nuclear electricity always exclude the management of the nuclear wastes, huge research budgets, major accident, dismantling).

These continuing lies have still not changed and you will again meet so-called experts to pretend seriously that Chernobyl was a Soviet accident that could not happen in France.

Before the energy debate, Réseau Sortir du nucléaire was calling for:

-an independent evaluation of all economic and ecological costs for

nuclear energy, including the risks of catastrophes and the absence of a solution for radioactive wastes;
-a real national debate to consider how and when we could phase out nuclear.

Of course, nothing was done in this sense by the government: to get rid of the nuclear option was not even an hypothesis to discuss. The Réseau and other ecological NGOs have finally organised these real debates by themselves in many towns.

Let's also remark that during the preparation of the official debates, different environmental organizations who had accepted to be part of a consultative committee finally withdrew because of a lack of openness, transparency and impartiality.

The official debates also programmed a day to discuss on renewable energies; on this day, politicians said nice words but the facts are that :

-The ADEME (governmental agency to promote renewables) has seen its budget cut down by 40% for 2003;

-Recently, all wind power projects in Britain were blocked for landscape reasons. With only 150 MW installed compared to the German 12,000 MW, France is going on to slow down;
-In the best case, it seems that for the French government, renewable energy must be a window shop in the "energy mix", where the nuclear option keeps a predominant place.

Let's be realistic! We cannot throw our money in all directions. Much money has been spent on nuclear energy and to renew the French nuclear capacity in the next decades will cost a lot again ... from the pockets of the taxpayers.

[This article was written by André Larivière of Réseau Sortir du nucléaire and edited by WISE-Amsterdam]

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UK: PLUTONIUM WORKING GROUP REPORT

For the last three years a diverse group of stakeholders has been looking at ways of dealing with the UK's stockpile of separated plutonium. Part of the British Nuclear Fuel (BNFL) National Stakeholder Dialogue, the Plutonium Working Group (PuWG) comprised representatives from the nuclear industry, regulators, government departments, trade unions, local government and the non-governmental organisation (NGO) community. The PuWG published its fourth and Final Report in March 2003.

(587.5517) CND - The main objective of the PuWG was to develop and recommend principles for BNFL's management and reduction of separated plutonium stocks. For historical reasons relating initially to the military desire for plutonium, and later to the perceived view that plutonium was a potential energy source for fast reactors, the UK has built up a huge stockpile of separated plutonium.

Currently totalling over 60 tons this stockpile is projected to grow to over 100 tons in the next decade. Most of this plutonium is, or will be, stored at Sellafield and belonged to BNFL.

The PuWG, therefore, focussed on the portion of the stockpile that was BNFL's direct responsibility, although its conclusions and recommendations are relevant to all stocks.

After preliminary investigation of 17 possible stockpile reduction programmes, the PuWG eventually concentrated on detailed strategic action plans (SAPs) for four scenarios:

-immobilisation in a purpose built plant (mixing the plutonium in glass, which makes it difficult to recover);
-immobilisation as 'low spec' MOX in the Sellafield MOX Plant (SMP)

(processing the plutonium into a kind of ceramic MOX fuel, which is not suitable for use in a reactor (see also WISE News Communiqué 539.5223: "Sellafield: build new PWR or make "dirty" fuel");

-use as MOX in existing UK nuclear reactors;
-and use as MOX in new build UK reactors.

The PuWG did not advocate any particular option because of the uncertainties associated with each one, but rather stressed that all options needed to be kept open for the time being so that contingencies are

available and recommended further explorations necessary to reach an informed decision on the future management of BNFL's plutonium.

The Stakeholder Dialogue began in September 1998, with work on plutonium commencing in the second phase. It is held under the auspices of The Environment Council, an independent UK charity, and is facilitated by independent professional facilitators. The agendas and workstream that the various Working Groups follow are agreed by consensus within the group and all members are treated as equals.

Whilst outside the Dialogue it remains 'business as usual', within the meetings the Dialogue processes seek to identify and build on common ground whilst not denying disagreement.

This approach can sometimes be difficult to maintain, especially when options being considered would not be naturally supported (although this applies equally to all participants) and hence the reports produced are generally prefaced by significant disclaimers covering members opposed to certain options and ideas.

The PuWG disclaimers make it clear that participation in the Group and agreement with its recommendations does not imply endorsement for

further plutonium separation, or for the use of MOX fuel, for example.

The Dialogue processes are iterative in approach and focus on the practical and deliverable. They are also time consuming - building a degree of trust between group members from different, often oppositional, backgrounds, for example, takes time. Greenpeace and Friends of the Earth withdrew from the PuWG and the wider Dialogue for policy reasons and also because they felt it was tying up too much of their resources.

The Campaign for Nuclear Disarmament (CND) also withdrew full time staff for similar reasons, but was fortunate in having volunteer support that had participated in the Dialogue from the start and was able to continue this involvement.

The process can also be frustrating. Whilst the PuWG got BNFL to initiate an eighteen month study of long term management options it was largely disappointed in the resulting report which failed to provide the anticipated level of information and analysis and favoured BNFL's pre-existing policy! (The announcement by the UK government of new arrangements for the UK's nuclear liabilities partway through the study, whereby the plutonium would effectively no longer be BNFL's "problem", played a part in this.)

The process also caused some difficulties 'back home' where those who favoured engagement often faced sustained criticism from the more fundamental parts of the Campaign.

The process has had success, however. Before the Dialogue began, BNFL's plans for long term storage of plutonium and use as MOX went largely unchallenged in official circles. The PuWG has at last provided a means for getting plutonium immobilisation and the research and development needed to progress it onto the agenda in a serious way.

Following on from the PuWG's work a new group has been recommended to look at the security and safeguards issues surrounding MOX transport and trade and plutonium swaps - possibly almost the first time industry and government representatives have sat down with their critics to discuss such issues.

[All reports of the BNFL National Stakeholder Dialogue are available at www.the-environment-council.org.uk]

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U.S.: STRONTIUM-90 IN BABY TEETH NEAR FLORIDA REACTORS

A study on childhood cancer near nuclear power plants in Florida was released in April. According to the Radiation and Public Health Project, levels of fission product strontium-90 in the teeth of children living in southeast Florida had increased with 37% from 1986-1989 to 1994-1997. The highest levels were found near the Turkey Point and St. Lucie reactors. The amount of strontium-90 appeared to be 85% higher in the teeth of children with cancer than those without. The results might suggest a link between cancer and exposures to radioactivity, but further studies are still needed to confirm this.

(587.5518) WISE Amsterdam – The study was conducted by the Radiation and Public Health Project (RPHP) and funded by the Health Foundation of South Florida. RPHP is an independent non-profit research organization, established by

scientists and physicians to investigate the links between environmental radiation, cancer and public health. The main authors of the study are Dr. Ernest Sternglass, Professor Emeritus Radiation Physics of the University of Pittsburgh, Dr.

Jerry Brown, Founding Professor Florida International University and Joseph Mangano, national coordinator of RPHP.

Four nuclear reactors are in operation in southeast Florida: Turkey Point-3

and -4 in Miami-Dade County and St. Lucie-1 and -2 in St. Lucie County. Concerns have been raised about reported increases in childhood cancer. RPHP studied data on radioactive releases from the plants, radioactivity concentrations in rain- and drinking water, cancer rates in the region and levels of strontium-90 in baby's teeth in the region. The main findings of the RPHP study are:

Radioactivity emissions

Radioactivity in Miami-Dade County (Turkey Point) rainwater rose from a minimum in 1987-1988 to a plateau in 1990-1993, and later by some 60% in the last half of the 1990s. Atmospheric bomb testing by the U.S. ended in 1963 and by other countries in 1980. Accidental releases by underground bomb testing ended in 1992-1993. The releases by these tests were an important source of beta-emitting radionuclides. As the activity in water still increased in the late 1990s, the persistence of (high beta) radioactivity in precipitation and drinking water near Turkey Point and St. Lucie therefore is likely to be caused by those two NPPs.

Radioactivity in drinking water

The highest levels of fission product strontium-90 in drinking water in southeast Florida were found within 5-20 miles (8-32 kilometers) of the Turkey Point and St. Lucie reactors. Fission products like strontium-90, cesium-137 and iodine-131 are always released during normal operation of a reactor. They are released by the plant by air or water discharges. The levels of strontium-90 decreased with distance from the plants.

This appears to rule out past nuclear bomb tests as the source of strontium-90 in drinking water. Contamination by nuclear tests would have caused equal activity levels all over Florida instead of the highest levels found near the two NPPs.

Cancer rates in Southeast Florida

From the early 1980s to the late 1990s, cancer incidence in children under 10 rose 35.2% in the five counties closest to the Turkey Point

and St. Lucie reactors. Childhood cancer in the whole U.S. had only risen with 10.8%. So, the amount of childhood cancer rose more quickly in the regions of the two NPPs. A high amount of 325.3% increase in childhood cancer was observed in St. Lucie County.

Radioactivity in Florida Baby Teeth

The authors collected baby teeth for measurements on strontium-90 concentrations. The study found that levels of strontium-90 in 250 Miami-Dade County baby teeth have been rising since the early 1980s. The current level is even as high as in the late 1950s, when the U.S., U.K., and the Soviet Union conducted atmospheric bomb tests. As the major releases of strontium-90 have ended since the atmospheric tests stopped, the authors suspect another cause for the (increased) presence of strontium-90 in teeth.

A comparison of the 461 baby teeth from six southeast counties near the two NPPs with 24 teeth from 12 other Florida counties (more than 40 miles from any NPP) showed that strontium-90 levels in the six southeast counties have a significant 44% higher amount of strontium-90.

In 1982, the average concentration of strontium-90 in southeast Florida baby teeth was 2.23 picoCuries per gram Calcium. By 1995, it reached 5.29 picoCurie/g Calcium. That significant rise of +137% makes it almost impossible to ascribe the current levels to past atmospheric nuclear bomb tests. That is because of the fact that one would expect a decline in strontium-90 levels as the atmospheric tests had ended and strontium-90 from that cause is more and more disappearing from the natural environment.

From 17 teeth from children diagnosed with cancer and living in the counties near the NPPs, 14 were found to have strontium-90 levels above the average for those without cancer in the same counties. Furthermore, 11 out of these 14 teeth have significantly higher strontium-

90 concentrations. On average, strontium-90 levels in cancer teeth were 85% higher than those found in non-cancer teeth.

Conclusions and recommendations

The authors conclude that the radioactivity releases from the Turkey Point and St. Lucie NPPs are the primary cause of rising strontium-90 levels in southeast Florida baby teeth, which is the highest in the counties near the plants.

Strontium-90 levels are significantly higher in teeth from children with cancer. The higher levels of strontium-90 in children with cancer raises the question whether exposure to emissions by the two NPPs may be a possible cause for the cancer. The authors are quite strong in their conclusions when they state that "there is now substantial evidence that exposure [...] is a significant causal factor".

But as this is only a first study on strontium-90 levels they also recommend that more detailed studies on cancer rates and a relation with strontium-90 levels are necessary before full conclusions can be drawn.

The possible radiation-cancer link should also be considered in future federal policies regulating the operation of nuclear reactors, especially on renewal or extension of the licenses of aging reactors.

More information about the Radiation and Public Health Project can be found at www.radiation.org. The website also includes earlier study results of the project.

Sources: Environmental Radiation from Nuclear Reactors and Childhood Cancer in Southeast Florida, Radiation and Public Health Project, 9 April 2003; Press release RPHP, 9 April 2003

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IN BRIEF

Cause of Hungarian Paks-accident was 'design fault'. According to the management of the Paks-2 reactor, the accident with a spent fuel cleaning machine is especially to blame on its supplier, Framatome ANP. In response to the accident (see *WISE/NIRS Nuclear Monitor* 586.5507: "Serious incident at Hungarian Paks-2 reactor"), plant's management released on 134 May a 24-page investigation report (see www.npp.hu). The fuel elements in the cleaning tank suffered severe damage due to overheating. "Excessive confidence" in Framatome's technology, miscommunication between Paks and Framatome, design faults in cooling capabilities and an insufficient temperature monitoring system had led to overheating without being detected. Meanwhile, there were two new incidents were reported. An employee received mild radiation because he ignored the radiation-counter's signal, and one of the reactor's well-insulated rooms was covered by 10 cm deep radioactive water.

Hungarian TV2 satellite service, Budapest, 10 May 2003;
www.npp.hu, 13 May 2003;
Nucleonics Week, 15 May 2003

Nuclear facilities in Iraq damaged by looting. Seven nuclear facilities in Iraq have been damaged or destroyed by looting. Technical documents, sensitive equipment and possibly radiation sources are maybe scattered. If so, there may be consequences for public health and the spread of materials to build a nuclear or radiological bomb. Looters roamed unrestrained among isotope stores and scientific files. Some containers that held radioactive sources are even missing.

The Tuwaitha Yellowcake Storage Facility, the adjacent Baghdad Nuclear Research Center, the Ash Shaykhili Nuclear Facility, the Baghdad New Nuclear Design Center and the Tahadi Nuclear Establishment are damaged. All of

them had attracted close scrutiny from the International Atomic Energy Agency (IAEA) who suspected that Iraq was working on developing a bomb. Warehouses at Ash Shaykhili were completely destroyed by ransacking and fire. This facility held destroyed centrifuges once used to enrich uranium, disks and machinery used in an alternate enrichment process. Another site known to have been damaged is the Baghdad New Nuclear Design Center. The center of its building housed the key personnel responsible for the crash program that nearly succeeded in building a nuclear bomb in 1991.

United Nations nuclear inspectors are increasingly worried. Their main worry revolves around the fate of at least 200 radioactive isotopes which were stored at the sprawling Tuwaitha complex. Reports from Baghdad speak of locals making off with barrels of raw uranium and the isotopes which are meant for medical or industrial use. The IAEA-chief, Mohamed ElBaradei, has appealed twice to the U.S. in March and April to be allowed to resume inspections of the Iraqi nuclear sites. Those requests have gone unanswered. *The Washington Post*, 4 May 2003 / *The Guardian*, 14 May 2003

New Chinese reactor starts up. Unit 2 of the Chinese Qinshan nuclear power plant phase 3 reached criticality on 29 April. Qinshan-5 is a 665 MW reactor, the second of two Canadian-designed and built CANDU-6 PHWRs of the US\$ 2.9 billion Qinshan phase 3 project in Zhejiang province. Its twin was connected to the grid in November 2002. *Weekly Digest, World Nuclear Association*, 9 May 2003; *WNA News Briefing*, 7-13 May 2003

Sellafield cleared after three-year inquiry. British Nuclear Fuel's (BNFL) Sellafield site has been given a clean bill of health by the Nuclear Installations Inspectorate (NII), three and a half years after it admitted to

serious safety breaches. The NII found serious "irregularities" at Sellafield, which included the falsification of documents relating to MOX fuel that BNFL sold to customers in Japan. The NII made 28 recommendations to improve safety at Sellafield and at its MOX plant, though BNFL ended up having to make 41 changes to its working practices. The NII green light however will not mean that BNFL will be able to resume large scale shipments of its MOX fuel, thanks to problems at its major customer, Japan.

Independent on Sunday, 11 May 2003

Italian spent fuel to British Sellafield. The restart of Italian spent fuel transports to Sellafield was protested locally 15 April because of fears the materials obtained from reprocessing would never be repatriated. The fuel is from Italy's long-closed Garigliano, a prototype General Electric BWR, which closed after a 1986 referendum. Cumbrians Opposed to a Radioactive Environment (CORE) is concerned that Italy might not want to take back the recovered uranium and plutonium from reprocessing. CORE-campaign coordinator Martin Forwood says the restart of the Italian transports was "particularly unwelcome" as some Italian tonnages were contracted for around 1975 and "are therefore not covered by a return-of-waste clause". BNFL confirmed that transports of spent fuel had resumed after about 10 years' hiatus. "We now expect to receive around 50 metric tons from the storage facility at Avogadro, near Milan, over the next two years", the company said.

Nucleonics Week, 24 April 2003

Boron crystal found on bottom South Texas reactor pressure vessel. Houston Lighting and Power Company has discovered 'popcorn' like formations of boron crystal at two instrumentation penetrations on the bottom of the reactor pressure vessel of its South Texas-1 (1312 MW

PWR) reactor. The crystalline formations are the apparent evidence of water leaking through welds and penetration sleeves in the reactor vessel. Such formations at the bottom of a reactor vessel were never found before in U.S. reactors. At the Davis-Besse reactor corrosion was found near control rod penetrations in the vessel's head. The South Texas vessel damage is just one more in a number of recent surprises indicating that material degradation is unexpectedly growing.

NIRS, 14 May 2003

Top-management LES resigned. The president of Louisiana Energy Services (LES), George Dials, unexpectedly resigned 13 May. It is a further indication that the proposed US\$1.1 billion LES uranium enrichment plant project in Hartsville is in se-

rious jeopardy. LES lead spokesperson Nancy Kilkeary also resigned. According to a LES press release Dials resigned to pursue other business interests. He also was quoted as saying that he had accomplished his task "to get LES up and running". However, the project ran into setbacks, most recently on 12 May, when the Trousdale County (Tennessee) Commissioners voted to rezone the county to attempt to attract certain types of industry. Industries like LES were explicitly excluded. Only a few months ago local politicians were mostly in favor of the project, but are now lined up against, unless certain conditions met.

NIRS, 14 May 2003

SARS infects Asian nuclear energy programs. Severe Acute Respiratory Syndrome (SARS), believed to have

originated in southeastern China and blamed so far for over 100 deaths worldwide, has not infected any personnel in nuclear energy programs in the Asia-Pacific region, but the disease has made its presence felt. A four-day annual nuclear energy exhibition in Shenzhen, the heart of the region where experts from the World Health Organization (WHO) says SARS originated, got 50% less visitors than in 2002. The exhibition begun a decade ago by China to bring together Chinese nuclear organizations and foreign firms itching to do business in China.

Nucleonics Week, 24 April 2003

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THE NUCLEAR MONITOR

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