

NUCLEAR MONITOR

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NUCLEAR WASTE “EURO-DUMPS”?

The European Commission has launched its “nuclear package” – a set of proposals which are supposed to increase nuclear safety. In practice, their main effect would be to force countries all over Europe either to accept Yucca Mountain-style nuclear waste dumps in their country, or else take part in multi-country dump plans. At the same time, the Commission wants to increase the Euratom Loan ceiling by 2 billion Euros.

(576.5453) **WISE Amsterdam** – The new proposals were released the week before a “double-size” nuclear waste transport – 12 Castors instead of 6 – is set to take place from France to Germany’s Gorleben nuclear waste site, to be met by thousands of protesters.

Despite the opposition to Gorleben and the U.S. Yucca Mountain, the European Commission wants to set deadlines for all EU member states, including the newly-joining countries in Central and Eastern Europe, to set up similar dumps in their country, unless they take part in multi-country dump site plans.

The proposals, released on 6 November 2002, are for deep geological “disposal facilities” into which nuclear waste is dumped with the intention of leaving it there forever. According to the draft directive, “indefinite surface or near-

surface storage of spent nuclear fuel that is not to be reprocessed is not considered an acceptable method of long-term management”.

The proposed deadlines for these “Euro-dumps” are: 2008 for deciding on a high-level waste dump, which must be put into operation by 2018; and 2013 for putting into operation “disposal facilities” for “low-level, short-life” radioactive waste.

These deadlines are extremely tight – for example, a German government commission has set deadlines 12 years later than these for high-level waste “disposal” (see article “Fierce debate over German waste plans” in this *WISE/NIRS Nuclear Monitor*).

Decommissioning funds

The waste proposals form one part of the “nuclear package”, a set of independent but related proposals on dealing with nuclear issues as the EU

is enlarged to include countries from Central and Eastern Europe (see *WISE/NIRS Nuclear Monitor* 574.5442, “Euratom and the EU ‘nuclear package’”).

Another proposal concerns decommissioning funds. Here, the concern is that there may not be enough money available to dismantle and decommission some reactors, particularly in Central and Eastern Europe.

However, the European Commission has also criticized some Western European countries, particularly France, where Electricité de France’s decommissioning fund “certainly does not comply” with the proposals.

The French utility has used decommissioning funds to buy up foreign utilities, some of which have made massive losses (see “Financial problems and earthquake risks affect French reactors” in this *WISE/NIRS Nuclear Monitor*).

Finland has plans to allow utilities to “borrow back” up to 75% of the decommissioning fund, but the Commission seems less concerned about this, since the borrowers must provide security for the loans. Finland is the only EU member country where there are firm plans to build a new nuclear power station (see *WISE/NIRS Nuclear Monitor* 569.5409, “Finland: parliament approves new reactor, greens resign”).

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Nuclear safety

Nuclear safety is the subject of another part of the "nuclear package". Here, the proposals claim to introduce "common safety standards", based on "internationally recognized principles". Yet current international standards are very lax, so there is a danger that the new "common safety standards" will not be tough enough.

The Commission does not propose to check the reactors itself, instead insisting that each country has an independent nuclear safety authority, with a "peer review" process – i.e. inspectors from one country checking another country's nuclear safety authority.

Russia

The Commission also wants to negotiate with Russia on how much uranium EU countries can buy from the Russian Federation. They plan to use this as a bargaining tool to get Russia to tackle the problem of old, dangerous, first-generation reactors – including Chernobyl-type reactors – that are still operating in Russia.

Euratom loans

The final proposal is to increase the ceiling for Euratom loans by 2 billion Euros (US\$1.95 billion), making the new maximum total 6 billion Euros. This proposal has already been anticipated for some time (see box "More cash for Euratom?" in *WISE News Communiqué* 545.5261, "Russia: Adamov accused of corruption").

Euratom loans were originally intended for building reactors in Western Europe, but more recently have been applied for projects in Central and Eastern Europe. While it is claimed that the money is used to improve safety, in some cases it simply involves paying the Western nuclear industry to carry out modifications that delay the closure of dangerous reactors.

And in the latest case, Cernavoda-2, the proposed Euratom loan is for completion of a Canadian-designed

reactor that Romania has no need for (see *WISE/NIRS Nuclear Monitor* 563.5375, "Cernavoda-2: Exporting nuclear risks").

Hostile reception

The "nuclear package" has met with a hostile reception from both pro- and anti-nuclear groups. Before the proposals were even released, European nuclear industry lobby group Foratom commented: "The current system works well. The industry is not favorable, the regulators are not favorable, and so the Commission is a bit isolated".

Anti-nuclear groups had stronger criticism. "The only purpose of the package is to revitalize the nuclear industry in an enlarged EU", commented Claude Turmes, a Green MEP from Luxembourg.

Greenpeace described it as a "nuclear survival package" of "life support systems" for a dying industry, and added: "The money would be better spent in investing in renewable energy".

What will happen now?

The Council of Ministers, which consists of ministers from each EU country, must approve the proposals. Most of the proposals will be considered by the Energy Ministers at their meeting on 25 November, and will then go to the European Summit in Copenhagen, Denmark in December.

Most proposals will be decided by "qualified majority" voting, a complex procedure which means that several countries must oppose the proposals in order to stop them.

However, the increase in the Euratom loan ceiling has a different procedure: the finance ministers of all EU member countries must decide the proposal by consensus. This means that just one country could block the proposal.

Since the legal basis for the proposals is the outdated, undemocratic Euratom Treaty, the European

THOUSANDS DEMONSTRATE IN STRASBOURG

Thousands of people from all over Europe – 10,000 according to the organizers, 3,300 according to police – took part in a massive anti-nuclear demonstration outside the European Parliament in Strasbourg, France on 20 October. The organizers, the French Nuclear Phase-out Network (Réseau "Sortir du nucléaire"), were very pleased with the demonstration. Most of the demonstrators came from France, whose 58 reactors and around 75% nuclear electricity make it one of the most nuclear-dependent countries in the world. The demonstration was reported widely in the French media.

The demonstration was followed by a series of meetings in the European Parliament. Even European Commissioner Loyola de Palacio, who is known for her pro-nuclear views, described the demonstration as a success for the organizers! Mrs. de Palacio is the Commissioner responsible for the "nuclear package" described in the main article.

**Réseau "Sortir du nucléaire"
press release, 28 October 2002;
AP, 21 October 2002**

Parliament has no more than a consultation role in the decision-making process.

For further details, see the Friends of the Earth Europe web site (www.foeeurope.org).

Sources: European Commission press releases, proposals and draft directives, 6 November 2002 (europa.eu.int/comm/energy/nuclear/nuclearsafety.htm); *The Guardian*, 7 November 2002; *Financial Times*, 5 November 2002; Report of meeting with Loyola de Palacio, 21 October 2002; Greenpeace press release, 5 November 2002

Contact: WISE Amsterdam

FINANCIAL PROBLEMS AND EARTHQUAKE RISKS AFFECT FRENCH REACTORS

A member of the French parliament has shown that several question marks hang over the accounts of Electricité de France (EdF). It has also become apparent that 34 French reactors have been operating for many years with emergency shutdown systems that are inadequately protected against earthquakes.

(576.5454) **WISE Amsterdam** - The French state-owned company EdF is the world's largest nuclear utility, with subsidiaries all over the world: Argentina, Brazil, China, Europe, the U.S. and elsewhere. Its financial problems therefore have worldwide implications.

EdF's annual accounts for 2001 were released a few months ago. At the time, it was already clear that EdF had gotten into serious problems with its foreign subsidiaries, which together lost 1.392 billion Euros (US\$1.37 billion) in 2001.

Yet up until recently, its core business of generating electricity – mostly nuclear – in France was thought to be unaffected. However, recent scrutiny by a French MP, Yvelines Masdeu-Arus, has shown that EdF's financial problems are not limited to its subsidiaries.

Masdeu-Arus pointed out that the financial situation of EdF has deteriorated continually over a number of years, and has calculated that the net value of the EdF Group has declined by over 11 billion Euros (just under US\$11 billion) between 1998 and 2001.

EdF has recently been on a shopping spree, buying businesses all over the world. When the French electricity market is opened to competition, EdF hopes to use profits from these foreign subsidiaries to offset any losses in France.

These foreign subsidiaries, notably those in Argentina and Brazil, have now themselves produced losses (just as they did for Enron, which pursued a similar strategy.)

Worse still, EdF has used its nuclear decommissioning funds to buy up these subsidiaries. Masdeu-Arus pointed out that while the accounts include a 27-billion-Euro provision for decommissioning, only 1.585 billion Euro of this is in a dedicated fund, the rest being "no more than an accounting classification". Indeed, the European Commission has singled France out for criticism over the inadequacy of EdF's decommissioning funds (see "Nuclear waste 'Euro-dumps'?" in this *WISE/NIRS Nuclear Monitor*).

Another worrying tendency is that EdF, like British Energy, seems to be facing a cash crunch. The EdF Group's total cash reserves have dropped by 55% in 2001, from 4.761 to 2.123 billion Euros (US\$4.7 billion to US\$2.09 billion).

This "cash crunch" is unlikely to lead to financial problems like those of British Energy since unlike British Energy, EdF benefits from a guarantee from the French Government. However, the European Commission has declared this guarantee to be illegal state aid, and has demanded that EdF repay 900 million Euros to the French government (see box "Illegal aid for EdF" in *WISE/NIRS Nuclear Monitor* 575.5452, "British Energy's financial problems continue").

Nuclear "on the cheap"

In a liberalized energy market, utilities may try to produce "cheap" nuclear electricity by saving money on essential items such as provisions for decommissioning the reactors. EdF, it seems, has tried this strategy even before the French electricity market is liberalized – which raises

the question: where will they make extra savings once the market is liberalized?

EdF's financial problems are also ironic because the French strategy of "mass-production" of nuclear reactors was intended to keep the price down. French nuclear electricity has been sold cheaply all over Europe, giving the impression that nuclear power can be cheap if produced on a large enough scale. In fact, excess French nuclear electricity has often been "dumped" on the rest of Europe – sold at a loss of perhaps a billion dollars per year (see *WISE News Communiqué* 456.4523, "Losses on French electricity exports").

Yet, when the nuclear lobby in the U.S. or U.K. talks of building new reactors, it sometimes uses the French example to claim that if several reactors – perhaps ten – were built at the same time, nuclear power would be cost-competitive. EdF's current financial problems show that this is a dubious claim. Indeed, mass-produced reactor designs have their own special problem: mass-produced design flaws.

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Earthquake risk

The latest of these "mass-produced design flaws" affect a staggering 34 of France's 58 reactors. There are in fact two separate flaws, both of which affect the reactors' safe operation if an earthquake occurs. One of the flaws affects auxiliary cooling water tanks that supply the reactor with cooling water in case of an emergency. The other design flaw affects the remote control mechanisms of certain valves (for valves in areas of very high radioactivity, remote control mechanisms are essential.)

Both design flaws were classed as level 1 on the 7-level International Nuclear Event Scale (INES). However, given that all 34 reactors have been operating for their entire lifetime with components that could fail if an earthquake had occurred, this Level 1 rating fails to reflect the seriousness of the issue.

The problem was also put into focus by recent earthquakes in Italy and

Brittany. Fortunately, both of these occurred in areas where there are no nuclear power stations. Italy closed all its nuclear power stations down after the Chernobyl accident, and the French authorities gave up plans to build reactors in Brittany after local opposition (see *WISE News Communique* 499/500, the "Victory Special", for more details).

Previous "generic" design faults in France include faults in the containment buildings (see *WISE News Communique* 487.4832, "Generic problems at EDF NPP?") and problems with various kinds of piping (see *WISE News Communique* 507.4986, "New delays for plagued French N-4 Series"). Also, large numbers of cracks continue to be detected in French reactors (see *WISE/NIRS Nuclear Monitor* 568.5402, "Large numbers of undetected cracks in the world's PWR's").

Sources: WISE-Paris news releases, 28 October 2002; EdF annual

U.S. MOX RISK

While EdF works to improve the earthquake resistance of its reactors, other French nuclear facilities continue to be at risk. The MOX plant at Cadarache is already under notice of closure because of earthquake risk (see *WISE News Communique* 533.5192, "France: Mox facility at Cadarache at Risk"). Yet the authorities want to keep this plant open, possibly in order to produce lead test assemblies for the US MOX program.

www.wise-paris.org, 7 October 2002

accounts for 2001; Réseau "Sortir du nucléaire" press release, 4 November 2002

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A YUCCA MOUNTAIN IN THE HEART OF THE GREAT LAKES?

A Canadian nuclear waste dump is planned to hold half as much waste as Yucca Mountain in dry cask storage at the Bruce nuclear site on the shore of Lake Huron.

(576.5455) **NIRS** - The "Bruce Nuclear Power Development" is located on the eastern shoreline of Lake Huron in Ontario, Canada. Its 9 reactors rank it as one of the largest single nuclear plants in the world (1). Bruce was originally owned and operated by the Canadian government utility Ontario Hydro. Hydro's successor company, Ontario Power Generation (OPG), leases the Bruce reactors to Bruce Power, a partnership comprised of financially-desperate British Energy (82%), Cameco Corporation (15%), and the two main workers unions at Bruce (2). The oldest Bruce reactor, Douglas Point, permanently closed down in 1984 (3). The 4 Bruce "A" CANDU pressurized heavy water reactors have been shut down since 1998 as

part of a "Nuclear Asset Optimization Program,"(4) nukespeak for OPG's effort to deal with utility-wide safety, maintenance, management, and financial problems. Bruce hopes to re-start 2 of its "A" reactors by the middle of next year (5).

In addition to its concentration of reactors, Bruce is also the disposal site for all of Ontario's commercial radioactive waste. 20 of Canada's 22 commercial reactors are owned by OPG and located in Ontario: 8 at Bruce, plus 4 at Darlington and 8 at Pickering on the shoreline of Lake Ontario. All of the "low" and "intermediate" level radioactive wastes from these 20 reactors are sent to Bruce for "processing." The wastes are either incinerated into

ash, compacted, baled, or stored "as is" in both above ground and below ground structures and containers.

From the mid-1960's to the mid-70's, "incineration" meant an open-air "pit in which combustible wastes were burned." A replacement incinerator operated from 1976 to 2000 and emitted levels of toxic dioxins and furans hundreds of times in excess of 1992 Canadian Council of Ministers of the Environment regulations. This was allowed even after 1992 because the guidelines only applied to new incinerators. Bruce planned to replace its old incinerator in 2002 (6).

Just as reactor operations deposit airborne tritium precipitation onto local farms, and discharge tritium

into Lake Huron, tritium is leaking into the groundwater at Bruce's waste dumps. Due to leakage at "Radioactive Waste Operations (RWO) Site 1," OPG has decided to transfer those wastes into "RWO Site 2." But Site 2 is also leaking tritium into the groundwater. In December 1995, the already permissive "operating target" of 2,040 Becquerels/Liter at RWO Site 2 was violated (US Environmental Protection Agency drinking water standards limit tritium levels to 700 Bq/L; an Ontario government advisory committee recommended only allowing 20 Bq/L in drinking water).

In response, the Atomic Energy Control Board (AECB, Canada's regulatory agency, now called the Canadian Nuclear Safety Commission, CNSC) simply increased the permissible "operating target" by 500%, to 10,175 Bq/L! Despite this, the regulatory agency has predicted that tritium leakage will violate even this weakened regulation by next year (6).

The tritium plume has contaminated a swamp that straddles the boundary between Bruce and the Inverhuron Provincial Park, with its nearby drinking water well used by park visitors. As nearby "Lake Huron is the ultimate receptor of groundwater," (7) such tritium contamination could eventually impact local communities' drinking water supplies, not to mention those downstream in both the U.S. and Canada. Currently, there are over 50,000 cubic meters of "low" and "intermediate" waste at Bruce. An additional 7,000 cubic meters is "processed" every year (8).

Dry cask storage

Now OPG is proposing to build a dry cask storage facility for high-level radioactive waste at Bruce that would be 100 times bigger than any such facility currently on the U.S. shorelines of the Great Lakes. Dwarfing the Palisades nuclear plant dry cask storage facility with its 18 outdoor silos on Lake Michigan in southwest Michigan, OPG plans to

install nearly 2,000 dry storage casks to store 18,000 tons of high-level radioactive waste. That is the amount already sitting in the almost full cooling pools at the Bruce reactor buildings. It is projected that the Bruce site will generate an additional 18,000 tons of high-level waste in the next 15 years. The grand total of 36,000 tons would be equal to about half the amount targeted to be buried at Yucca Mountain, Nevada (9).

The Pickering container was judged superior in only one category: "financial integrity" (i.e. it was cheaper)

In December 1997, Hydro prepared an environmental assessment for its proposed Bruce dry cask facility. The assessment was successively approved by the AECB (now CNSC), the Canadian Environmental Assessment Agency, and finally the Canadian Minister of the Environment. Each agency concluded that the project was "not likely to cause significant adverse environmental effects."

However, the design of the Bruce "Western Waste Management Facility" was changed very late in the construction licensing process by Hydro. Hydro had originally proposed a specially designed "Bruce Dry Storage Container," then (after the period of public comment had ended) switched its choice to the "Pickering Dry Storage Container" design. The original design called for Bruce-specific dry casks to be stored in the "open air," around 1,250 containers essentially sitting in a field on a concrete pad.

But Hydro abruptly changed the design to "Pickering" dry casks. As Pickering containers hold smaller quantities of irradiated fuel, this increased the number of containers proposed to nearly 2,000.

In a comparison performed by Hydro, the Bruce container was judged

superior to the Pickering container in 8 of 11 categories. The Pickering container was judged superior in only one: "financial integrity" (i.e. it was cheaper). In addition, a storage building was added to the design, perhaps to compensate for the increased level of radiation expected to be emitted by storing Bruce waste in Pickering containers. AECB labeled the changes "major" and suggested public notification and opportunity for public comment was necessary. But Hydro pressured AECB and the license to build the waste facility was granted, based on a reference design which was no longer applicable, and without any public notice or opportunity for comment.

Alarmed by the sudden design changes that had been rubber-stamped despite never having been quantitatively analyzed, concerned citizens near Bruce turned to the Canadian courts in May 1999. A volunteer community group, the Inverhuron and District Ratepayers Association (IRDA), sought further information on the design changes, and called for an independent Environmental Assessment by a full panel of experts under the Canadian Environmental Assessment Act.

NUCLEAR FUEL WASTE ACT

Canada's new Nuclear Fuel Waste Act comes into force on 15 November. It establishes a Waste Management Organization, comprised solely of nuclear industry representatives, to decide by 2005 whether to leave high-level radioactive waste where it is, permanently bury it in the Canadian Shield, or "temporarily" centralize it. Given OPG's decades-old practice of sending all its "low" and "intermediate" level wastes to Bruce, some fear that political momentum and cost cutting considerations could favor centralizing all of Canada's high-level wastes for "interim" storage at Bruce.

Owen Sound Sun Times, 30 October 2002;
www.friendsofbruce.ca

The courts, however, declared they were not "an academy of science" and were not qualified to rule on the issue. IRDA appealed to the Supreme Court of Canada, which reviewed the case but declined to hear it. Adding insult to injury, the Canadian courts not only ruled against IRDA, but also fined it C\$100,000 (US\$62,100)! IRDA had already incurred significant legal costs (10).

Similarly, the Chippewas of Nawash First Nation submitted extensive comments to the Canadian Environmental Assessment Agency in November 1998, expressing tribal opposition to the proposed dry cask facility as a threat to their treaty rights to fish the waters of Lake Huron near Bruce (11). The Canadian authorities disregarded the tribe's concerns.

Perhaps because they were so busily engaged in the intense fight against the Yucca Mountain dump (to name but one struggle), nuclear watchdogs in the U.S. knew little, if anything, about developments at Bruce. This has changed in recent months as Canadian nuclear watchdogs have reached out for help in fighting waste expansion at Bruce. After all, radiation does not respect national borders, and the U.S. shoreline in

WHAT YOU CAN DO

Urge CNSC to require a full, independent Environmental Assessment and to conduct public hearings on both sides of the border concerning the re-start of Bruce A units 3 and 4. Send comments by 27 November to: Guy Riverin, Environmental Assessment Specialist, PFTS Division - CCNS, Ottawa, Ontario K1P 5S9, Canada; fax +1 613 995 5086; e-mail ceaainfo@cnsccsn.gc.ca. Urge your U.S. Senators, Representative and the Bush Administration to oppose any move by the Canadian government to centralize high-level radioactive waste storage on the shores of the Great Lakes, 20% of the planet's surface fresh water!

Michigan is only 50 miles across Lake Huron from Bruce.

On 13 September 2002, representatives from NIRS, Coalition for a Nuclear-Free Great Lakes in Michigan, and Great Lakes United in New York State traveled from as far away as 570 miles to join Canadian allies from IRDA, Coalition for Nuclear Responsibility, Campaign for Nuclear Phaseout, and Citizens for Renewable Energy at a CNSC hearing in Ottawa.

OPG was obviously very confident of CNSC's approval, for it had already held its ribbon-cutting ceremony at the proposed dry cask facility two weeks earlier

The U.S. intervenors protested at having been kept in the dark by the Canadian government despite clear cross-border impacts, and their warnings – that such a large-scale, high-profile facility and concentration of nuclear risk would be a radioactive bull's eye in the heart of the Great Lakes and a terrorist's dream come true – were carried widely by Ontario newspapers and the Canadian Broadcasting Corporation (such as the *Toronto Sun's* 14 September "Nuke plant called terror target").

Despite this, CNSC publicly announced its approval of OPG's application for coverage of its proposed dry cask facility under the Canadian Nuclear Liability Act – the final legal hurdle before casks can be loaded at Bruce – on 23 October (12).

OPG was obviously very confident of CNSC's approval, for it had already held its ribbon-cutting ceremony at the proposed dry cask facility on 9 October, two weeks earlier (13)! Loading of the first dry casks at Bruce is now imminent.

This grassroots groundswell or resistance has alerted elected U.S. officials to take action. On 17 October, U.S. Senators Debbie Stabenow and Carl Levin (Democrats from Michigan) wrote a letter to U.S. Secretary of State Colin Powell expressing their concern about the Bruce dry cask proposal.

Writing "the Bruce complex would store more than 17 times the amount of radioactive waste at one site than is stored in the entire state of Michigan," and that "in the wake of the events of September 11, 2001 [and] given the importance of the Great Lakes to tens of millions of Canadian and U.S. citizens for drinking water, fisheries, tourism, recreation, and other industrial and economic uses," they called upon Powell to press the Canadian government on the matter.

Dismissing their concerns, the U.S. State Dept. responded on 29 October that "each dry storage canister will have 24-inch thick concrete walls with steel inner and outer liners and a welded cap" and that "combined with other security measures... will provide security for the material stored within" the Bruce dry cask facility (14). In fact, the steel liners are only one inch thick altogether, and the concrete only 20 inches thick (15).

A 1998 U.S. Army test at Aberdeen Proving Ground in Maryland clearly showed that a TOW anti-tank missile, all-too-available on the international black market, can obliterate the concrete shielding surrounding dry casks; a second missile could then punch a hole right through the inner metal canister containing the high-level radioactive waste, releasing radiation into the environment (16).

Holes in security at Bruce were highlighted when, two weeks after the terrorist attacks of 11 September 2001, a man whose boat had capsized on Lake Huron was able to squeeze through a gate, enter a building, and use the telephone to call for help without being detected (17).

Dr. Gordon Edwards of the Canadian Coalition for Nuclear Responsibility worries about what would happen if a fully-fueled jetliner were to crash into Bruce's proposed 2,000 dry casks. Would the casks be knocked over like bowling pins, and the irradiated fuel bundles damaged? Would deadly radioisotopes then be vaporized and released in the high-temperature, long-duration fire that would ensue? Dr. Edwards also points out that, under OPG's design, the cask caps would not be welded on until the casks are transported a distance of a kilometer from the pools, along roads with steep ditches, to the dry cask facility, a safety/security vulnerability that the U.S. State Dept. letter does not address (18).

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6. Atomic Energy Control Board of Canada memos dated 27 August 1996 (BMD 96-148, p. 1) and 7 March 2000 (BMD 00-44, pgs. 2-5). See "Facility Description" sections. See also "Bruce site leaks nuclear waste," *Toronto Star*, 5 July 2000.
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Source and contact: Kevin Kamps at NIRS

FIERCE DEBATE OVER GERMAN WASTE PLANS

German utilities want to begin dumping nuclear waste as soon as possible in Schacht Konrad, a former iron ore mine near Braunschweig (Brunswick). A government commission, however, proposes starting a new process of looking for nuclear waste sites.

(576.5456) **Herman Damveld** - The German federal government wants to establish a single site which will accept all types of nuclear waste for permanent disposal. To find a suitable site, it set up the AKEnd commission (Arbeitskreis Endlagerstandorte or "final disposal site working group" – see box). The commission presented its plans in Berlin on 18 and 19 October. The basic principle is that the nuclear waste must remain safely underground for a million years.

The German government wants the nuclear waste dump to be ready by 2030. The AKEnd commission made it clear that this timetable can only be achieved if a list of candidate sites has been chosen by 2004. Test

drilling to investigate the suitability of these sites would take about five years.

After that, an underground laboratory would be excavated where ten years of research would be carried out. Around 2020, a single location would be chosen. Constructing the underground waste dump itself would take a further ten years, so that the first nuclear waste container would be placed underground in 2030 at the earliest.

Holger Bröskamp from E.ON expressed doubts about the AKEnd plan: "The utilities have not set aside any money for research into new locations where nuclear waste can be stored. It costs half a billion Euros

per location." He pointed out an alternative: "Very recently, a licence was issued for storing low and intermediate-level nuclear waste in Schacht Konrad. We want to use this site as quickly as possible, because there are already tens of thousands of cubic meters of nuclear waste that we want to put into storage quickly."

Wolfgang Pfeifer from the Karlsruhe nuclear research center underlined this: "We don't want to wait for the AKEnd procedure, because we are busy dismantling all kinds of nuclear installations. If we first have to store the resulting waste 30 years in buildings above ground, it would need extra packaging. This would cost 1.8 billion Euros extra, and we don't have that much money."

Criteria

If the AKEnd plan goes ahead, the question arises of how to make the choice of site for the nuclear waste dump. For this, the AKEnd has made a three-stage plan, as explained by Volkmar Bräuer, an AKEnd member who works for the Federal Institute for Geological Sciences and Raw Materials (Bundesanstalt für Geowissenschaften und Rohstoffe). The starting point is a so-called "blank map of Germany". The AKEnd's criteria are then applied to this map.

The first step consists of applying "unsuitability" criteria. These are criteria that exclude a site from consideration, such as earthquake risk. Also, the groundwater in the area of an underground nuclear waste dump must not contain any tritium or carbon-14. The presence of these substances shows that the groundwater is flowing too quickly.

AKEND & KONRAD

The AKEnd commission was established in February 1999, four months after the Social-Democrats (SPD) and Greens formed their first government coalition. In their October 1998 coalition agreement, the Schacht Konrad site was disregarded as unsuitable and doubts were voiced over Gorleben. The AKEnd commission was established to develop a new site selection procedure and scientific criteria as an alternative for Konrad and Gorleben.

In the June 2000 nuclear phaseout agreement between the German utilities and the government, the compromise was reached that legal procedures for a storage license for Konrad would be finished but that the utilities would give up immediate storage plans for the site. The industry agreed not to claim any financial damages for earlier investments in Konrad.

www.akend.de; *WISE News Communiqué 532 (27 June 2000)*

This criterion led to an extensive discussion. It appears that speed of groundwater movement has only been measured in a part of Germany, so that the data is incomplete. How, then, is it possible to make a fair choice using incomplete data? Or must data for all parts of Germany first be brought up to the same standard - which, as Bräuer explained, would make it unlikely that candidate sites could be chosen by 2004.

The second step consists of applying criteria that would make the sites particularly suitable, such as very slow-moving groundwater and the requirement that the waste can be stored at a depth of less than 1500 meters. Also, the site's rock formation must be large enough: at least 3 square kilometers for salt-domes and at least 10 square kilometers for clay or granite. Salt-domes of clay or granite formations which are not large enough are eliminated at this step.

The third step consists of criteria for choosing one specific location within a region. Besides geological criteria, this includes criteria regarding the acceptance of the local population and environmental protection.

There was hours of confing discussion about the precise meaning of these criteria. The criteria were generally vague or else incomprehensible for the public at large. Also, the status of the criteria was unclear. In the end, Michael Sailer of the AKEnd commission stated that the criteria were no more than "proposals that will be reassessed in a following phase of the process and applied after that. Therefore, we also have an extra control group." So, the real discussion will only take place in a few years' time, if the government adopts the AKEnd commission's plans - something that remains unclear.

Walkout

This lack of clarity was something that Mathias Edler of Greenpeace

Germany had already seen coming. He stated that the argument about Schacht Konrad showed that the German government didn't want a new beginning. Otherwise, Konrad would not have been licensed.

For Greenpeace, the AKEnd is no more than a sedative, which Edler didn't fancy. Out of protest, he walked out of the room.

There is also another problem: the Gorleben salt-dome. Wolfgang Ehmke of the Citizens Initiative Lüchow-Dannenberg commented: "Research has been going on in the Gorleben salt-dome since 1997. Some tunnels have already been dug. 1.1 billion Euros have already been spent. The Schröder government has announced a moratorium on research in the Gorleben salt-dome until 2010. But by then, any other candidate sites would only have been investigated by test drillings from the surface. The amount of knowledge gained will not be the same as at Gorleben. To bring the salt-dome back into consideration in 2010 is scientifically flawed and unjust. What is more, Gorleben does not meet the criteria that have been laid down."

Ehmke, incidentally, also had grave doubts about whether research would be carried out elsewhere.

"According to the new coalition agreement, the government will not provide money for research into other sites. And here we have been told that the nuclear industry has no money left over for this. Gorleben and Konrad are two skeletons in the closet which, I fear, will soon be brought out again", he said, to loud applause.

[Translated from Dutch by WISE Amsterdam]

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SCIENCE FOR SALE: TMI AND THE UNIVERSITY OF PITTSBURGH

Some recent press reports have suggested that cancer rates around Three Mile Island in the U.S. state of Pennsylvania are unchanged since the 1979 accident. Eric Epstein, chairman of Three Mile Island Alert and coordinator of the EFMR Monitoring Group, describes how this latest study – which did in fact acknowledge an increase in some types of cancer – fails to tell the full story.

(576.5457) Eric Epstein – The University of Pittsburgh's most recent health study is essentially a recitation of discredited protocol and disputed data. Released on 31 October 2002, the Study actually acknowledged an increase in lymphatic and blood cancers among men. However, as in previous of University Pittsburgh Studies conducted by the same group of researchers, e.g., (Evelynn Talbott et al; 2000) (1), this survey relied on government and nuclear industry sponsored "health studies" that were completed in the early 1980s.

These studies were based on inaccurate dose projections, did not factor data only available in 1985 regarding the severity and conditions of the partial-core meltdown at Three Mile Island 2 (2), and did not factor the prevailing weather conditions and wind patterns in March-April 1979.

Nor did any of these studies evaluate the health impact to members of our community who defueled Three Mile Island. In fact, General Public Utilities (GPU) chose not to maintain a health or cancer registry, despite the fact that, from 1979-1989, 5,000 clean-up workers received "measurable doses" of radiation exposure (3).

Moreover, the University of Pittsburgh's Study relied heavily on the much maligned Pennsylvania Department of Health's seventeen year-old survey released in September 1985. That study's protocol was ridiculed and criticized by epidemiologists at Harvard (Dr. George Hutchison), and Penn State (Dr. Robert A Hultquist) for "diluting" increases in cancer by "expanding"

the population base to include people living outside of the ten-mile study-zone (October 1985) (4).

A great deal of radiation was indeed released by the partial core melt at TMI. The President's commission estimated about 15 million curies of radioactivity were released into the atmosphere. A review of dose assessments, conducted by Dr. Jan Beyea, (National Audubon Society; 1984) (5) estimated that from 276 to 63,000 person-rem were received by the general population within 50 miles of TMI.

More recently, David Lochbaum of the Union of Concerned Scientists, estimated between 40 million curies and 100 million curies escaped during the accident.

For 11 days, in June-July, 1980, Metropolitan Edison (Met Ed) illegally vented 43,000 curies of radioactive Krypton-85 (beta and gamma; 10 year half life) and other radioactive gases into the environment without having scrubbers in place (6).

And by 1993, TMI-2 evaporated 2.3 million gallons (8,700 cubic meters) of accident generated radioactive water, including tritium (a radioactive form of hydrogen), into the atmosphere despite legal objections from community-based organizations (7).

The plant's owners, co-defendants and insurers have paid over US\$80 million in health, economic and evacuation claims, including a US\$1.1 million settlement for a baby born with Down's Syndrome (8). In June 2000, the United States Supreme Court remanded 1,990 unsettled

health suits from the TMI-accident back to Federal Court (GPU v. Abrams; Dolan v. GPU) (9).

In August 1996, a study by the University of North Carolina-Chapel Hill, authored by Dr. Steven Wing, reviewed the Susser-Hatch study (Columbia University; 1991). Dr. Wing reported that "...there were reports of erythema, hair loss, vomiting, and pet death near TMI at the time of the accident...Accident doses were positively associated with cancer incidence. Associations were largest for leukemia, intermediate for lung cancer, and smallest for all cancers combined...Inhaled radionuclide contamination could differentially impact lung cancers, which show a clear dose-related increase." (10)

Today, TMI-2 remains a high level radioactive waste in the middle of the Susquehanna River. There was no decommissioning fund established for TMI at the time of the accident. The site of the nation's worst commercial nuclear accident has not been decontaminated or decommissioned. There has not been a human entry in the basement of the reactor building since March 1979... (11)

Notes:

1. *Environment Health Perspectives*, June 2000.
2. On 6 November 1984, research conducted by the Department of Energy on reactor damage during the accident, indicates temperatures may have reached in excess of 4,800 degrees Fahrenheit (2480 degrees Celsius). In October 1985, removal of damaged fuel from TMI-2 began.
3. On 11 April 1984, William Pennsylv settled out-of-court two days before an administrative law judge was scheduled

to hear his case relating to GPU's refusal to allow Pennsylv to wear a respirator during cleanup activities.

By 1986, TMI-2 defueling work force peaks at 2,000, but by 1989, after ten years of defueling activities, 5,000 TMI workers have received "measurable doses" of radiation exposure.

4. State's TMI study clouded by survey method doubts, Frank Lynch, *Sunday Patriot-News*, Front Page, Harrisburg, PA, 6 October 1985.

5. Study available from the TMI Public Health Fund, 16223 Locust Street, Philadelphia, PA 19103, +1 215 875 3926.

6. In November 1980, the United States Court of Appeals for the District of Columbia ruled that the krypton venting (June-July 1980) was illegal.

7. In 1980, the Susquehanna Valley Alliance, based in Lancaster, successfully prevented GPU/Met Ed from dumping 700,000 gallons (2,700 cubic meters) of radioactive water into the Susquehanna River.

Ten years later, in December 1990, despite legal objections by TMI-Alert and the Susquehanna Valley Alliance, GPU began evaporating 2.3 million gallons (8,700 cubic meters) of accident-

generated radioactive water (AGW).

By August 1993, evaporation of 2.3 million gallons of AGW was completed over six months behind schedule. The evaporator was disassembled and removed from the site. And on 28 October 1993, according to the Pennsylvania Department of Environmental Resources, the total activity during evaporation was 658 curies of tritium.

8. By 1985, TMI had paid at least US\$14 million for out-of-court settlements of personal injury lawsuits. The largest settlement was for a child born with Down's Syndrome. Most of the cases were *sealed*, and only those cases involving *minors* are published as prescribed by the rules and regulations of Pennsylvania's Orphan's Court.

9. On 12 June 2000, the United States Supreme Court, without comment, rejected an appeal by GPU to throw out 1,990 health suits. On 2 May 2001, the Third Circuit Court ruled that "new theories" to support medical claims against Three Mile Island will not be allowed.

10. New Study Shows Higher Cancer Rate near Three Mile Island Nuclear Power

Reactor Meltdown.

Researchers at University of North Carolina at Chapel Hill have published, in the journal *Environmental Health Perspectives* (24 February 1997), a reevaluation of the health effects near Three Mile Island. They have found chromosomal damage and higher cancer rates than previously reported, suggesting radiation levels were higher than official estimates.

Copies of the study may be requested at: +1 919 541 3345.

11. In December 1993, GPU placed TMI-2 in Post-Defueling Monitored Storage. On 17 October 2001, due to a "credible threat" against Three Mile Island, the Harrisburg and Lancaster airports were closed for four hours, air travel was restricted in a 20-mile radius, and fighter jets were scrambled around TMI.

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BRITISH ENERGY LOANS DECLARED ILLEGAL

European Commissioner Mario Monti has said that UK government loans to ease British Energy's financial crisis were illegal. The UK government now finds itself under attack from both sides: Greenpeace and the Canadian mining company Cameco have both launched legal challenges to the loans.

(576.5458) **WISE Amsterdam** – The UK government has so far made two emergency loans to British Energy. The first, at the end of August, was for £410 million (US\$640 million), and lasted until 27 September (see *WISE/NIRS Nuclear Monitor* 573, "In Brief"). After that, the loan was extended until 29 November and increased to £650 million (US\$1 billion) (see *WISE/NIRS Nuclear Monitor* 574, "In Brief").

This double loan contravenes EU criteria, which state that emergency funds can only be given in the form of a one-off loan.

The European Competition Commissioner, Mario Monti, has confirmed in a letter to UK Green MEP Caroline Lucas that the loans are illegal. He wrote: "the aid granted

to British Energy by the UK Government does constitute unlawful aid, and has been registered by the Commission as such, since it was granted without prior authorization by the Commission".

British Energy's advisers have written to Mr. Monti, demanding that he withdraw this statement, since the European Commission has not yet made a final decision. However, his spokesman said: "What Mr Monti said about the aid being illegal is right – it's just not the full story."

The European Commission has said that it is up to the UK courts to enforce the law. Greenpeace UK, together with green energy company Ecotricity, have asked the High Court for a judicial review of the loans. An

initial court hearing is expected in around two weeks.

Canadian response

As well as challenges from Greenpeace and Ecotricity, the UK government loan has been criticized by Cameco, British Energy's Canadian partner in Bruce Power. It was first reported that Cameco had lodged a legal objection to the loan; later, Cameco said they would prefer to avoid court action, but may be forced to go to court to protect the interests of their shareholders.

Local taxes

As well as the UK government loans, British Energy has asked local councils if it can defer payments of business rates (local government taxes) on its nuclear power stations. Lancaster Council has already agreed

to defer payments of £1.7 million per month for the 4-reactor Heysham nuclear power station until February 2003. This raises the possibility that ratepayers will pick up the bill if British Energy goes bankrupt before then.

Shareholder meeting

Amidst all this, British Energy held an extraordinary general meeting (EGM) of shareholders on 4 November 2002 to allow the company to increase its borrowing limit to £1.6 billion (US\$2.45 billion). The shareholders approved this, no doubt because the company made it clear that otherwise it may be forced to cease trading.

Friends of the Earth commented that the consequences of the increase in borrowing limit is likely to be passed on to the UK taxpayer, since "nobody

but the government is going to give this lame-duck company any loans." They concluded: "The time has come to put this company into administration, phase out nuclear power and speed up investments in renewable power and energy efficiency schemes."

Sources: *The Observer*, 3 November 2002; Caroline Lucas MEP press release, 3 November 2002; *Daily Telegraph*, 7 November 2002; *The Independent*, 3 November 2002; *Sunday Herald*, 3 November 2002; Reuters, 4 November 2002; Friends of the Earth Scotland press release, 4 November 2002

Contact: WISE Amsterdam

IN BRIEF

Argentina – police use rubber bullets. On 26 October, the Foreign Affairs Committee of the Argentine Congress approved a treaty to accept nuclear waste from the new Lucas Heights reactor in Sydney, Australia (see *WISE News Communiqué* 553.5312, "Argentina: 'No to Australian nuclear waste, yes to the national constitution' "). A Greenpeace demonstration against this treaty was followed by mass arrests, which in turn led to further protests. The Argentine Federal Police then used rubber bullets against two Indymedia journalists who were filming the protest. The final decision on the treaty will be taken by the Chamber of Deputies.

WISE Argentina; Indymedia Argentina, 29 October 2002

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THE NUCLEAR MONITOR

The Nuclear Information & Resource Service was founded in 1978 and is based in Washington, DC. The World Information Service on Energy was set up in 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 issues.

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). A Russian version is published by WISE Russia and a Ukrainian version is published by WISE Ukraine (available at www.nirs.org). The *Nuclear Monitor* can be obtained both on paper and in an email version (pdf format). Old issues are available through the WISE Amsterdam homepage: www.antenna.nl/wise and at www.nirs.org.

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