

## Contents

Editorial	1
Arius Internal News	1
International News	2
International Meetings	4
Topical Article	
o <i>Castles in the Air?</i>	5
Upcoming Conferences	8

## Editorial

We report first on the closing stages of the SAPIERR project and, in our next issue, expect to include a more detailed report of how the proposals that are emerging from the project are faring, when we begin to present them to European governments this summer. This is a significant period for Arius. In many senses, SAPIERR will be the culmination of some of our main 'start up' objectives – at least from the European perspective – and it is expected that the rest of this year and next year will see major changes in Arius strategy and aims in response to the SAPIERR achievements.

There are local political rumblings this month from Capitol Hill, which has just begun to wake up to the fact that the USA does import foreign radioactive wastes and there may be a lot more to follow. We report on this in our International News section – and you can expect to hear more in the future, as this is only an opener to a much larger debate that must take place as the full implications of internationalising the fuel cycle are realised.

Anyone who has joined in discussions on shared repository solutions will have encountered the comment that, fine concept though it may be, it will never be possible to find a host country, let alone a site, and that we really should have one before we go any further. Our Topical Article addresses this problem head-on – and shows that there is little if any difference between dealing with it nationally or internationally.

*Neil Chapman  
Baden-Dättwil*

## Arius Internal News

### 2008 Assembly of Members

The 2008 AoM will take place on 4<sup>th</sup> April 2008 in Baden, Switzerland. The main objectives of the meeting will be to present the 2007 Annual Report to Arius Members and to discuss activities for 2008 and beyond. As noted in the Editorial, a focal point of discussion will be the approach to be taken by the

Association once the SAPIERR II project is completed at the end of the year. At this time, the initial reactions of governments and the European Commission to the suggestions for how to move forward with a European regional repository project will be known. The main factors will be whether the SAPIERR suggestions are adopted in some form and, if they are, when and how potential participants in a European Development Organisation wish to move forward. The answers to these questions will affect the strategic planning of the European Members of Arius and will consequently have a significant impact on the future of the Association.

### Final SAPIERR II Workshop

SAPIERR (Strategic Action Plan for Implementation of European Regional Repositories: Stage 2) held its final internal workshop in Baden, Switzerland, on 12<sup>th</sup> and 13<sup>th</sup> March to consider the results of most of the main Work Packages and plan for the completion of this major study in the final quarter of 2008. Twelve representatives of participating organisations attended the meeting (see photograph on following page).

A core proposal emerging from SAPIERR II is that the task of establishing shared regional facilities should be addressed by a non-profit European Development Organisation (EDO) that would function for about ten years before transforming into or establishing a new European Repository Organisation (ERO), which could operate either on a non-profit or a commercial basis. Draft reports were reviewed in detail for Work Packages covering the following topics:

- legal liabilities and responsibilities associated with shared European disposal facilities;
- organisational forms and structures for an EDO and an ERO;
- the economic aspects of shared disposal facilities
- the societal aspects of shared facilities, including a survey of opinions within communities already hosting nuclear facilities.

Reports for these work packages will be completed in the next few weeks, complemented by the report on the Work Package on safety and security issues. They will then circulate in the SAPIERR Interest Group (SIG) for comments before being updated and published on the SAPIERR website in early May. The intention is to compile all the work in Phase II of the project (including other work packages) into a single volume that will be published at the end of 2008 or in early 2009.

The next step is to present the overall findings to government representatives in potentially interested European countries. This programme will take place over the next five months. The objective will be to explain the project conclusions and the way forward that is being proposed, through planning for and



establishment of an EDO. This will allow us to gauge the interest in taking this important step, the likely first countries to participate and the timescale on which founding members would like to make progress. Of course, the project is well aware that interested countries may not wish to take any action in the immediate future, in which case the documented results of the study will serve as an important foundation for follow on work at any time a group of countries wishes to move forward.

One of the key questions directed at shared facilities is the issue of finding sites, particularly for geological repositories. This question was not considered directly as a work package in the SAPIERR project but parallel work within Arius has been considering approaches to siting. The Topical Article in this issue addresses this matter and is likely to provide support to the overall presentation of the results of SAPIERR to government representatives.

## International News

### The European High-Level Group

Last year, the European Commission established a new "High-Level Group on Nuclear Safety and Waste Management" to develop a common understanding and to reinforce common approaches across the European Union in the fields of nuclear safety and nuclear waste management. The group is composed of 27 senior officials from national regulatory and nuclear safety authorities and it held its first meeting last October, at the time when our last Newsletter was going to press. The group will help the EC identify priority safety issues as well as advise it on rules regarding the safety of European nuclear installations and the safe management of spent fuel and radioactive waste, so is clearly likely to be influential in any discussions about standards for any shared European disposal facilities.

Andris Piebalgs, EC energy commissioner, stated that *"It is up to each Member State to decide whether to have nuclear power or not. But the question of nuclear safety and waste management concerns everybody. The high level group, with experts from all member states, will be essential in helping us achieve our common goals in this field."*

It is encouraging for the Arius and SAPIERR project teams to see that European waste management is considered to be a common concern.

### European Parliament Environment Committee Votes for Action on Geological Disposal

On 17<sup>th</sup> September last year the Committee on the Environment, Agriculture and Local and Regional Affairs of the European Parliament considered a paper on Radioactive Waste and Protection of the Environment. The Committee recognised that geological disposal is the appropriate way forward for long-lived wastes and unanimously adopted a wide ranging draft resolution to put to the European Assembly. The resolution proposed that the Assembly calls on the Council of Europe Member States and observers that are confronted with the issue of management of nuclear waste to address 15 recommendations. These covered topics as wide as encouragement of work on repository siting, on enhancing public awareness and involvement, and on common standards and centralised databases.

Interestingly, one of the recommendations was "to ensure the effective independence of the national authorities in charge of the control and management of nuclear waste". The meaning of this was not explained, but the report recognised that shared solutions were a possible way forward, noting that *"The 2005 Tokyo International Conference on Safety of Disposal of Radioactive Waste Disposal noted that, since many countries have comparatively small volumes of radioactive waste, it would be disproportionately costly for each of them to develop its own geological repository. For this reason, studies*

*had been initiated at regional level, supported by the European Union, to examine the feasibility of a regional repository in which the waste from several countries could be placed”.*

### **Proposed Italian Waste Import Ignites Controversy in USA**

A commercial radioactive waste management company, EnergySolutions Inc, is seeking to import into the USA about 20,000 tonnes of low-level waste from Italy for processing and disposal. After processing in the company's plant at Oak Ridge in Tennessee, there would be about 1600 tonnes of residues to be transported to and disposed of at the company's Clive repository, about 80 miles west of Salt Lake City, in Utah. If approved, this is said to be the largest amount of foreign waste that would have been imported into the USA by a commercial company.

The application to import the waste is being considered by the Nuclear Regulatory Commission (NRC), but has sparked considerable political and local opposition. On March 13<sup>th</sup>, a bill was introduced into the US Congress by three Representatives (from Utah, Tennessee and Kentucky) proposing to prohibit the NRC from licensing the import. A spokesman said that Tennessee was becoming a 'funnel' for nuclear wastes. Although smaller quantities have been licensed for import in the past, the scale of the present proposal seems to have been the trigger for the opposition, with politicians saying that disposal of this amount of foreign waste was never envisaged when previous approvals were given.

The introduction of the proposed legislation has given rise to some emotive or clearly uninformed comments from politicians – to the effect, for example, that no other country in the world is accepting nuclear waste from other countries, that the USA is putting itself in position to become the world's nuclear dumping ground and that the USA has only a finite amount of space available for disposal of nuclear waste.

Interestingly, when first proposed, the arrangement appeared uncontroversial. When the issue was first raised, Utah's governor, Jon Huntsman Jr., stated that all low-level nuclear waste was welcome, as long as it falls within the State's radiation limits and there is available capacity. He had no objection to nuclear waste from foreign countries being disposed of in the EnergySolutions landfill. Utah State Senator Curt Bramble agreed with Huntsman's view that as long as it meets State requirements, there should be no barrier for foreign low-level waste. However, when other State and national politicians entered into the debate, support for the initiative declined. Subsequent quotes from Governor Jon Huntsman now indicate that he does not want foreign nuclear waste coming into Utah, or into the United States, and that he is expecting the Nuclear Regulatory Commission to deny EnergySolutions' application for import of radioactive waste from Italy. Meanwhile, advocacy groups in Utah, Tennessee, South Carolina and Louisiana are filing for a 90-day extension on the public comment period and requesting a hearing.

This is all rather surprising, given that EnergySolutions has been importing foreign wastes

for more than a decade (mainly from Germany, Belgium and Canada) and around 1.5 million tonnes of metallic waste has been processed to date, with much being used to manufacture shielding materials for nuclear research and other facilities. The Italian waste would, however, be the largest and most diverse consignment of wastes that the company had processed. A spokesman for the company said he believed that EnergySolutions, with an excellent technical track-record, was helping to take care of a problem, regardless of geographical and political boundaries, saying they would “rather have (the waste) handled by people who know what they're doing than have it land in Kazakhstan, or somewhere, not properly disposed of”.

From an Arius perspective it is interesting to see this issue being opened up for discussion in the USA. As we have noted in previous Newsletters, the GNEP initiative to manage the nuclear fuel cycle internationally will eventually have to tackle the back-end issue of disposing of wastes from spent fuel imported by GNEP members for recycling. Countries such as the USA will have to decide, sooner rather than later, how they are going to address the whole issue of waste imports, potentially on a much larger scale that brought to attention by the current episode over the Italian wastes.

### **An IAEA international fuel bank – lessons for multinational repository planning?**

2004 saw the IAEA convene an expert group to look at multilateral approaches to the nuclear fuel cycle. Their work and their report<sup>1</sup> concentrated on the front end of the fuel cycle (although disposal was also covered, with input being provided from Arius). It recognised that a multilateral nuclear fuel bank could provide assurance of nuclear fuel supply to countries that would then voluntarily forego developing national uranium enrichment capabilities with possible additional proliferation risks. This idea has been discussed several times in the past, but never moved beyond the concept phase.

In September 2006, however, a commitment of \$50 million was made by the Nuclear Threat Initiative (NTI), an organisation committed to reducing threats from nuclear, chemical and biological weapons. The NTI is co-chaired by philanthropist CNN founder Ted Turner and former US Senator Sam Nunn and the funds were put up by billionaire investor Warren Buffett. The NTI funding was made conditional on the contribution of an additional \$100 million coming from one or more IAEA member states. On December 26<sup>th</sup> 2007, President Bush signed the US congressional budget allocation, matching the \$50 million donation by NTI to the IAEA project.

The Director General of the IAEA, Mohammed ElBaradei, welcomed the developments and noted that other proposals for the creation of a reliable fuel supply are also currently under consideration by the IAEA. A Russian proposal is for the establishment of a joint enrichment facility at the country's Angarsk Electrolysis Chemical Complex, with the inclusion of

<sup>1</sup> Multilateral Approaches to the Nuclear Fuel Cycle, IAEA, Vienna, 2005. 190 pps

an IAEA controlled LEU reserve. A German suggestion is for multilateral uranium enrichment under the auspices of the IAEA and with a uranium enrichment plant in an extra-territorial area provided by a third-party state.

Arius has pointed out repeatedly that important security enhancing developments of this nature should be complemented by multinational arrangements ensuring that all spent fuel and radioactive wastes will also be stored and disposed of in a manner that also enhances global security. A small but important start to providing the funding for initiating multinational disposal projects has been made by the European Commission through their support for the SAPIERR project. As projects become more concrete, higher levels of funding and wider global participation in the back end initiatives will become necessary. The constantly growing recognition of the need for multinational efforts in the fuel cycle and the specific examples provided by the front end initiatives mentioned above, also increase the credibility of shared repository initiatives.

## International Meetings

### *SAPIERR-CATT workshop, Sofia, December*

The joint workshop of the SAPIERR and CATT projects advertised in our last Newsletter took place on 10<sup>th</sup> and 11<sup>th</sup> December 2007 in Sofia, Bulgaria, with two Arius representatives taking an active part in proceedings. The workshop report has been produced by Karl-Fredrik Nilsson and Eberhard Falck of JRC Petten. We present here an edited abstract from the summary, with additional comments from the Arius perspective.



The two European Commission projects were intended to explore different but complementary collaboration models in radioactive waste management. SAPIERR I and II have looked into the possibility of establishing regional repositories and the CATT project explored the scope for shared management facilities and technology transfer between Member States. The workshop was intended to

- bring together the SAPIERR and CATT project partners, as well as other stakeholders, in order to explore the complementary aspects of the initiatives;
- facilitate sharing of the main results of CATT and the interim findings of SAPIERR (which runs until November 2008), as well as the conclusions and experience from other organisations on Member State collaboration for waste management;
- discuss the state of knowledge and future needs and propose collaborations.

The workshop agreed upon a catalogue of issues and opportunities that can be used to shape future collaborative actions. This catalogue was developed by means of brainstorming discussions and included SWOT (strengths, weaknesses, opportunities and threats) analyses of the 'pros' and 'cons' of the following actions that could potentially enhance cooperation between countries:

- develop a EU pre-licensing system of generic disposal concepts and disposal technologies including common approach to structuring and assessing the safety case;
- agree a common regulatory framework, harmonisation of regulations, standards and infrastructure;
- reach international agreement on short-term and long-term liabilities, waste ownership and value of spent fuel;
- develop a common approach to pre- and post-closure safeguards of spent fuel;
- introduce a new EC Directive on radioactive waste management;
- encourage small programmes to utilise facilities in large programmes;
- form an alliance of WMOs to search for one site;
- consider whether each member country of the alliance should be a potential facility host and membership requirement a qualified willingness to become a host;
- identify one member country of the alliance up-front as facility host;
- identify technology for disposal and/or encapsulation that is to be transferred and associated financing schemes;
- develop standardised approach to Geological Disposal designs, containers, and safety cases;
- promote exchange of experts between programmes with financial incentives from for instance EC;
- develop a URL for regional repository as first step towards regional repository;

- define minimum data requirements on wastes for purpose for shared repositories.

Based on the SWOT analyses the following tentative conclusions were drawn:

1. There exist a number of developed concepts for geological disposal that are ready to be implemented. Technology transfer from these programmes is expected to become an important tool to allow all European countries with radioactive waste to have secure and safe disposal of their waste in the mid-term future. Technology transfer is applicable for shared facilities as well as when each country has its own national repository.
2. Harmonized standards and criteria could offer benefits to achieve safe and secure disposal in all nuclear countries, but it may be counterproductive to impose a common set of regulations.
3. Standardized technical concepts and solutions would facilitate technology transfer. There is a risk, however, that standardized solutions would not be optimized with respect to the individual Member State's needs.
4. Shared facilities could be an attractive option for many Member States with small or medium sized radioactive waste programmes. Shared facilities are complex social and economic constructs and the economic, logistic, safety and safeguard benefits need to be balanced against the more challenging legal and social aspects. Projects for shared facilities may be based on the basis of a number of equal partners joining in, or the basis that a small programme is permitted to join a larger programme.
5. The successful implementation of the most developed disposal concepts is crucial for the safe and secure disposal in all European nuclear countries since it provides the basis for the Technology Transfer and would promote the public acceptance of geological disposal.

Continuous support at the European Union level is crucial to further explore European collaboration for implementation of long-term waste management solutions by Technology Transfer and shared facilities.

Below, we add a few comments on the meeting, from an Arius perspective.

The possibility of launching a new, joint project between the two project teams was discussed and considered useful in principle. However, no further action was taken as it eventually proved unlikely to fit appropriately into the funding cycle for the remainder of the FP 7 programme.

As we have commented before, Arius is firmly of the opinion that multinational collaboration in the area of radioactive waste disposal must cover a wide spectrum of approaches, ranging from sharing ideas, through transfer of specific technologies up to implementation of common facilities. Technology transfer will be a vital component of any shared, regional repository solution. The economic analysis being completed within the SAPIERR project

highlights the enormous gains to be made by countries sharing R&D and technology within a joint programme, or importing them from other national programmes, either cost-free or commercially, to the financial advantage of all parties concerned.

## Topical Article

### Castles in the Air: can sites be found for multinational waste repositories?

*Charles McCombie & Neil Chapman, Arius*

Initiatives aimed at developing regional, multinational waste disposal facilities have been criticised as not being credible until such time as a country agrees to host a shared repository. Are such initiatives really 'castles in the air' – unrealistic fantasies with no identified location and hence with no hope of being implemented?

An obvious counter to such criticism is that, if lack of an agreed site implies that a radioactive waste disposal programme will fail, then there are remarkably few successes in the national disposal programmes around the world today. Only in Finland has a preferred site for deep disposal been agreed at all necessary regulatory and legal levels. A few other countries are quite close to this stage (e.g. Sweden, the USA and France), but they have not yet cleared the final hurdles. Furthermore, all these programmes, including the Finnish success, have spent decades in the siting process.

On this basis, it seems premature to write off budding programmes to develop multinational repositories as unrealistic because they have not identified a host country in the first years. In practice, multinational strategies can be modelled directly on successful national siting approaches in that they have to go through exactly the same technical and stakeholder involvements steps, may take many years to achieve siting successfully and, in fact, should actually avoid premature selection of potential sites. The elements of national approaches that can guide multinational strategies are summarised below, before considering how they could be adapted and applied to the multinational case.

#### **What is needed for successful siting of a national repository?**

Successful **national repository** siting is dependent on achieving, at the outset, a sufficiently broad consensus amongst stakeholders on the following premises:

- A safe solution for the long-term management of long-lived radioactive wastes is required by all parties. The parties referred to in the national case are communities, regions, or political jurisdictions (e.g. States in the USA, Cantons in Switzerland, counties in Sweden, etc.)
- Geological disposal in a deep repository is the only available approach today that can guarantee the required level of safety – provided the repository is properly implemented at a well-chosen site.

- Numerous, small repositories are for reasons of cost, safety and security either infeasible or, at a minimum, clearly less effective than fewer or even a single shared facility. At present, even the largest national disposal programmes are seeking only a single site for implementation of a geological repository.
- A repository host community is providing a localised service to a wide range of users. Hosting such a shared facility can result not only in real or perceived drawbacks for the host party but also in specific benefits, such as financial gains, broader economic developments or increased political leverage.
- If these benefits are judged to outweigh potential drawbacks, willing hosts may well come forward. In any case, a repository will not be imposed on any party against its will.

Assuming that all of these premises are accepted by the involved parties, consensual siting is feasible. However, a transparent process leading to identification of technically or socially acceptable sites is still required. Much progress towards identifying a generically suitable process has been made by national waste management programmes in recent years, although the way it is being implemented today differs in detail from country to country. The generic characteristics of a suitable siting process are broadly agreed to be as follows:

- It is adaptively staged and acknowledged to be a multi-year process that will evolve as the implementers take account of feedback from all stakeholders.
- The siting process is based on objective, transparent, pre-defined and well-documented criteria.
- The objective is to identify sites that are demonstrably safe and the process is not based on claims that a "safest" site can be identified.
- The process includes true dialogue between all stakeholders, especially potential hosts, with the objective of ensuring that it is regarded as fair and equitable by all.
- The aim is to identify informed and willing repository hosts that will subsequently be full partners in the repository implementation process.

### **What are the differences between this idealised national repository siting process and a multinational process?**

Almost none, is the answer. When the parties interested in jointly using a shared repository are sovereign nations rather than sub-national entities, the hurdles to be surmounted are basically the same – although some of them are undoubtedly set higher. Furthermore, some siting options at the national level, such as imposing a facility on a community if no volunteers came forward, are not feasible in a multinational process. This 'last resort' option has arguably played a role in some national repository programmes. The US Congress overrode the State of Nevada veto on the selection of Yucca Mountain. The Swiss government, after a Cantonal referendum led to the loss of a potential site at Wellenberg, changed the

law so as to remove cantonal veto rights. In Germany, the AkEnd government advisory group was divided on whether a government ruling could unilaterally fix a site in the event that no willing communities came forward.

Increasingly, however, national programmes are accepting that potential siting communities must be directly involved in the siting process and finally must be willing hosts. Japan is looking for voluntary sites. The Swedish implementer, SKB has agreed to accept any local veto despite legislation that would allow the government to overrule this. Both the UK and Canada have recently chosen strategies based on consensual siting. In such an environment, willing national hosts in a multinational initiative appear no less likely than local hosts for a national facility. A further hopeful indication that optimisation of waste management can occur above the national level is provided by current hazardous waste disposal projects. In Europe, several nations export and import hazardous chemical wastes without raising public concern, in order to make use of the best available facilities.

A staged approach for a multinational facility needs to tackle some difficult and high-profile matters up front. It need not solve them all at the outset, but it must have a transparent, agreed route to doing so. Specifically, the approach should be clear about the extent of commitment being made by partner countries on joining a shared solution enterprise and at all subsequent siting stages. In this respect we can consider the following points:

- The ideal approach is that potential host sites result from voluntary expressions of interest at the local community level. However, the national government of the potential host country would obviously, at a minimum, have to agree not to block or forbid such local community volunteering. Nevertheless, the staged approach need not require countries to commit irrevocably at the outset to being a potential host. It could require that each partner country's land area is considered for its merits in the first stages of potential site consideration, but also have the proviso that any country can withdraw its land area from the 'pool' before the siting work becomes highly focussed. This focussing is likely to be some years into the future, as potential sites are not expected to emerge at the outset.
- The mechanisms and implications of being in or out of the pool of potential land need to be established by the partners at the start of the project. One approach to starting the siting work would be to establish agreed exclusion criteria for clearly unsuitable land and then to invite volunteers in the non-excluded land areas of partner countries. If the partners are contiguous countries, this approach will be more coherent.
- Partners could enter the project at different stages. Only when the largest programmes likely to be in the eventual project are known with more confidence can a sensible estimate be made of the costs of repository implementation and of the scale of benefits and impacts to the host country and community. The size of these will be key factors for any community or country making a decision on whether to move to the next stage of

siting as a potential host. This again illustrates that too early a commitment on hosting could be inappropriate.

- Partner countries that already have developed national siting programmes will be readily able to pool their knowledge, but they will also have to decide how to deal with sites and communities that are already being considered as possible national repository locations – will these sites be in the pool, not in the pool, in the pool at the start or only in the pool later? For some countries this will be an especially sensitive issue to resolve and would need direct consultation with potential host communities already identified.

### **Where might regional or multinational repositories first be implemented?**

Currently, the most intensive work on this concept is being done within the SAPIERR project, which concentrates on the feasibility of establishing one or more regional repositories serving several European countries. This project, now completing its 2<sup>nd</sup> phase, is funded by the European Commission, reflecting the support for such an approach as expressed in the European Parliament. The goals of SAPIERR-2 are:

- to develop an organisational framework and a project plan to facilitate debate on the establishment of a modestly sized, self-sufficient, European Development Organisation (EDO) that can work in parallel with national waste agencies;
- to perform further studies on key issues related to economics, design, public and political attitudes and the safety and security of shared storage and disposal facilities;
- to achieve and document the consensus of interested parties from a number of nations on a preferred way forward.

The ultimate objective of SAPIERR-2 is to propose a **practical implementation strategy** and **organisational structures** that will enable a group of countries to create a formalised, structured organisation that could be established at some time after 2008 for working on shared EU radioactive waste storage and disposal activities. If the results published at the end of 2008 are endorsed by a sufficient number of European countries, then the first formal implementing body for a regional repository could be established any time after this.

The concept being developed by SAPIERR is, however, also applicable in other regions of the world where small nuclear programmes exist or new nuclear programmes are being proposed. For example, further bodies could be established in the following global regions

- **Asia:** Taiwan and Korea have had considerable problems in siting national disposal facilities, even for LLW. Both also have challenging geological environments and would be clear candidates for partnering, despite their substantial nuclear programmes. More obvious participants would be the countries in the region

now considering initiating nuclear programmes. These include Malaysia, Thailand, Vietnam and the Philippines.

- **Arab States:** The Gulf States have already established a cooperative effort to introduce nuclear power. Jordan has also expressed the wish to do so and has supported regional disposal concepts. Other Arab countries such as Algeria and Egypt are possible candidates.
- **Central/ South America:** Mexico needs a disposal solution as do Brazil, Argentina, and, depending on the course of decisions on future nuclear power programmes, Chile and Peru.
- **Africa:** South Africa has great nuclear ambitions and also large areas where safe geological repositories could be implemented. They may decide to follow a purely national strategy rather than offering disposal services to their continental neighbours. In this case, other African countries, such as Ghana, that are contemplating introducing nuclear power will also need access to a repository

A very important point to note is that it is not only those countries that have, or will have, nuclear power plants that require access to a geological repository. Other nuclear technology applications also produce long-lived wastes that should be disposed of in this way. The quantities are modest, but the hazard potential is not. Regional repositories offering a safe disposal service would therefore also contribute to environmental health and safety in such non-nuclear power nations.

### **Are there realistic alternatives to regional repositories if global safety and security is the objective?**

The scenario in which every country, however small, implements its own state-of-the art geological repository is scarcely credible. Lack of resources and technical capabilities effectively rule this out. The other option that is being discussed widely at present is that large nuclear supplier countries accept spent fuel from smaller user countries. This is the concept that has been promoted by Russia for some years and is now being highlighted in the Global Nuclear Energy Partnership (GNEP), originally proposed by the US Government. These initiatives can certainly help – if the supplier countries really deliver on the tentative offer to take back fuel. However, gaps will remain unless they also accept the backlog of spent fuel that exists in some potential user countries, vitrified HLW resulting from reprocessing and also other long-lived wastes. The probability of such a wide service being offered may well be far lower than that of small nuclear waste producers getting together on their own terms, as partners to implement shared regional repositories of the type discussed in this article.

## Upcoming Conferences

Below, we highlight upcoming conferences that are specifically relevant to Arius activities and objectives.

May 2008	
3 <sup>rd</sup> – 5 <sup>th</sup>	AAAS: Global Nuclear Future Initiative Inaugural Workshop, Cambridge MA., USA <i>Arius represented</i>
September 2008	
7 <sup>th</sup> – 11 <sup>th</sup>	2008 IHLRW, Steps Toward Reality for Safe Disposal", Las Vegas, NV, USA ( <a href="http://www.ans.org/meetings/index">www.ans.org/meetings/index</a> ) <i>Arius represented</i>
October 2008	
13 <sup>th</sup> – 18 <sup>th</sup>	The 16 <sup>th</sup> Pacific Basin Nuclear Conference (16PBNC) "Pacific Partnership toward a Sustainable Nuclear Future", Aomori, Japan ( <a href="http://www.pbnc2008.org">www.pbnc2008.org</a> )
20 <sup>th</sup> – 23 <sup>rd</sup>	EURADWASTE'08: 7th European Commission Conference on the Management and Disposal of Radioactive Waste; Luxembourg ( <a href="http://www.radwastegovernance.eu">www.radwastegovernance.eu</a> ) <i>Arius and SAPIERR represented</i>