



ISOE NEWS

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ISOE NEWS IS A PROJECT OF JOINT NEA-IAEA SECRETARIAT

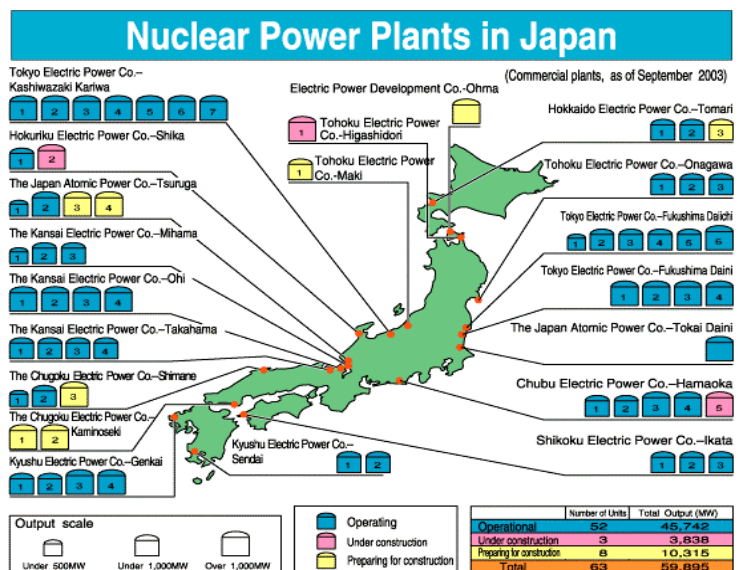
International Ministerial Conference "Nuclear Power for the 21st Century"

The International Conference on Nuclear Power for the 21st Century was held in Paris on 21 and 22 March 2005, attended by Ministers, high-ranking officials and experts from 74 States and 10 international organisations. This Conference was organised by the International Atomic Energy Agency (IAEA) in cooperation with the Organisation for Economic Cooperation and Development (OECD) and the OECD/NEA, and was hosted by the French Government. Its aim was to discuss future policies with respect to nuclear power and, in particular, to examine and analyse the potential contribution of this energy source to meeting energy needs of the century while respecting social concerns and expectations. Over half of the participating countries do not presently have nuclear power, of which many are developing countries.

Many wide ranging views were expressed, and in depth discussions took place during the Conference. There was, however, broad convergence of views among participants in several areas. A vast majority of participants affirmed that nuclear power can make a major contribution to meeting energy needs and sustaining the world's development in the 21st century, for a large number of both developed and developing countries, while recognising that several conditions are required for nuclear power to thrive. More information on the conference can be found at <http://www.parisnuclear2005.org>

15th Meeting of the ISOE Steering Group

The Fifteenth Meeting of the ISOE Steering Group will take place 7-11 November 2005 in Tokyo, Japan, kindly hosted by the ISOE Asian Technical Centre. Initial plans for the meeting include an ALARA mini-workshop for the Asian region, a visit to the Kashiwazaki-Kariwa NPP in Niigata prefecture, and a demonstration of the prototype web-enabled version of the ISOE database. The meeting will be an excellent opportunity for the ISOE Steering Group to exchange information and discuss future plans for the ISOE system.



In Japan NPPs generate about 300 TWh or 30% of the total electric power.

Russian Participation in the ISOE Programme

Vadim O. Glasunov, Head of Laboratory , Optimization of NPP Personnel Exposures during Maintenance, All - Russian Research Institute for Nuclear Power Plant Operation



Russian participation in ISOE started through IAEA in year 2002. All plants with pressurized water moderated reactors (VVERs) participate in the ISOE programme.

In 2004, Russian NPPs generated 143 TWh amounting to 15.6% of the total electric power generation in Russia. Centralized management of all 10 NPPs is performed by one operating utility – Rosenergoatom.

At the end of 2004, the new Kalinin 3 unit (VVER-1000) was put into operation in the Russian Federation and nowadays there are 10 Nuclear Plant Sites including 31 units in operation. Moreover, 4 units are at the stage of decommissioning.

As it is known, there are two main types of reactors which are operated in the Russian Federation:

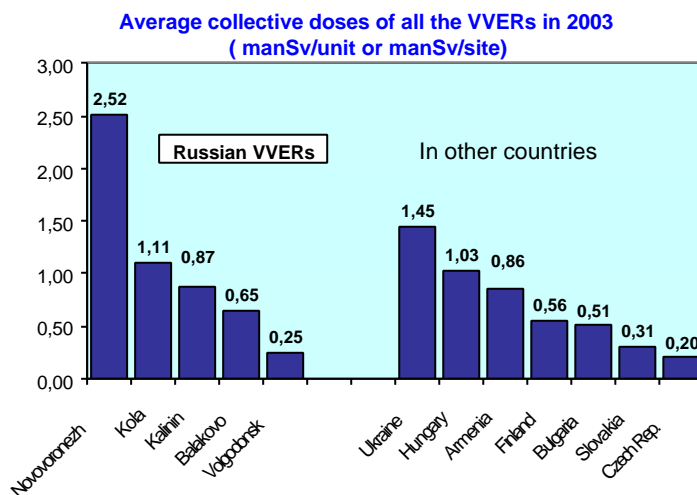
- VVER type reactor – shell type, water cooled and moderated, heterogeneous thermal reactor
- RBMK type reactor – boiling water cooled, graphite moderated, high power channel type reactor.

In addition, there are 4 EGP units in operation (Bilibino 1-4) - channel type, uranium-graphite reactor of small capacity; and also one fast breeder reactor (Beloyarsk 3).

ALARA Programme Results

During the last ten years (1995-2004), the average annual collective dose per unit for VVERs decreased from 2.26 manSv to 1.00 manSv and for RBMKs from 10.17 manSv to 4.23 manSv.

To reduce occupational exposures and meet international standards and new requirements, radiation protection managers have been faced with considerable technical and organizational work. One of the first steps was elaboration of a standard ALARA programme for all Russian NPPs in 2000. On the basis of this programme, each NPP has prepared its local ALARA programme.



Dose Limits

An annual equivalent dose limit of 50 mSv was used until 2000. Since 2000, the limit was set according to the standard approach - effective dose of 20 mSv per year, averaged over defined periods of 5 years with the further provision that it should not exceed 50 mSv in any single year.

OECD/NEA International Nuclear Emergency Exercise INEX-3

The NEA's work on international nuclear emergency exercises began with the INEX-1 Exercise in June 1993. Since that time, the ongoing INEX series has proved successful in testing and improving international nuclear emergency response arrangements. The next exercise in this series, INEX-3, addresses international interest in the 'consequence management' issues that will arise after the early phase of an incident. The INEX-3 table-top exercise focuses on decision-making mechanisms in the medium and late phases after a nuclear or radiological incident causing serious contamination. Exercise objectives cover agricultural and food countermeasures, decisions on "soft/light" countermeasures, recovery management, and public information. Currently about twenty countries have indicated their intent to hold an INEX-3 exercise in 2005, either individually or in co-operation with a neighbouring country. This exercise will be followed in the spring 2006 by an international evaluation workshop.

INTERNATIONAL IARC STUDY—U.S. Commercial Cohort Information on the Ongoing Cancer Mortality Study

Roger P. Shaw, CHP, IARC Study Project Manager for the U.S. Commercial Cohort

The International Agency for Research on Cancer (IARC), located in Lyon, France, began a collaborative cancer mortality epidemiological study in 1993. Initiated in light of ongoing questions as to the validity of extrapolations from studies of high dose populations to estimate risks to low dose populations, the purpose of the study is to provide a more precise estimate of any risk associated with radiation exposure at occupational levels

The collaborative project includes a large cohort of about 500 000 workers in a retrospective pooled cancer mortality study of nuclear workers, making it the largest such study in the world. Data is the property of IARC and the participants, and no analysis or publication of results is expected on a local level. Participating countries include Australia, Belgium, Canada, Finland, France, Hungary, Japan, Korea, Lithuania, Slovak Republic, Spain, Sweden, Switzerland, U.K., and U.S. (Commercial and DOE cohorts).

In addition to the U.S. DOE cohort study led by a team of researchers at NIOSH, a group of U.S. commercial nuclear plants also decided to participate in the study. IARC approved their participation in accordance with strict protocols. Funds were provided by the participating 15 nuclear utilities, and highly credible and independent researchers were selected for the study. The U.S. involvement includes 52 reactors and about 54 000 workers.

Prior to requesting permission from IARC for participation in the study in 1998, the following advantages and disadvantages were considered:

Advantages

- Demonstrates concern for workers
- Independent researchers
- Efficacy of current dose limits
- Helpful for dealing with cancer "cluster" perceptions
- Confidentiality of individual worker data

Disadvantages

- Cost not insignificant
- Public relations effect uncertain
- Study outcome uncertain
- Effect on worker concerns uncertain
- Not likely to reach scientifically dispositive conclusions

IARC Study Result for the U.S. Commercial Cohort

Results of the study were published in the journal *Radiation Research* (Howe, et al, November 2004). The retrospective cancer mortality study included ~54 000 nuclear power plant radiation workers during 1979-1997, with an average lifetime dose of 2.57 rem (25.7 mSv), and investigated 1 190 total deaths. Standard Mortality Ratios (SMR--Ratio of Observed to Expected Deaths) calculated for deaths from all causes, all cancers and all non-cancers respectively are:

| | |
|-----------------|----------------------------------|
| All causes | 0.41 (59% lower than background) |
| All cancers | 0.65 (35% lower than background) |
| All non-effects | 0.34 (66% lower than background) |

These results indicate a very substantial “healthy worker effect”. This can be compared with common values for “healthy worker effect” of about 10% to 15% lower mortality than background as observed in other studies, although similar IARC studies for Canada and France showed SMR results ranging from 0.45 to 0.74 below background. Positive, though statistically non-significant associations for leukaemia and solid cancers combined were also observed.

These data are not inconsistent with the Japanese Atomic Bomb Study and current risk estimates. However, wide confidence intervals on the data also mean that the results are consistent with a range of models that predict greater risk than currently assumed, or even no risk at all.

The authors of the study conclude that a strong positive and statistically significant association exists between dose and non-cancer mortality from arteriosclerotic heart disease (AHD). The authors noted that these are contradictory results requiring cautious interpretation. Nonetheless, AHD findings are cause for some caution.

The next step of the project is to publish the 15-Country IARC study in 2005, followed by informing the involved radiation workers of the results.

For more information it is possible to contact RP Shaw Consulting, Rumson, New Jersey, USA (e-mail: roger1234@comcast.net) or to visit the web (www.iarc.fr/ENG/Units/RCAa.htm).

ALARA Meetings

The **CANDU** ALARA Meeting for Canadian Utilities was held in Toronto on June 6 and 7. The meeting was sponsored by North American Technical Centre of ISOE.

The 2005 **PWR** Radiation Protection ALARA Meeting is scheduled to be in Las Vegas on July 11-13, 2005. NATC coordinates this meeting of about 50 PWR units from Sweden, France, and US. A technical tour is planned of the Yucca Mountain Project by the US Department of Energy. More information are available on the web www.pwralara.org and by e-mail contact dwmiller2@aep.com.

