



Bundesamt für Strahlenschutz

BfS aktuell

Newsletter issued by the Federal Office for Radiation Protection

4/04

Volume No. 7 November 2004

| Responsibility for Man and the Environment |

Contents 4/04

Round Table of the German Mobile Telecommunication Research Programme Takes up Work	1
Frequency and Dose of X-ray Diagnostic Examinations in Germany – Current Evaluation for the Period from 1996 to 2001	2
Harmonisation of the Dose Rate Measuring Networks on the European Level	2
Discussion Forum on Safety Philosophy of Disposal	3
Further Developments in the Interim Storage Facilities – New Container Designs	3
Decommissioning of Nuclear Facilities in Europe	3
Repository Financing Ordinance	4
Trainee posts	4

Imprint

BfS aktuell is published quarterly.

Publisher

Bundesamt für Strahlenschutz
Postfach 10 01 49
38201 Salzgitter
Tel.: 01888/ 333-0
Fax.: 01888/ 333-1885
Internet: www.bfs.de

Editor

Lutz Ebermann
Tel.: 01888/ 333-1122
Fax: 01888/ 333-1105
e-Mail: LEbermann@bfs.de

Round Table of the German Mobile Telecommunication Research Programme Takes up Work

Accompanying to the German Mobile Telecommunication Programme a Round Table (RTDMF) has been established at BfS. The body acts as a consultant and gives social groups and institutions the possibility to get informed about the state of the research programme and to provide incitements from their point of view. The Round Table shall in particular make a contribution to transparency. It advises and supports BfS in the communication of the research programme and participates in the elaboration of concepts for the publication of research results.

Representatives of the Commission on Radiological Protection, the Bund für Umwelt und Naturschutz, the mobile telecommunication network operators, the mobile telecommunication information centre, the federal association of consumer advice centres, the federal medical association, the Laender committee of immission protection, the mobile telecommunication study group, the office for technology consequences assessment at the German Bundestag, the dpa-Themendienst and the BMU participated in the constituent meeting. The RTDMF is chaired by BfS.

At first there was a report on the development and the state of the research programme and the previous measures for informing and involving the public (brochure, expert talks, public consultation, Website www.emf-forschungsprogramm.de) were introduced.

In the further course of the meeting the expectations of the participants regarding the Round Table were in the fore. It became clear that the Round Table do not consider themselves a technical-scientific advisory body but an independent advisory and discussion forum which is to provide – accompanying to the research programme – the imparting of results and transparency to the greatest possible extent.

The rules of procedure and the body's composition were discussed in detail. The Round Table can propose

further members. Essential for taking up further members is that the body is capable to work, which depends on the number, the technical interests of the participants as well as on their willingness to work together closely. The meetings of the RTDMF are not public for reasons of the body's capability to work. The activities of the Round Table *as a body*, results of votes and recommendations are documented by BfS in the form of co-ordinated minutes and disclosed. Minority opinions are also documented. The participants are free to pass on their personal impressions and the information they were given.

Besides the information on current developments in the German Mobile Telecommunication Research Programme, the perception of the previous measures taken by the members of the RTDMF to achieve more transparency as well as proposals for improved information on the research project are to be in the centre of interest of the second meeting.

BfS, in view of the great interest and the discussion relevance of the topic due to the broad spectrum of the participants of the RTDMF, hopes for a constructive contribution to an appropriate and comprehensible communication of the research programme and its results.

Monika Asmuß, Christiane Poelzl
Department Radiation Protection and Health

Frequency and Dose of X-ray Diagnostic Examinations in Germany - Current Evaluation for the Period from 1996 to 2001

Since the beginning of the 90ies, BfS has compiled data on medical radiation exposure in Germany and evaluated them – this was last done for the period from 1994 to 1997. When the amended X-ray Ordinance came into force in 2002, the regular determination of medical radiation exposure of the population was transferred to BfS as an official task. The currently most recent evaluation of the data on the frequency of X-ray examinations in Germany refers to the years 1996 to 2001. Here a new concept was implemented which enables a trend analysis over several successional years. Another advantage of this concept is the better adaptation to international standards, so that it becomes possible to make an international comparison on a reliable basis.

In the international comparison Germany is in the upper range regarding the annual number of X-ray examination per person of the population. During the period examined the values have varied between 1.78 and 1.85 examinations per inhabitant and year without a trend being indicated. Also the relative frequency of the various examination methods has varied only slightly, the dental X-ray diagnostics being constantly about one third of the total number of X-ray examinations. Most noticeable in the trend analysis is the permanent increase in CT examinations of about 7 % per year over the total period examined. Nevertheless is currently the share of this dose-intensive method in the total number of X-ray examinations still comparatively low. In 2001 it reached a value of 6 % only. In contrast to CT, the conventional examinations of the abdomen including the gastrointestinal tract, the gall system and the urinary tract show a decrease in frequency. In contrast to the total frequency a

continuous increase of about 1.6 mSv in 1996 to about 1.8 mSv in 2001 – i. e. by about 2% - can be determined over the examined period for the effective dose per head of the population, which is purely calculated. The value of 2 mSv which had earlier been estimated by BfS for 1997, corresponds with these values within the given uncertainty of ± 0.5 mSv. The dose increase determined within the scope of the current evaluation is mainly due to the significant increase in the CT examination frequency. The share of the effective dose due to CT examinations in the collective effective dose was still about one third in 1996 and reached a share of about one half in 2001. In contrast, the effective dose per head of the population shows a nearly constant course in the residual examination methods.

The world-wide observed increase in the frequency and dose of X-ray examinations reflects the increased rating of the imaging methods in diagnostics, therapy planning and therapy monitoring. In contrast to other European countries, such as e. g. the United Kingdom, Germany has a very high level of medical care.
Elke Nekolla, Jürgen Griebel, Richard Veit
Department Radiation Protection and Health

Harmonisation of the Dose Rate Measuring Networks on the European Level

In Germany and various other European countries measuring networks for the continuous monitoring of external radiation exposure (dose rate, ODL) have been established. The purpose of these measurements is that they provide a quick survey of the affected areas and the level of radiation exposure of man, in particular in case of accidents. The erection of these measuring systems and the representation of results took place up to now in a quite uncoordinated way. Some North European countries (Finland, Sweden and Norway) are presently modernising their own nation-wide dose rate measuring networks. Against this background the work group "Nuclear and Radiation Safety" of the Council of the Baltic Sea States (CBSS) suggested to convoke a group of experts in order to check the possibility of a harmonisation of the measuring networks. In a first meeting with Finish, Danish, Swedish and German participation the respective operational, deployment and utilisation concepts of the measuring networks were analysed. It showed that part of the technical equipment and also of the measuring strategies vary considerably. On the basis of this analysis the work group developed a 12-point-recommendation for harmonising the erection and operation of national dose rate measuring networks. These "Principles for the erection of measuring systems for environmental monitoring" should help to harmonise the European measuring networks without having to give up national singularities. At the same time the EU initiated a research programme lasting two years in which the basic requirements on the equipment of the dose rate measuring networks shall be elaborated systematically, in order to guarantee better comparability of the compiled data. Within the scope of this so-called AIRDOS project another BfS expert was appointed to an accompanying research group, together with colleagues from Switzerland, Austria and The Netherlands. On their first meeting this research group elaborated a questionnaire in which all information relevant to measuring, transfer and evaluation of data is compiled. On the basis of this Europe-wide data binding

recommendations are to be expressed by the EU on the equipment of dose rate measuring networks, on the compilation and interpretation of data.

Experiences and results of the two work groups are to be combined in the medium term. It is of interest to all parties involved to harmonise the measuring networks to the extent that synchronised, reliable dose rate maps can be made very quickly which cover all countries involved.

Ulrich Stöhlker

Department Radiation Protection and the Environment

Discussion Forum on Safety Philosophy of Disposal

In the last 20 years it could be noticed that the lacking of generally accepted principles on the safety of disposal has had a detrimental effect, due to very controversial discussions. With its draft of the principles for the safe disposal of radioactive waste, BfS would therefore like to initiate a new discussion about the procedure and the evaluation criteria for the disposal of radioactive waste. A first draft is currently discussed in a circle of national and international experts. It is intended to include the result of the discussion in the work of the BMU on the determination of criteria for the disposal of radioactive waste and to give the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety a basis for regulatory measures.

Motive of the work is the conviction that a general basic understanding for repository safety including the respective evaluation criteria is essential for the transparent and comprehensible structuring of decisions in repository issues. It is the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety that the relatively best repository site will be selected in a selection procedure for repository sites. Another procedure must be applied to the examination of repository alternatives than has been applied previously to the examination of a repository in a licensing procedure. An estimation as realistic as possible of the risk emitting from a closed repository and the minimisation of that risk must be a matter of priority and not the keeping of dose limits.

Georg Arens

Department Safety and Nuclear Waste Management

Further Developments in the Interim Storage Facilities - New Container Designs

On 30th June 2005 the transports of spent fuel elements from German nuclear power plants to foreign reprocessing plants (WAA) will stop. BfS has licensed the storage of spent fuel elements (BE) in interim storage facilities (SZL) on all nuclear power plant sites. For the nuclear power plants with up-to-date waste management problems temporary storage facilities were licensed until the SZL have been taken into operation. From 1st July 2005 on basically no more transports with spent fuel elements from power reactors are necessary in Germany. As before, return transports with waste from the foreign WAA will be necessary. The CASTOR containers will only be transported for final disposal of the spent fuel elements after they have been stored in the SZL.

In interim storage the following requirements apply to

the storage containers and their components:

- Specified density (He leakage rate $< 10^{-8}$ Pa m³/s) with monitored double-lid system
- Limited dose rate at the surface (separated according to gamma and neutron radiation)
- Keeping of sub-criticality ($k_{\text{eff}} < 0.95$)

These requirements were laid down in the licences for all interim storage facilities.

The up-to-date containers CASTOR V/19 and V/52 and HAW 20/28 do only fulfil the requirements for the currently used BE or a part of the HAW glass canisters, respectively. For the storage of fuel elements to be used in future and the further HAW return various manufacturers develop new designs and submit the respective documents to BfS for design approval. The most advanced is the examination of the TN 85 (manufacturer: COGEMA Logistics (CL) for the storage of HAW glass canisters. Currently one has started to examine the TN 2, likewise CL, for future fuel elements. This year two more container types, CASTOR V/b (manufacturer: GNS) and MSF-57 BG (manufacturer: Mitsubishi) have been announced to be examined by BfS.

In the evaluation of new designs BfS will not only keep the achieved high standard of safety-related examination but will develop it further, using the most modern computer programmes. The programmes will be verified through vertical-shock tests, which are very much supported by BfS.

First vertical-shock tests with models and original containers were carried out in September under traffic law test conditions on the occasion of the PATRAM 2004 in Berlin.

Helmut Scheib

Department Safety and Nuclear Waste Management

Decommissioning of Nuclear Facilities in Europe

The Federal Office for Radiation Protection (BfS) supports the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) in the expediency supervision of procedures for the decommissioning of nuclear facilities. In connection with this, BfS works out status reports on decommissioning projects in Germany. Besides, with participation of GRS, a report titled "Survey of decommissioned nuclear facilities in Germany and in Europe" was elaborated which also deals with the decommissioning situation in Europe. The report contains a compilation of decommissioning projects of nuclear facilities including already concluded projects in the European countries including Germany (without the countries of the former USSR). The compilation contains 61 decommissioning projects of European power and prototype reactors, 18 of them in Germany, 124 decommissioning projects of European research reactors, 31 of them in Germany, and 69 decommissioning projects of European nuclear fuel cycle facilities (without facilities of uranium ore production and processing), 10 of them in Germany. The status of the decommissioning projects in Germany compared with the other European countries is shown. The compilation also contains the nuclear facilities

in operation in Germany. All nuclear facilities are summarised in a table.

Status and duration of the decommissioning projects as well as the decommissioning strategies and technologies are described plant-specifically for Germany and country-specifically and in some cases also plant-specifically for Europe. Furthermore, the preferred decommissioning strategies in the single countries are explained. Here it shows that the preferred decommissioning strategy depends on a number of factors, such as e. g. the availability of interim storage facilities and repositories, the national waste management policy and the availability of financial funds. While e. g. in Germany immediate dismantling is preferred, Great Britain favours safe enclosure over a period of 30 to 100 years. France and Italy have changed their decommissioning strategy from safe enclosure to immediate dismantling. Altogether a trend of immediately dismantling the decommissioned nuclear facilities emerges which could already be recognised on the international IAEA Conference on the Decommissioning of Nuclear Facilities in October 2002 in Berlin.

The report contributes to the support BfS renders to BMU in the expediency supervision of procedures for the decommissioning of nuclear facilities. Additionally, the report represents a base within the scope of the international exchange of experience in the field of decommissioning of nuclear facilities.

Ernst Warnecke, Bernd Rehs
Department Nuclear Safety

Repository Financing Ordinance

The financial arrangements for the establishment of repositories for radioactive waste are laid down in the Repository Financing Ordinance (EndlagerVIV). In order to cover the necessary expenditures for these installations the Federal Office for Radiation Protection charges prepayments on the contributions to be paid according to § 21 b of the Atomic Energy Act as allowed by this Ordinance.

The administrative court of Braunschweig concluded as early as in 1994 that the Ordinance in force showed serious faults. The amendment to the Ordinance was promulgated on July 6, 2004 to become effective as of February 1, 2004. In 1998, the Bundesrat had refused approval of an earlier amendment to the Ordinance. The new regulations aim at optimising the method of levying prepayments while taking into account the principle of a fair distribution of charges and at increasing the application of the 'polluter pays' principle. Separate distribution codes for the different repository projects were introduced and arranged to provide a fairer allocation of funds. The Ordinance stipulates in particular that prepayments in the form of advance partial payments can already be charged in the calendar year when expenditures arise to cover the pre-estimated expenditures for the measures to be taken in this calendar year. This way the Federal Government is able to cut down the annual interest cost by more than € 2 million. The prepayments made so far, which amount to € 2.2 thousand million, will be recalculated and redistributed retrospectively on the basis of the new distribution codes so that the Federal Government

and the Länder will have to pay arrears of about € 160 million due to interests in research institutions. The total amount is to be paid as of 2005 in five equal annual instalments to the benefit of parties which were committed to make prepayments and paid excessive amounts.

Norbert Nimbach
Central Department

Trainee posts

The Federal Office for Radiation Protection has offered a total of 13 places for vocational training in the following regulated occupations: biology laboratory assistant, chemical laboratory assistant and IT specialist. The trainees are based at the sites of Berlin (2 chemical laboratory assistants + 1 IT specialist), Freiburg (1 IT specialist), Neuherberg (4 biology laboratory assistants) and Salzgitter (5 IT specialists).

In the framework of the Federal Government's initiative to increase the number of trainee posts in the federal administration, the Federal Office for Radiation Protection took on another 22 trainees as of September 30, 2004. The training focuses mainly on regulated occupations which are not administration-specific so that it will be easier to find a job in the labour market later on.

Apart from two administrative employees, five IT specialists are on vocational training in the Federal Office for Radiation Protection in Salzgitter. Furthermore, trainee posts were provided, in co-operation with private enterprises, for a digital and print media designer (with the main stress on media engineering), two electronic technicians for automation technology, four IT assistants and five office communications specialists. The branch offices have offered additional trainee posts for a biology laboratory assistant (1 in Neuherberg) and two IT specialists (1 in Berlin and 1 in Freiburg).

We have thus reached our goal of providing 35 trainee posts for young people as early as this year.

Norbert Nimbach
Central Department