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3rd BfS Expert Talk in Berlin: "The German Mobile Telecommunication Research Programme - an Interim Result"
The public 3rd BfS expert talk "The German Mobile Telecommunication Research Programme - an Interim Result" took place on April 28, 2005 in Berlin with participation of invited scientists, representatives of institutions dealing with this topic, and stakeholder groups. It served to present the first results of the German Mobile Telecommunication Research Programme (Deutsches Mobilfunk Forschungsprogramm, DMF) and their placement in the international state-of-the-art of science. In her opening address, the State Secretary in the Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (Bundsumweltministerium, BMU), Ms Simone Probst, pointed out the necessity of taking into account possible risks already in the phase of development of new technologies and to take precautions correspondingly. The German Mobile Telecommunication Programme makes an active contribution to a scientifically founded risk evaluation and is thus a component of the precautionary measures demanded by the Federal Government. In his introductory speech, the President of the Federal Office for Radiation Protection, Wolfram König, at first outlined the objective of the DMF to reduce uncertainties in the evaluation of possible biological and health effects of mobile telecommunication fields and thus also to take into account the worries and concerns in the population. He then went into the current status of the DMF. Some projects that are still in the pilot phase or that had to be postponed or cancelled were concretely mentioned. Furthermore he underlined the necessity of reliable study designs and the keeping of a high scientific standard, without which no meaningful results can be achieved. Finally he pointed out the measures implemented within the scope of the DMF, which shall improve the flow of information between research institutions and the public. These include the detailed DMF homepage, which is meanwhile also available in English, and the Round Table on the German Mobile Telecommunication Programme. In the single topics of biology, epidemiology, dosimetry and risk communication the staff members of the BfS team Non-ionising Radiation (AG-NIR) entrusted with technical accompaniment presented the crucial scientific questions that are to be answered by the projects in the respective areas and gave a survey of the project status. As far as results are already available, they were presented and subsequently discussed with the attendant

research contractors.

In the subsequent discussion it was debated to what extent the programme is classified as comprehensive and if new suggestions within the course of the running programme should still have to be taken into account. There was a controversial discussion without final result about involving practising physicians in the clarification of health issues. The project on "Integrated Network Planning" which cannot be carried out because of lacking co-operation of the network operators was also discussed controversially. Relating to this issue, a workshop shall be carried out to elaborate the best modus operandi of operators and communities in the common site selection. The feasibility of further proposals of the participants on biological and epidemiological projects is currently examined by BFS.

Finally there was a discussion about the necessity of the timely implementation of a transparent procedure to work up the results of the DMF. The installation of an independent, interdisciplinary commission was suggested. A part of the participants pleaded for a strong role of the Commission on Radiological Protection (Strahlenschutzkommission, SSK).

The conference report of the 3rd BfS Expert Talk is published in the Internet under <http://www.emf-forschungsprogramm.de/veranstaltungen> and as "BfS-Schrift".

Cornelia Baldermann

Department of Radiation Protection and Health

DMF - perceptions of the dosimetry workshop and consequences to further research

Within the frame of the German Telecommunication Research Programme (DMF) interim and final results of research projects are presented and discussed – also in the form of symposiums – for the purpose of taking stock and mutual exchange of information. On January 31, 2005, a colloquium on various topics in the field of dosimetry was performed on this basis. Apart from the respective research contractors and their project partners and the involved technical tutors of BfS, representatives of BMU and SSK also attended the event. Altogether more than 20 persons contributed to the success of the event.

The presentations of the project managers on altogether nine different research projects were categorized according to topic in four blocks, which can be headed as follows:

- Exposure due to radio communication applications in unlicensed frequency bands
- Exposure due to mobile phones in real situations
- Exposure due to stationary digital radio communication transmitters
- Small-area SAR distribution and thermo-physiological effects

Among others, the projects deal with the developments of measuring and calculation methods as well as with methods for the characterisation of exposure scenarios, e. g. due to wireless communication media in households and offices or due to mobile telecommunication base stations of the GSM technology, which are difficult to evaluate because of their signal structure. Of the many interesting single results only three will be emphasised here.

In connection with the step-wise conversion of the terrestrial TV distribution from the old analogue to the new digital DVB-T transmission standard, the IMST GmbH company presented a comparison of the mean transmitting power installed before and after the conversions, among others on the basis of the respective planning of the providers and Laender media institutions for selected regions. At the present

time, no generally valid statement can be made if really a reduction or rather, at least partially, an increase in exposure of the general public will be associated with DVB-T. Considering as example the Bremen/Unterweser region, it could be shown that although the number of transmitters was reduced from fourteen to eight, the mean transmitting power installed increased from 951 kW ERP before conversion to 1050 kW ERP after conversion. As this is associated, among others, with how one deals with analogue supplementary transmitters of the public providers in supply subsidiaries, further investigations are required here at any rate. Especially in the two regions of Munich/South Bavaria and Nuremberg comprehensive measurements are planned in the course of the year before and after the conversion to DVB-T, which will provide more detailed knowledge of the effects on the exposure situation of the public. In the determination of real exposures occurring through the use of mobile phones in daily situations it was shown that the transmitting power regulations of the mobile phones caused by the base stations of the mobile phone networks are less effective than had been assumed up to now. Generally it is assumed that after a link connexion the transmitting power of the mobile part is regulated to the necessary minimum to keep the connexion. However, the used rule algorithms are not entirely identical at all net operators and they can also vary between different transmitting areas of a transmitter. In several different office rooms it could be shown how the transmitting power of the mobile part was frequently regulated frequently to the maximum during the time the call was made, without that this could be explained, for example through a change in the posture of the test person which would have led to a change in the radiowave propagation from the mobile part to the base station. Such an upward regulation of the transmitting power is generally only expected when handing over a call from one transmitting area to another. It is planned to carry out in further investigations detailed measurements in such environments where particularly bad reception conditions must be expected, e. g. in cars or in train wagons.

With respect to exposure due to transmitters operated near the body in the trunk area, which are caused e. g. by mobile phones worn at the belt or by similar scenarios, numerical calculations at generic models have shown that in dependency of the frequency, the exact distance of the transmitter to the body, and in particular the thickness of the adipose layer, the resulting SAR values can be around factor 2 above the values found in homogeneous models. As generally also measurements are carried out in homogeneous models one has to assume that the results achieved in such a way are not in any case conservative. In further investigations calculations shall be performed in anatomically correct, highly-resolved body models. Up to now models of adult men have usually been used for this. Deviating from this, special models of children and women shall be used in this project.

The minutes of the colloquium can be found in the Internet on the homepage of the German Mobile Telecommunication Programme under http://www.emf-forschungsprogramm.de/veranstaltungen/coll_dosi_050131.html, together with the presentations of the lectures.

Dirk Geschwentner

Department of Radiation Protection and Health

Further decrease in occupational radiation exposure: annual report 2003 of the radiation protection register

The BfS Radiation Protection Register has published their annual report on the occupational radiation exposure in 2003 in Germany. The report provides a survey of the tasks of the Radiation Protection Register. Statistical evaluations of the exposure data of all occupationally radiation protection monitored persons provide a survey of the development of occupational radiation exposure in the years 1999 to 2003 with emphasis on the year 2003.

In 2003, about 315,000 persons were radiation protection monitored. Of these 16 % received a measurable whole-body dose. The mean annual dose of these exposed persons decreased from 1999 to 2003 by about one quarter to 0.9 mSv/a (2002: 1.0 mSv/a). This mean annual dose is the lowest dose since the beginning of occupational radiation protection monitoring.

Particularly pronounced is the decrease of exposed persons with annual dose values above 20 mSv. The number of these radiation exposed persons decreased from 101 in 1999 to 8 persons in 2003. Compared to 2002, the number of exceedances decreased from 17 to 8 and has thus more than halved. This is also by far the lowest value since the beginning of occupational radiation protection monitoring. Expressed in comparative figures: of 100,000 persons monitored in 2003 there were 2.5 persons who exceeded this limit of the whole-body annual dose, while in 1999 of 100,000 persons monitored there were still 33 persons who received whole-body annual dose values above the then still permissible 20 mSv. This is a welcome result of minimising measures in radiation protection.

The report "Occupational Radiation Exposure in Germany 2003 – Report of the Radiation Protection Register" can be received at Wirtschaftsverlag NW, Verlag für neue Wissenschaft GmbH, Postfach 10 11 10, D-27511 Bremerhaven.

Gerhard Frasch

Department of Radiation Protection and Health

The migrated IMIS (Integrated Measuring and Information System for the Monitoring of Environmental Radioactivity) started operation on April 1, 2005

In the Federal Republic of Germany environmental radioactivity has been measured over a wide area since 1955 within the scope of the tasks carried out by various authorities. On the occasion of the Chernobyl reactor accident in 1986, however, it showed that there were no co-ordinated measuring strategies for a rapid detection of environmental radioactivity, that the exchange of data between the authorities was difficult and that the measured results were evaluated differently. On the basis of experience gained from this situation the Federal Government decided to pass a Precautionary Radiation Protection Act in the same year (Strahlenschutzvorsorgegesetz, StrVG as of December 19, 1986). It is the essential content of the act to regulate and upgrade environmental monitoring according to uniform criteria and to integrate all activities in a uniform measuring and information system (IMIS). The Integrated Measuring and Information System consists of continuously running federal measuring networks and of Laender (Federal States) measuring facilities which are connected with the Federal Office for Radiation Protection via a high-capacity, IT-supported information system. The measurements at the Federation and Laender are carried out according to defined measuring programs.

Normally, radioactivity data are registered daily at more than 2000 measuring sites in Germany. The measurements of the automatic measuring networks for the monitoring of air and water run continuously day and night and have thus also the function of an

early warning system. In case of a nuclear event with consequences for the federal territory the measuring system provides every two hours new information on radioactivity which is immediately forwarded to the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety in a form which has been adapted to the situation.

The first IMIS generation was in operation for more than ten years and was therefore updated (migrated) to a modern state-of-the-art of IT technology. After a successful conclusion of the project "IMIS migration", BfS started operation of this second generation of the IMIS on April 1, 2005. With it IMIS contains new functions, converted onto a new IT-platform and user interface and adapted significantly with respect to the definition of the processes and displays.

In a central, highly-available server at the BfS Central Federal Agency (Zentralstelle des Bundes, ZdB) all data and information are gathered. About 200 clients of the approximately 70 federal and Laender authorities participating in IMIS are connected on-line to this server. Modern software tools were developed, the functionality of IMIS was extended and the provision of information was improved. An integrated, intuitively understandable user interface was developed for a better usability. The response time was shortened.

These improvements permit a considerably more rapid transfer, examination and evaluation of the measured values than before. The efforts relating to system maintenance and training measures could also be reduced clearly. In order to better satisfy the single demands of the participating authorities with their partially quite different tasks, the flexibility in data and document evaluation and preparation was very much increased. From the IMIS data base results can be selected in manifold ways and can be represented in the form of maps, tables and texts. The provision of measure-relevant information has been automated and standardised as far as possible, so that it can be displayed rapidly and in a way that it is easy to understand.

To sum up, one can say that with the new IMIS there is a modern, flexible and high-capacity system available to monitor routinely environmental radioactivity and to be able to determine and evaluate rapidly the radiological situation in case of an event. Even if the migration has been concluded, the further development of IMIS has not yet been finished. On the medium term and long term it will particularly be the task of BfS to interlink IMIS with other national and international systems.

Hermann Leeb

Department of Radiation Protection and the Environment
Wolfgang Weiss

Department of Radiation Protection and Health

Termination of transports to reprocessing plants on July 1, 2005

On June 14, 2000, following protracted negotiations, the Federal Government made an agreement with the electric utilities relating to phasing out nuclear energy, to conclude the use of nuclear energy in Germany in a controlled way.

With the "Law on the controlled phasing out of the use of nuclear energy for the commercial generation of energy" which came into force on April 27, 2002.

Apart from the regulations to limit the run-time and amount of power of the nuclear power plants, the law contains the commitment that transports of spent fuel elements from power reactors to reprocessing plants are not permitted any longer from July 1, 2005 on. From this time on, spent fuel elements may only be stored in interim storage facilities near the sites or, if this is not possible, in central interim storage facilities.

In the past, the transports of spent fuel elements to reprocessing plants were severely disputed in the

public. In 1998, massive exceedances of the limit values for the contamination at the containers and transport vehicles were detected. This was followed by a transport stop imposed by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). Transports were taken up again in 2001, with requirements to guarantee that the contamination limit values were kept.

Since this time 267 containers with spent fuel elements have been transported to the reprocessing plants in La Hague/France (191 containers) and Sellafield/Great Britain (76 containers), and the permissible contamination limit values have always been kept. The last transport of a container was carried out on April 27, 2005, from the Stade nuclear power plant to the COGEMA reprocessing plant at La Hague/France. Starting on July 1, 2005, transports of spent fuel elements from power reactors to reprocessing plants will no more be permitted. Their discontinuation will be a considerable contribution to minimise transports of spent fuel elements in Germany. A further minimisation of transports will be achieved by the interim storage facilities at the nuclear power plant sites which are in operation or under construction, since inner-German transports to central interim storage facilities will no more be necessary.

Peter Bruhn

Department of Safety of Nuclear Waste Management

Federal Custody has been cleared nearly completely

With the transport on May 9, 2005, the last plutonium-containing nuclear fuels were removed from the Federal Custody in Hanau.

With this the storage of plutonium-containing nuclear fuels which had started in 1981 in the so-called fission-product bunker on the premises of the Siemens company in Hanau was terminated. Only uranium-containing nuclear fuel plates from decommissioned so-called Siemens training reactors (SUR) of various German universities are still stored.

These nuclear fuel plates are already packaged such that they can be transported and are probably to be removed in the 3rd and 4th quarter of 2005, within the scope of a waste management project of the Federal Ministry for Education and Research (BMBF), so that the Federal Government will be able to return the fission-product storage facility in Hanau to the Siemens company at the end of 2005.

Subsequently, the storage area of the Siemens company can also be dismantled and the entire terrain can be used conventionally.

Harald Schell

Department of Safety of Nuclear Waste Management

Amended version of the Law on Environmental Information

In February 2005 the Law on Environmental Information (UIG) was amended. The amendment has the objective to strengthen the rights of information of private persons and to extend the authorities' duty to inform. The following innovations result from this in particular:

- Each civil law natural person and legal person has the right to access to environmental information, without it being required that they explain a legal interest in the information
- The period for examination of the queries has been halved to one month
- The right of access to information in situ is free of charges
- If an authority does not possess the information requested, they have to mention to the person filing the application the institutions where the information asked for is available or they have to forward the application to these institutions
- The extended term of environmental information

also includes data on the state of human health and the contamination of the food chain as far as they are affected by the state of the environment or by factors such as radiation. BfS, for example, published measured values of natural radioactivity in drinking and mineral waters

- Within the scope of their objective and spatial competence the authorities are committed to actively distribute the environmental information mentioned in § 10 clause 2 UIG. This information must be distributed proactively, e. g. via the Internet. Examples for data published by BfS are the survey of reportable events in nuclear power plants and the licences of interim storage facilities and transports
- Since § 10 clause 2 UIG sets up minimal requirements only, the authorities may also actively distribute other environmental information. Among others, BfS published the IMIS data base and the UV index on their homepage. The regulations of the Federal Data Protection Act provide for a limit for publication, in addition to §§ 8 and 9 UIG.

BfS have their existing procedure (DA UIG) adapted to the new regulations.

Anna Distler

Central Department

BfS annual report 2004 introduced

The Federal Minister for the Environment, Nature Conservation and Nuclear Safety, Jürgen Trittin, and BfS President Wolfram König introduced the BfS annual report 2004 on June 23, 2005 in Berlin. Apart from current figures and facts about BfS, the annual report contains 80 pages of selected contributions about the BfS task spectrum.

This year's focus of the report is on fundamental considerations about the present radiation protection system. Although radiation protection is based on solid knowledge, an advancement of this system is required, since on the one hand the inner logic of the system and the manageability for the practice get lost because of the complexity of the regulations, and, on the other hand, it becomes increasingly clear that the previous approach possibly guarantees no sufficient protection for a small part of the population.

The Federal Office for Radiation Protection summarised their position about the radiation protection questions of principle in the Radiation Protection Guidelines. The report investigates the basic principles of the protection of man and the environment from ionising radiation and non-ionising radiation and redefines them in view of more recent scientific findings and social developments. To introduce the guidelines a discussion is planned among all relevant institutions. This includes publication, among others on the BfS homepage.

Apart from a multitude of single topics dealt with by the BfS staff members in 2004, the report describes at length a technical concept to limit radiation exposure due to radon and new results in the detection and evaluation of medical radiation exposures.

The complete BfS annual report 2004 can be downloaded in the Internet under <http://www.bfs.de/bfs/druck/jahresberichte/jb2004.html> or can be received free of charge by Bundesamt für Strahlenschutz, Postfach 10 01 49, 38226 Salzgitter, e-mail: info@bfs.de, fax: 0049 888 333 1150.

Lutz Ebermann

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