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### **The new organisational structure of BfS**

The organisation of a federal authority has to be structured in a way that the work necessary to fulfil the required tasks will be performed in consideration of quality and efficiency. The final report of the Council of Experts called "Slim State", and the catalogue of measures of the programme of actions present the main steps for this. BfS has taken up the important elements of the programme of actions and implemented the following measures:

- A Guiding Principle ("Leitbild") has been developed for BfS. This Leitbild specifies the principles and objectives of work in BfS. One of the main results of the Leitbild process was to point out the need for reorganising BfS.
- A cost efficiency calculation (KLR) has been introduced.
- The controlling as a result of the cost efficiency calculation is currently developed.
- The basic guideline for a modern management of ideas in the federal administration has come into force by a works agreement "Guideline for the ideas management of BfS".
- The rules of procedure of BfS (Geschäftsordnung des BfS, GO) have been reviewed and amended on the basis of the common rules of procedure of the federal ministries (Gemeinsame Geschäftsordnung der Bundesministerien, GGO).
- The proposal for a personnel development concept is available. As a contribution to this concept, management principles have already been developed, and management training in the area of "staff meetings" and "agreements about objectives" have been carried out.

The reorganisation of BfS came into force on 1<sup>st</sup> Feb. 2003, and has concentrated the tasks of the former Departments of Radiation Hygiene (Oberschleißheim site) and Applied Radiation Protection (Berlin site) – which were formerly partly

assigned in relation to their history - to new task groups with clearly objective criteria. In the same way the tasks assigned to the Central Department were examined and part of them were assigned to the scientific departments. The new structure smoothes the historically-related "discrepancies" by concentrating tasks and is a new formation under the conditions of new main tasks and effects from the cutting down on staff in the last few years. A survey of the newly developed organisation of BfS is given in the organisation chart attached to the annual report of BfS which will be published in June.

*Werner Herud  
Central Department*

### **Report of the Radiation Protection Register for the years 1999 – 2001**

The Radiation Protection Register collects and combines the current exposure data of the approximately 320,000 occupationally exposed persons in Germany, and controls that the exposure limits of these persons are kept. Furthermore the Radiation Protection Register controls the issuing of radiation passes to the currently about 77,000 persons.

The Radiation Protection Register has finished a report on occupational radiation exposure in Germany. This report includes a statistic evaluation of the monitoring data in the Radiation Protection Register from the years 1999 to 2001. 14 percent of the occupationally exposed persons monitored in 2001 received a radiation dose at a measurable level. The trend to a reduced radiation exposure continued also in the years 1999 to 2001. The mean annual dose of exposed persons decreased from 1.4 mSv to 1 mSv. The collective dose decreased from 52.8 person-Sv to 43.8 person-Sv. In the year 1999, 12 persons out of 10,000 received an annual dose higher than 20 mSv. In 2001, this was only one person out of 10,000 monitored workers. Furthermore, the report informs about the co-operation between the measuring centres and the regional registration and surveillance authorities with the Radiation Protection Register. It presents the historical development of the occupational radiation protection monitoring and gives a survey of the tasks of the Radiation Protection Register as well as an outlook on its future development.

The report will be published in Spring 2003.

*Gerhard Frasch  
Department Radiation Protection and Health*

### **Current evaluation of radiation exposure to patients from nuclear-medical examinations**

For the assessment of radiation exposure to patients by means of nuclear-medical diagnostics, the frequency of radionuclide application in Germany in the years 1996 - 2000 and the resulting effective doses in ambulant and hospitalised patients were determined. The results obtained were the following:

Approximately 3.8 million persons had nuclear-medical examinations per year, which corresponds to a yearly frequency of application of 47 examinations per 1000 inhabitants. A variation of the examination frequency in the studied period was not found. The most frequent examinations were scintigraphies of the thyroid and the skeleton.

A mean collective effective dose of approximately 10,800 person-Sievert was assessed per year, corresponding to an effective dose of 0.13 mSv per inhabitant. The main contribution to this dose is provided by four nuclear-medical examinations: the scintigraphy of the skeleton, myocardium, tumour, and thyroid.

The mean effective dose per examination was 2.8 mSv.

Assessing these data in view of the radiation risk it should be taken into account that exposure does not involve the whole population, but only those patients who have a diagnostic benefit from it.

Compared to the mean radiation exposure to the population from X-ray diagnostics at a level of about 2 mSv per year and person, radiation exposure due to nuclear-medical diagnostics is relatively low. Nevertheless dose reduction measures such as introducing diagnostic reference values and using new radio-pharmaceuticals are possible and necessary. For example the substitution of Tl-201-chloride by Tc-99m-MBI reduces radiation exposure in case of a myocardial scintigraphy.

*Aja Stamm-Meyer  
Department Radiation Protection and Health*

### **Overview of the current measuring results on radioactive contamination of wild boars**

While in Germany food from agricultural production has only low radiocesium contamination and can be eaten without concern, the radiocesium content in game, in comparison, is still at a high level. Particularly wild boars from the highly exposed South German regions frequently exceed the limit of 600 Bq per kg for radiocesium and are, therefore, not allowed to be marketed.

In 2002, in the scope of a research project initiated by BfS to clarify the reasons for the continuously high contamination of wild boars, altogether 57 wild boar samples from the Bavarian Forest were analysed. With a soil contamination of locally up to

100 kBq per m<sup>2</sup> radiocesium, the area under examination is one of the highest exposed regions in Germany. The measured values of radiocesium in the muscle flesh were in the range of about 430 Bq per kg and 20,000 Bq per kg, at a mean value of about 6,400 Bq per kg. Only one sample was less contaminated than 600 Bq per kg. Excess values to the dose limit have also been observed in less exposed regions of Germany. The peak value found in the scope of a measuring campaign in the Palatine Forest (soil contamination in the range of some kBq per m<sup>2</sup> radiocesium) was about 8,200 Bq per kg. From 2132 wild boar samples examined in the year 2001 in the Palatine Forest, 9.4 % had more than 600 Bq per kg radiocesium.

Wild boars take up radiocesium via their fodder. *Elaphomyces granulatus* play a special role, because their fruit body growing underground is a preferred "delicacy". With a peak value of about 122,000 Bq per kg in the year 2002, *elaphomyces granulatus* in the Bavarian Forest were contaminated by one order of magnitude higher than edible mushrooms. Also large thick forest areas are of great significance: the more animals move to agricultural areas on search for food and feed low contaminated fodder, the less is the radiocesium content in their muscle flesh. Breeding animals fed exclusively with agricultural products have only very low contamination levels which can be compared with that of beef, pork or chicken.

*Martin Steiner*

*Department Radiation Protection and Environment*

### **Registration of the residual electricity amounts from nuclear power plants**

The residual electricity quantity that can still be generated in the nuclear power plants, as laid down in the Atomic Energy Act, are based on an average total operating life of about 32 years for each nuclear power plant. Since April 2002, BfS has been in charge of the documentation and publication (in the Federal Bulletin) of the generated residual electricity amounts of all German nuclear power plants. The data were reported and recorded from 1 January 2000 to April 2002, retrospectively, in an operators' collective report, and since May 2002 every month to BfS. All data reported from the operators are controlled by accountants and independent experts, in accordance with the legal regulations.

BfS publishes also in the Federal Bulletin the transmission of the electricity generating rights (also called amounts of electricity transmissions). On 23 January 2003, a transmission of this kind of 5.5 TWh took place from the Philippsburg 1 nuclear power plant to the Obrigheim nuclear power plant. This was published in the Federal

Bulletin on 12 March 2003. Further details can be taken from the Annual Report 2002 of BfS.

*Johann Hutter*

*Department Nuclear Safety*

### **Morsleben Repository for Radioactive Wastes: Early backfill of selected open mine workings of the ERAM central part as a measure of emergency response (VaGZ)**

The Federal Office for Radiation Protection (BfS) as the responsible operator of ERAM (Morsleben repository for radioactive wastes, the competent mining authority, the Landesamt für Geologie und Bergwesen des Landes Sachsen-Anhalt (Federal State Authority for Geology and Mining of the Land Saxony Anhalt) and the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) have agreed altogether that there exists acute danger according to mining law with regard to the structural safety of the ERAM central part. Therefore it is urgently required to start with the implementation of safety measures on the basis of licences according to mining law. According to the estimation of BfS, BMU, and LAGB, it cannot be accepted to wait until an Atomic Licensing Procedure has been concluded. It can be derived from geo-mechanical model calculations, survey and geo-technical measures of surveillance, monitoring and in-situ results that slow but continuous damage processes are under way in the central part. The result is that safety is not given any more.

To improve the geo-mechanical condition of the ERAM central part, it is provided to backfill selected open mine workings, if possible completely with a pumpable salt concrete. By this way additional bearing arches and pillars to act in combination with the salt rocks shall be built up in the central part, in order to ensure the efficiency of the open mine working for the implementation of the decommissioning measures.

The concept of supporting measures consists in reducing the void volumes with a supporting backfill to further ensure the structural safety of the remaining excavation system. The backfilled voids strengthen the pillars so that the loads resulting from the rock pressure can be cleared better. For this reason the voids with a high degree of backfilling shall be backfilled with salt concrete as backfill material. The salt concrete, a mixture of salt grit, coal filter ash from coal-burning power plants, concrete, and water is a hydraulically binding backfill material, which sets after several days. The void volume of the selected workings amounts to about 670,000 m<sup>3</sup>. Because the backfilling of the workings as well as the creeping of the rock to the emplaced backfill takes several years, the backfilling measure has to be performed

within a short time, in order to limit the ongoing damage processes. On 19 March 2003, BfS commissioned the Deutsche Gesellschaft zum Bau und Betrieb von Endlagern mbH, DBE (German Company for the Construction and Operation of Repositories) to start the initial mining and installation work and to introduce the provision of the required equipment. Following the conclusion of the mining safety work and creation of the necessary infrastructure on the surface and underground for the backfill operation, it can be started at first with a mobile pumping set with a fill material throughput of 300 m<sup>3</sup>/d. A station is established in parallel.

The costs for the planned backfilling measures amount according to actual estimate of DBE to about 100 Mio. Euros at a planned period of 6 years.

Parallel to the implementation of the planned backfilling measures, the plan approval procedure for the decommissioning of the ERAM, according to the Atomic Energy Act, is continued. The submission of the required documents according to § 6 AtVfV for the public participation procedure (among others "Decommissioning Plan" and "Environmental Impact Study") for the decommissioning of the ERAM shall be carried out at the beginning of the backfilling measures, if possible. The plan approval decision for the ERAM decommissioning project could be executed, after conclusion of the public hearing procedure and expert's examination, by end of 2007. After a conversion period of nearly two years the implementation of the licensed ERAM decommissioning measures could start by end of 2009.

*Wilhelm Hund*

*Department Safety of Nuclear Disposal*

### **An authority keeping the balance between science and politics – panel discussion at BfS in Salzgitter**

Following a thorough discussion process of one year, 1 ½ years ago BfS adopted its new Guiding Principles ("Leitbild") (see internet [www.bfs.de](http://www.bfs.de)). One of the focal topics in this process was the relationship between science and politics.

Many BfS workers consider their office as being an independent scientific authority. Therefore, the wish for freedom of science and research, independent of political conditions seems reasonable.

President Wolfram König took up this topic by inviting to a panel discussion about the relationship between science and politics in his office at Salzgitter. The guests at the round table were Simone Probst, Parliamentary Undersecretary, (BMU); Hartmut Bäumer (Business Consultant and

former Chief Official in Gießen); Dr. Günther Dietze (SSK Chairman); Dr. Wolfgang Hawickhorst (GNS Manager); and Michael Sailer (RSK Chairman). The discussion was presented by Dr. Stephan Otto, who had already accompanied the Leitbild process within BfS.

After the introduction a lively discussion arose among the participants. Conflicting topics were, among others, to which degree politics should intrude into scientific results. There was agreement between the participants that the freedom of science and research in a university could not be transferred to an authority, because the marginal conditions in the official administration and the respective tasks of an authority significantly differed from university actions. It is quite right that the priority of politics requires loyalty from the administration, where own responsibility of the employees is not excluded but should be integrated. Without this loyalty of the administration, no democratically legitimated political will could form on the one hand, and on the other hand the administration is original part of the institutional dimension of politics. Science and research in an authority like BfS need politics to become effective. If it separated from politics, it would sooner or longer disappear and become unimportant.

A focal point in the discussion concerned the problem of scientific uncertainties. Science would create facts on which politics must have a critical look. In doing so politics would also have to answer questions on which science could not answer yet, said Simone Probst. Michael Sailer asked the question, if at least science specified the questions sufficiently. Günther Dietze emphasised that there was seldom consensus in science. Wolfgang Hawickhorst stated that politics had to take actions and must never withdraw. Hartmut Bäumer certified to BfS its particularly difficult initial position after the change of the government in 1998. Similar to industry, the constraints were strongest in the executive power. However, an authority could not evade the principle of democracy.

The lively participation of BfS workers in the discussion showed that this topic will be of further importance for the way BfS workers see themselves. This is again a successful example of how a modern authority analyses frankly and critically its own role and the consequences of its actions continuously in the scope of its social responsibility. In summary, the panel discussion was also an indicator for the development of a new culture in discussions at BfS, which had been initiated by the Leitbild process.

*Dirk Daiber*

*Press and Public Information*