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Fachverband für Strahlenschutz e. V.

Mitgliedsgesellschaft der International Radiation Protection Association (IRPA) für die Bundesrepublik Deutschland und die Schweiz Publikationsreihe FORTSCHRITTE IM STRAHLENSCHUTZ

Publication Series PROGRESS IN RADIATION PROTECTION

30 JAHRE FACHVERBAND FÜR STRAHLENSCHUTZ E. V. DATEN UND FAKTEN

30 YEARS GERMAN-SWISS RADIATION PROTECTION ASSOCIATION NUMBERS AND FACTS

April 1996

Edited by Hans Brunner Renate Czarwinski Rupprecht Maushart

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30 Jahre Fachverband für Strahlenschutz e. V.

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Vorwort des Präsidenten

30 Jahre deutsch-schweizerischer Fachverband für Strahlenschutz

Der deutsch-schweizerische Fachverband für Strahlenschutz wurde im Juni 1966 gegründet und hat sich in den vergangenen drei Jahrzehnten mit etwa 1400 Mitgliedern zum drittstärksten Verband (nach USA und Frankreich) in der IRPA entwickelt. Mit dazu beigetragen hat der Zusammenschluß mit der "Vereinigung für Strahlenforschung und Strahlenschutz" der ehemaligen Deutschen Demokratischen Republik im Jahre 1991. In der vorliegenden Broschüre soll ein Überblick über die Tätigkeitsfelder des Fachverbandes aufgezeigt werden.

Der Fachverband ist auf allen Gebieten des Strahlenschutzes tätig, wobei der Pflege des Erfahrungsaustausches und der internen Weiterbildung ein hoher Stellenwert zugeordnet wird. Die Arbeit wird schwerpunktmäßig in derzeit 13 Arbeitskreisen durchgeführt. Für spezielle Aufgaben werden innerhalb dieser Arbeitskreise noch weitere Arbeitsgruppen eingerichtet. Die einzelnen Arbeitskreise und ihre Tätigkeiten werden in dieser Broschüre vorgestellt.

Einmal im Jahr richtet der Fachverband unter enger Beteiligung der thematisch zuständigen Arbeitskreise eine internationale Jahrestagung aus. Die Proceedings dieser Tagungen erscheinen in einer einheitlichen Ausgabe durch den Verlag TÜV Rheinland. Daneben erarbeiten die Arbeitskreise noch weitere Veröffentlichungen oder Lose-Blatt-Sammlungen zu wichtigen Fragen des komplette Liste der Veröffentlichungen Strahlenschutzes. Die des Fachverbandes - mittlerweile wurde die Zahl 96 erreicht - ist in dieser Broschüre enthalten. Darüberhinaus ist bis 1997 vorgesehen, das gesamte Schrifttum des Fachverbandes EDV-mäßig so aufzubereiten und fortzuschreiben, daß ein leichter Überblick sichergestellt ist.

Seit Anfang 1995 informiert die vierteljährlich erscheinende Fachzeitschrift "StrahlenschutzPraxis" mit einer Auflagenstärke von etwa 3000 Exemplaren sowohl zu einem Schwerpunktthema als auch aktuell über das weltweite Strahlenschutzgeschehen.

Weiterhin ist der Fachverband aktiv bei der Erstellung des kerntechnischen Regelwerkes im Unterausschuß "Strahlenschutztechnik" beteiligt und bemüht sich, die Tradition des Strahlenschutzes durch die Schaffung eines "Museums für Strahlenmeßtechnik" in Zusammenarbeit mit dem Bundesamt für Strahlenschutz aufrechtzuerhalten.

President's Message

30 Years of German-Swiss Association of Radiation Protection

The German-Swiss Association of Radiation Protection (FS) was founded in June 1966. With its now approximately 1400 members it has evolved into the third largest organization (after the US and France) within the International Radiation Protection Association (IRPA). A major contribution to the rapid growth in the last three decades was the union of FS with the "Association for Radiation Research and Protection" of the former German Democratic Republic in the year 1991.

The activities of FS span the whole range of Radiation Protection issues. The exchange of experience as well as the extension of the expertise of its members (for example by internal educational programs) are considered high priority issues within FS. The activities of FS are concentrated in 13 working groups. Specific questions or problems related to Radiation Protection are adressed by special task groups, which are formed within the framework of the respective working group. An overview of the range of activities covered by the individual working groups is given in this broschure.

In order to promote the exchange of experience on issues of Radiation Protection on an international scale, a yearly international conference is organized by FS. The individual working groups are fully integrated into the preparation and organization of the conference. The conference proceedings are published by "Verlag TÜV Rheinland". Other publications of FS include papers elaborated by the individual working groups, which adress specific issues in the field of Radiation Protection. Besides the published material, internal reports composed by the individual working groups or task groups are available as loose paper collections. The complete list of publications, which currently totals 96 contributions, can be found in this broschure. It is planned to catalogue the complete print material available by FS on electronic media by 1997, in order to provide a quick and complete overview of the available information in the future.

Since 1995 FS publishes the magazine "StrahlenschutzPraxis" in quarter yearly intervals. "StrahlenschutzPraxis" has reached a print volume of approximately 3000 copies. Each issue includes one in-depth coverage of a specific topic in addition to up-to-date information about the current worldwide status on Radiation Protection.

Through its participation in the Subcommittee "Radiation Protection Technology" of the Nuclear Safety Standards Commission (KTA) FS is also involved in the development and improvement of German Nuclear Regulation. Last but not least FS strives to uphold the tradition of Radiation Protection by the establishment of a "Museum for Radiation Protection Measurement Techniques" in cooperation with the Federal Office for Radiation Protection.

Was ist der Fachverband für Strahlenschutz e. V.?

Entwicklung

Im Jahre 1964 bildeten die im deutschsprachigen Raum wohnenden Mitglieder der amerikanischen HEALTH PHYSICS SOCIETY (HPS) die Zentraleuropäische Sektion der HPS. Diese wurde 1966 bei der Gründung der IRPA. INTERNATIONAL RADIATION PROTECTION ASSOCIATION. der als FACHVERBAND FÜR STRAHLENSCHUTZ e. V. (FS) eine selbständige Gesellschaft. Der FS vertritt Deutschland und die Schweiz in der Dachorganisation IRPA. An der Jubiläumsjahrestagung 1991 in Aachen vereinigte sich der FS mit der Vereinigung für Strahlenforschung und ehemaligen DDR Strahlenschutz (VSS) und hat der nun auch Strahlenschutzfachleute der neuen Bundesländer als Mitglieder.

Aufgaben und Ziele

Der Tätigkeitsbereich des FS umfaßt den gesamten Strahlenschutz und Gebiete. insbesondere Austausch verwandte von Informationen und Erfahrungen aus dem wissenschaftlichen und praktischen Strahlenschutz, Förderung von Forschung und Technik, Anregungen zu Aus- und Weiterbildung sowie zur Klärung von Rechtsfragen, Beteiligung an der Ausarbeitung von Verordnungen, Normen, Richtlinien. Gesetzen. Empfehlungen. Arbeitsvorschriften etc., Mitarbeit bei der Aufstellung von Plänen für Maßnahmen gegen radiologische Zwischenfälle und Katastrophen, Hilfe bei der Erhaltung und Wiederherstellung der radiologischen Sicherheit. Information der Öffentlichkeit

In seinen wissenschaftlichen Jahrestagungen markiert und publiziert der FS den jeweiligen Stand von Forschung und Praxis in allen Bereichen des Strahlenschutzes. Daneben führt der FS zahlreiche Seminare und Fortbildungsveranstaltungen durch.

Der FS unterhält enge Kontakte zu anderen Fachgesellschaften in den IRPA-Mitgliedsländern, besonders in Strahlenschutzmedizin, medizinischer Physik, Strahlenbiologie, Kerntechnik und im Gemeinschaftsausschuß "Strahlenforschung" (GAST), die sich auch in gemeinsamen Tagungen niederschlagen.

Arbeitskreise

Wichtigste Mittel für den ständigen Erfahrungs- und Informationsaustausch sind die gegenwärtig 13 Arbeitskreise: Uranbergbau und radioaktive Altlasten / Ausbildung / Dekontamination / Dosismessung externer Strahlung / Entsorgung

/ Inkorporationsüberwachung / Notfallschutz / Nichtionisierende Strahlung / Rechtsfragen / Strahlenwirkungen - Strahlenbiologie / Umweltüberwachung / Groupe Francophone / Nachweisgrenzen.

Publikationen

Die mittlerweile über 70 FS-Berichte, die ursprünglich im Selbstverlag publiziert wurden, erscheinen seit 1989 überwiegend in der Publikationsreihe "Fortschritte im Strahlenschutz" (ISSN 1013-4506) beim Verlag TÜV Rheinland, Köln. Sie umfassen die Tagungsberichte, Seminarberichte sowie zahlreiche Arbeiten aus den Arbeitskreisen des FS, z. T. als Lose-Blatt-Sammlungen. Die Zeitschrift StrahlenschutzPraxis aus dem Verlag TÜV Rheinland ist das Publikationsorgan des FS.

Mitgliedschaft im FS

Der FS hat derzeit etwa 1 400 Einzelmitglieder, davon etwa 150 aus der Schweiz, und 30 fördernde Firmenmitglieder. Seine Mitglieder arbeiten in Großforschungszentren, Universitäten, staatlichen Forschungsanstalten, Industrie (Produktion und Forschung), Behörden, Ingenieurbüros, Kernkraftwerken, Fachschulen, Medizin u. a.

Ordentliches Mitglied des FS kann werden, wer ein abgeschlossenes Hochoder Fachschulstudium bzw. eine gleichwertige Ausbildung oder eine besondere Strahlenschutzausbildung nachweist, eine mindestens einjährige Tätigkeit auf dem Gebiet des Strahlenschutzes und zwei FS-Mitglieder als Bürgen vorweisen kann. Über Sonderfälle mit angepaßten Bedingungen entscheidet der Vorstand. Es besteht auch die Möglichkeit der außerordentlichen (Studenten, Interessenten aus anderen Gebieten) und der fördernden Mitgliedschaft (Firmen, Institutionen). Die Bedingungen dafür sind beim Sekretariat zu erfragen.

FS-Mitglieder erhalten die Tagungsberichte und die meisten anderen Publikationen des FS gratis zugestellt. Der Bezug der Zeitschrift StrahlenschutzPraxis ist im Mitgliedsbeitrag inbegriffen.

Antragsformulare für die Mitgliedschaft sowie die Satzung des FS können beim Sekretär angefordert werden.

A Brief History of the Fachverband für Strahlenschutz

Formation

In 1964, members of the American HEALTH PHYSICS SOCIETY (HPS) living in German speaking countries established the Central European Section of the HPS. When the IRPA, the INTERNATIONAL RADIATION PROTECTION ASSOCIATION, was founded in 1966, this European Section became the FACHVERBAND FÜR STRAHLENSCHUTZ e.V. (FS), an independent society. The FS represents Germany and Switzerland in the parent organization IRPA. At the 1991 Anniversary Conference in Aachen the FS united with the Vereinigung für Strahlenforschung und Strahlenschutz (VSS) of the former German Democratic Republic, so that radiation protection professionals from the new federal states are now members of the FS.

Tasks and Goals

The field of activities of the FS comprises the entire radiation protection and related areas, especially the exchange of information and experiences from scientific and practical radiation protection, support of research and technology, proposals for training and education, as well as the clarification of legal issues, participation in preparing laws, regulations, standards, guidelines, recommendations, working regulations, etc., cooperation in setting up plans for provisions against radiological accidents and catastrophes, aid in maintaining and restoring radiological safety, information of the public.

On its annual scientific meetings, the FS outlines and publishes the respective state of research and practice in all areas of radiation protection. In addition, the FS hosts several seminars and education courses.

The FS maintains close contacts, through meetings and conferences, with the other professional societies in the IRPA member states, especially in radiation protection in medicine, medical physics, radiation biology, nuclear technology and in the committee "Radiation Research".

Working Groups

The most important means for the regular exchange of experiences and information are the presently 13 working groups: Radioactive Residues / Training and Education / Decontamination / Dosimetry of External Radiation / Waste Management / Incorporation Monitoring / Emergency Planning / Non-Ionizing Radiation / Regulations / Radiation Biology / Environmental Monitoring / Contacts of French Rad. Prot. Society / Detection Limits. A description of the activities of these working groups is included in this brochure.

Publications

More than 70 FS reports have so far been published. Originally, they were published by the FS, but since 1989 they regularly appear in the publication series "Progress in Radiation Protection" (ISSN 1013-4506) published by Verlag TÜV Rheinland, Cologne, including conference and seminar reports as well as numerous studies by the working groups of the FS, some of them as loose-leaf-collections. The magazine *Strahlenschutz*Praxis, published by the Verlag TÜV Rheinland, is the publication organ of the FS.

Membership in the FS

Presently (November 1995), the FS has about 1400 individual members, about 150 of them from Switzerland, and 34 supporting company members. Its members are working in large research centers, universities, governmental research institutes, industry (production and research), authorities, engineering offices, nuclear power plants, technical colleges, medicine, etc.

Prerequisite for becoming a regular member of the FS is a degree from a university or a technical college or an equivalent education, or special training in radiation protection; moreover, one must have worked for at least one year in the field of radiation protection, and one needs two FS members as guarantors. In special cases, the officers of the FS can decide if modified requirements are acceptable. One can also become an extraordinary member (students, interested persons from other fields) or a supporting member (companies, institutions). Please contact the secretary for more information.

Members of the FS get the conference reports and most other publications of the FS free of charge. Subscription to the *Strahlenschutz*Praxis magazine is included in the membership fee.

Application forms for membership as well as the statutes of the FS can be ordered from the secretary.

FS and IRPA, - a Close Relationship

The Fachverband's part in the early history of IRPA

The Fachverband was founded in June 1966, just 3 month earlier than IRPA in September of the same year. In the face of this, it seems unlikely that the Fachverband could have assisted in inaugurating IRPA. However, one of the former incarnations of the Fachverband had been the "European Radiation Protection Society", called into being in 1963, with Peter Courvoisier as President and Rupprecht Maushart as Secretary General. As the name already discloses, we had the ambition to form an international body from the start. We do know today that this couldn't work at that time, but the history of our failure is a different story that has been told elsewhere (1).

Nevertheless, the Health Physics Society, under the presidency of W.T. Ham, in 1964 took up the initiative to form a single international Health Physics or Radiation Protection Society. Karl Z. Morgan was appointed to investigate the matter and explore the opinion and the willingness of key persons in Radiation Protection all over the world. As a result of his contacts with about 70 countries, an Ad Hoc Committee was formed consisting of 46 persons from 25 countries. A list of their names is given in (2), among them P. Courvoisier and R. Maushart representing Switzerland and Germany.

The committee nominated a working group of 11 persons to develop the basic principles and the aims and objectives of the new society. The working group assembled for the first time on February 1, 1964, in London. This meeting was, so to say, the Big Bang of the IRPA, and it seems worthwhile to list the names of the attendees here. It was A. Benco from Italy, P. Courvoisier from Switzerland, P. Bonet-Maury, F. Duhamel and H. Jammet from France, W.G. Marly and B.A.J. Lister from the United Kingdom, S. Halter from Belgium, R. Maushart from Germany, and W.T. Ham and K.Z. Morgan from the USA. P. Courvosier and R. Maushart certainly wouldn't have been invited without the background of the European Society, the influence of this organisation being increased by F. Duhamel who equally was a member.

To make a long story short: A pro tempore Executive Council was formed that met in June 12, 1964 in Gatlinburg, TN, where again R. Maushart represented the European Society. At this meeting, the name IRPA for International Radiation Protection Association was agreed upon and, with the legal guidance of J.C. Hart, the framework of a constitution was developed. Already three days later, the Council presented in Cincinnati, OH, the proposals to the HPS Board of Directors which in turn approved them unanimously. It also decided to hold a pro tempore General Assembly still in the same year.

This historic meeting took place in Paris, France, from Nov. 30 to Dec. 3, 1964, with the then French Section of the HPS as host and P. Bonet-Maury serving as local chairman. 45 Delegates from 15 societies adopted the constitution and elected out of their ranks provisional Officers and a provisional EC with the mandate to prepare for the first IRPA International Congress and General Assembly that, as we all know, were held in September 1966 in Rome. Just to conclude this part of the story, I would like to mention that the Officers elected in Paris were K.Z. Morgan as Chairman, P. Caldirola as Vice-Chairman, P. Bonet-Maury as Secretary, P. Courvoisier as Treasurer and W.S. Snyder as Publications Director. K. Becker and R. Maushart were among the 18 members ot the provisional EC, the former having been the President of a newly-formed "Central European Section of the Health Physics Society" that comprised Germany, Austria and Switzerland and in 1966 was transformed into the Fachverband. Shortly after, the European Society was dissolved.

In conclusion we might say that the open-minded spirit of that time fed by P. Courvoisier and R. Maushart together with many other esteemed colleagues into the formation of IRPA from the very beginning, is still guiding the Fachverband für Strahlenschutz after 30 years of its existence.

FS Representatives in the Executive Council

Dr. Herbert Jacobs	EC Member	1977 - 1984
Dr. Rupprecht Maushart	EC Member	1988 - 1990
Dr. Peter Courvoisier	Treasurer	1966 - 1984
Dr. Werner Hunzinger	Treasurer	1984 - 1989
Dr. Rupprecht Maushart	Treasurer	1990 -
Dr. Herbert Jacobs	Vice President	1984 - 1988
Prof.Dr. Alexander Kaul	Vice President for Congress Affairs	1980 - 1984

FS Sievert Award Recipient

Prof.Dr. Wolfgang Jacobi	IRPA-7, Sydney	1988
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IRPA International Congress Organized by the FS

IRPA-6	Berlin	1984	Congress President	Alexander Kaul
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IRPA International Congresses with FS Contributions

IRPA-1	Rom	1966	Proceedings Co-Editor	Rupprecht Maushart
IRPA-7	Sydney	1988	Program Chairman	Hans Brunner
IRPA-9	Vienna	1996	Program Chairman	Herwig Paretzke

IRPA Regional Congresses with FS Participation

6th IRPA Regional CongressAms13th IRPA Regional CongressSalz15th IRPA Regional CongressVisb16th IRPA Regional CongressPari

Amsterdam, NL Salzburg, Austria Visby, Sweden Paris, France May 1975 Sept. 1986 Sept. 1989 Dec. 1990

StrahlenschutzPraxis, - the New Journal of the Fachverband

The launching to the Journal - A new aera for the Fachverband begins

When the General Assembly of the Fachverband accepted, at the 26th Annual Meeting in Karlsruhe 1994, a proposal of the Board of Directors to publish a Journal of its own, this decision opened a new aera in the 28 years old history of the society. Less than nine month later, 2500 copies of the first 80-page issue No. 1/95 were distributed among the Radiation Protection Community, published by the well-renowned TÜV Rheinland Verlag and edited by the Publications Officer of the Fachverband, Dr. Rupprecht Maushart, as Editor-in-Chief, and an editorial committee of Hans Brunner, Renate Czarwinski and Manfred Winter.

The objectives of the Journal: Better communication internally and externally

The Journal, named "StrahlenschutzPraxis" or aptly translated, Applied Radiation Protection, was not only meant as a replacement of the time-honoured Bulletin, edited for many years by our Secretary Hans Brunner and very popular among FS members, but admittedly known among members only. It was one of the objectives, true, to update the techniques of the internal information flow by publishing a full-fledged Journal. But the main intention, after all, was to give the Fachverband and its nearly one and a half thousand members an unmistakable face, and a voice, perceptible from the outside. To be able to communicate successfully with the public, a scientific society must find means to make itself known and accepted also beyond the narrow circle of experts. From the beginning, therefore, the StrahlenschutzPraxis was conceived as a journalistic publication. And it was clear from the beginning as well that this face of the Fachverband should be a typical and distinguishable one. That's why we choose a modern, easy layout and, moreover, a prominent structure for the contents.

The distinctive mark of the Journal: The Main Topic

The most prominent feature of each issue is the Schwerpunktthema or Main Topic, discussing a theme of general interest by all its aspects, and presented in a manner understandable also by the interested non-scientist. All authors of this section are invited, and the complete distribution is usually edited separately by an expert well aquainted with the subject. Main Topics in the five issues published up to now have been:

- Nuclear Crime, a real threat?
- Non-Ionizing Radiation, a stepchild of radiation protection?
- Radioactive Residues, a legacy of the atomic age?
- Radiation Protection in Medicine, a continuing challenge
- The Effects of Chernobyl, what do we really know after 10 years?

Following issues will feature:

- Radiation Exposure of the Worker, everything under control?
- Radiation Protection on Natural Sources, much ado about nothing?
- Environmental Monitoring Today, has experience made us wiser?
- Biological Effects of small Doses, what is knowledge, what is faith?

The intent of the Journal: To present professional information understandably and interestingly

Besides of the Main Topic, the StrahlenschutzPraxis carries, in each issue, three to five "free" scientific or technical contributions on mainly practical or applicational topics. But more than that, the StrahlenschutzPraxis features a number of regular columns packed with actual information, as

- Continuing Education
- Reports from Meetings
- Survey on Recent Publications
- New Laws, Rules and Regulations
- News from Agencies, Authorities and Commissions
- Book Reviews
- News from the Industry
- What You Should also Know
- Letters to the Editor
- Calender of Events
- and, last not least, the "News from the FS", the administrative and personal informations that are indispensible for the active life and the effective functioning of a society. Among these news, an important part is played by the FS Working Groups and the regular reports of their meetings and publications.

The ambition of the Journal: To help promoting the communication within and out of the Radiation Protection Community

The StrahlenschutzPraxis has been well received. A recent opinion poll among the readers showed 96 % approval. However, the Editors are not yet satisfied. We aim for a wider - and more international - distribution. True, the Fachverband is a German-speaking society, so naturally the main language of the StrahlenschutzPraxis is German. However, Radiation Protection is international, and we would like to receive - and accept - more contributions in English ore French as well. As a start, we envisage, as a Main Topic "European Aspects of Radiation Protection: What do we have in common, what is different?, and one of the main differences is the language. But with your help, dear colleagues from around the world, we shall overcome!

Anyhow Ask for a complementary copy of StrahlenschutzPraxis!

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1996

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Kurt Traub



Dipl.-Ing. Manfred URBAN



Arbeitskreissekretäre / Secretaries of Working Groups

"Uranbergbau und radioaktive Altlasten" AKURA Radioactive Residues

Dr. E. ETTENHUBER

Das Foto lag bei Druckbeginn nicht vor.

"Ausbildung" AKA Training and Education

Dr. H.G. VOGT



"Dekontamination" AKP Decontamination

Dr. B. STOLZE



"Dosismessung externer Strahlung" AKD Dosimetry of External Radiation

Dipl.-Phys. E. PIESCH



"Entsorgung" AKE Waste Management

Dr. G.G. EIGENWILLIG



"Inkorporationsüberwachung" AKI Incorporation Monitoring

Dr. K. HENRICHS



"Notfallschutz" AKN Emergency Planning

Dipl.-Phys. M. BAGGENSTOS



"Nichtionisierende Strahlung" AKNIR Non-Ionizing Radiation

Dipl.-Ing. N. KRAUSE



"Rechtsfragen" AKR Regulations

Dr. W. BISCHOF



"Strahlenwirkung - Strahlenbiologie" AKS Radiation Biology

Dr.med. G. HEINEMANN



"Umweltüberwachung" AKU Environmental Monitoring

Dipl.-Phys. M. WINTER



"Groupe Francophone" AK SFRP Contacts to French Rad. Prot. Society

Dr. Ch. MURITH



"Nachweisgrenzen" AKSIGMA Detection Limits Gemeinsamer Arbeitskreis des Nke (2.12) und des FS

Obmann: Prof.Dr. K. KIRCHHOFF



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Fact Files on the Working Groups (WG) of the Fachverband

What is the WG "Uranium Mining and Mining Residues" Doing?

German reunification caused a particularly significant problem in the area of radiation- and environmental protection: in Saxony and Thuringia, next to still operating uranium mining and milling facilities, numerous former uranium- and old mining estates were left which released radioactive substances into the environment. The effects on the environment from old mining and its relics and the radiation exposure of the population in such mining areas were mostly unknown. These had to be clarified as quickly as possible and alleviated where necessary.

During a seminar under the heading: "Mutual Efforts for Protection against Radiation", organized by the Association for Radiation Research and Radiation Protection of the former GDR and the registered Association of Radiation Protection Experts in October of I990, related problems were discussed for the first time. The seminar participants unanimously agreed on the Expert Association's need to recognize these extremely important problems and to contribute to their solution. As proposed by the former president, J. Narrog, the directorate decided to establish a special working committee after the two associations were unified.

Under presidental direction, the constitutional session of this working committee took place in Seelingstädt on 6/7 February, 1991, and was named: "Uranium Mining and Radioactive Mining Relics". A former SDAG Wismut uranium ore milling facility hosted the constitutional session, during the course of which an inspection tour of the mining facilities and the historical mining estates in the East-Thuringian mining region (Ronneburg/Seeligstädt) was organized to demonstrate to about 50 participants in the 1st session the dimension of the problems in need to be resolved. E. Ettenhuber was elected as secretary. Within the scope of the working committee's administrative directive, he was re-elected for the next 4 years during the 6th session of the working committee on 1/2 April of 1993. During the same session, K. Tägder was elected to serve as deputy.

AKURA - its membership has meanwhile nearly doubled - has held 10 sessions during the past 5 years. Not only members of the Expert Association were extremely interested in these sessions but other parties as well. The working committee's sessions are usually attended by about 50 persons.

To members from the old federal states and also to some from the new federal states, the radiation protection problems and questions connected with the former mining operation and its historical burden represented new professional territory. Therefore, it was and is the major task of AKURA to contribute to the further instruction of participants in every working committee session and to create a permanent forum for an inter-exchange of expert opinions during the sessions.

The discussion were focussed on the following topics:

- activity planning / existing situations and radiation protection assurance,
- limits/reference values
- radiation exposures from radon and its daughter nuclides.

Already during its constitutional session, the working committee had decided to further the factual discussion of radiation protection problems arising from mining activities and historical mining estates by contributing its own studies and resolutions of practical questions.

For this purpose, working groups were formed to treat, among others, such topics as

- occupational radiation exposure of workers from radon/radon daughter nuclides and an analysis of criteria so far used for identifying occupational diseases in uranium miners,
- measurement of radon/radon daughter nuclides,
- environmental monitoring of mining activities.

The results of such studies were published in a series of Expert Association publications on radiation exposure and radiation induced occupational diseases in uranium mining by, for example, Wismut (FS-92-62-AKURA, FS-92-62/2-AKURA), on measurements of radon and radon daughters (FS-94-75-AKURA, loose-leaf collection) and were contributing to reports in the journal *Radiation Protection Practice*, published by the Expert Association on environmental control issues (environmental control: nuclear fuel cycle and mining, edition 3/95) as well as on measurements used as a basis for decisions about the release of contaminated areas from control (intended for edition 3/96).

Next to the named topics, the working committee is currently occupied with the question: "how should the historical mining residues be in future incorporated into the radiation protection system, and is 'radiological mining residue a plausible definition?"

It will be a major task of AKURA to direct the focus of attention on the opinions of the Expert Association concerning "radiation protection in mining activities and in historical mining residues" in the process of amending the Radiation Protection Ordinance.

Secretary

Dr. E. Ettenhuber, year of birth: 1941, study of chemistry at the Humboldt-University in Berlin, Ph.D. 1968. From 1969 up to 1990 staff member of the National Board of Nuclear Safety and Radiation Protection of the GDR (SAAS), scientific work in the field of environmental radioactivity, environmental monitoring and radiation protection of the public.

Since 1990 staff member of the Federal Office for Radiation Protection working in the field of radiation exposure in mines and mining areas.

What is the WG "Training and Education" Doing?

The working group "Training and Education" (*AKA*) holds a privileged position within the FS, since no special subject is discussed in all its diversity, but, in principle, all radiation protection issues pertaining to everyday practice are treated from the point of view of training and education.

The goal of training and education for the *AKA* is to convey competence; therefore, the *AKA* is primarily concerned with educational aims and contents, as well as methodical-didactic principles, the basic idea being to realize an effective and integrated educational concept which takes into account the requirements prevailing in practice, which is accepted by the persons concerned and avoids unnecessary formalizations.

In addition, the *AKA* sees its task in supporting persons having responsibility in the field of radiation protection by working out standardized work papers for radiation protection practice and for training and education, respectivelý. The persons addressed are radiation protection officers and representatives, and other persons working in radiation protection, as well as the instructors concerned with the training and education of these persons.

To enhance the motivation and to promote the success of persons participating in radiation protection courses it is one of the essential concerns of the *AKA* to check frequently what kind of professional knowledge and skills actually have to be passed on during these courses, what additional background information should be offered and how an effective arrangement of these lessons may look like. The discussions in the *AKA* between representatives of the organizers of such courses, supervisory boards and the persons participating in these courses are to a substantial degree influenced by the constraint to cut costs and the desire to offer practice-oriented instruction - the basic idea being that only qualified training and education will make the use of ionizing radiation possible and justifiable.

After its formation, the *AKA* has first been concerned with working out guidelines for technical instructions (technique) for the German Radiological Protection Ordinance; in the meantime, the draft of a new version has been presented. In addition, a catalog of educational aims was prepared (presently under revision). This will present the instructors with a selected framework of topics for their lectures and the time scope of the individual subject areas becomes manageable. From the point of view of the *AKA* such catalogs of educational aims may also contribute to quality assurance, e.g. in radiation protection courses in the medical field.

Another project of the *AKA* is the preparation of catalogs of examination questions for tests in radiation protection courses, providing the participants with guidelines for their level of education.

To support radiation protection officers and representatives, the *AKA* is presently preparing standardized radiation protection instructions for rather diverse fields of activity; moreover, the *AKA* is concerned with the formulation of the yet undefined "necessary level of knowledge … of persons working in related fields", which has to be provided for approval according to the German Atomic Law, the Radiation Protection Ordinance and the Roentgen Ordinance.

AKA: 58 members, 6 working groups, 6 publications. 1st meeting: February 25, 1975; 50th meeting: Spring 1996

Secretaries: 1975-1977: Dr. S. Lenkeit; 1978-1993: R. Spiess, presently: Dr. H.-G. Vogt.

Secretary

Dr. rer. nat Hans-Gerrit Vogt, born 1940; staff member of the Center for Radiation Protection and Radio-Ecology at the University of Hannover; Chairman of the AA2.8 "Shieldings" of the DIN Standardization Committee.

What is the WG "Operational Radiation Protection" Doing?

Summary

During the 17th session of the working group for Decontamination in February of 1996, it was decided to extend the topical range and to set new work goals. Accordingly, the working group will in future be known as Working Group for Operational Radiation Protection. The working group understands itself as a

contact point and shall provide support to radionuclide users from isotope laboratories and nuclear installations and to employees of competent authorities dealing with and clarifying daily occurring practical radiation protection problems. The focus is on topics such as: quality assurance in radiation protection, licensing pursuant to the Radiation Protection Ordinance, measuring equipment reference values, release measurements, release limits, decontamination of persons and objects, protection technology and protective means.

The manifold structured membership of the working group is prerequisite for a successful work benefitting the user of radioactive substances in all areas of application. The willingness to be receptive for treating simple and difficult radiation protection problems will lead to effectiveness in practice, a principal demand made on FS.

Foundation

The Association of Radiation Protection (FS), on the occasion of its 20th annual meeting on 6 October 1987, had established a Working Group for Decontamination (AKK) - the forerunner of the Working Group for Operational Radiation Protection.

Its members - from areas such as training, research, nuclear power plants, industry and decontamination facilities - assumed the task to develop practical solutions for problems occurring within the entire range of radioactive contamination. This, for example, led to a loose-leaf collection of data and facts on handling radionuclides and decontamination in radionuclide laboratories. The collection of such data is continuously extended and revised. In the person of Dr. H.-J. Reinecke, the FS directorate had found an experienced expert and organiser who was head of the Working Group for Decontamination up to the end of the year 1995.

At an unscheduled meeting of several working group members in November of 1995 in Berlin, it became evident that the working group needed to extend its goals and newly define its topical range. It had become apparent for some time that the confinement of AKK work to contamination-decontamination problems needed to be expanded and that topics were addressed that went far beyond the scope of these problems. First ideas on this subject were discussed during the meeting, the resulting proposals were forwarded to the directorate and to all members of the working group.

In future, the working group will be named Working Group for Operational Radiation Protection, designated to serve as contact point and be of assistance to radionuclide users from isotope laboratories and nuclear installations and to co-workers who, in their official capacity, process and clarify the daily problems occurring in practical radiation protection. Close collaboration with all other FS working groups is a principal requirement. The directorate was in support of this new topical orientation, in particular since a similar approach had repeatedly been discussed by this panel some years ago.

At the 17th session of AKK, a new secretary was elected for the working group.

Dr. Barbara Stolze, member of AKK since 1991, was elected as new secretary for the working group. She has been active for many years in the field of radiation protection, in research and training in the area of handling open and sealed radioactive substances at the Mecklenburg-Vorpommern State Institute for Personal Dosimetry and Radiation Protection Training.

The ideas and proposals for a topical re-orientation brought up in Berlin, inclusive of the continued treatment of contamination-decontamination problems which belong to practical radiation protection, were discussed along with additional ideas and conceptual proposals by members of the working group. The large majority of members was in favour of the future title: Working Group for Operational Radiation Protection (AKP).

Objectives

Already at the institutional meeting of AKK, the motto was known to be: from practice for practice. This applies to AKP in even greater extent and, for practical radiation protection purposes, is further extended by the necessary transposition of legal and official regulations into practical and relevant solutions at the workplace. All members of the working group were aware of the fact that the demand for and the volume of work may equally be as limited as the resources for achieving the protection goal and that assistance in minimizing radiation exposures may not always be fulfilled by the immediate adaptation of proposals for practical use.

AKP will process practice-oriented references, report on experiences, develop selective problem solutions and recommend, inform and, together with the established working groups, act as contact partner or, at least, mediator between other FS working groups and expert panels.

The practical solution of radiation protection problems in areas such as nuclear power plants, research, medicine, industry and competent authorities shall be the working goal of AKP.

Work areas

Quality assurance and radiation protection

subjects: definitions, internal and external auditing, certifications, accreditations, radiation protection areas, radioactive transports, incorporation, tensions between customer and supplier, competent authorities, in-service inspections

Licensing procedures pursuant to the Radiation Protection Ordinance subjects: requirements for licensing applications and their extent

Measurement methods (together with AKE)

subjects: reference values, release measurements, release limits

Decontamination of objects

Subjects: collecting point for experiences, decontamination procedures, special problems in nuclear installations (including decommissioning), separate treatment of procedures for radionuclide laboratories and nuclear installations

Decontamination of persons

Subjects: skin contamination measurements, reference values for person contamination and assessment of skin exposure from radiation after contamination, person contamination - review of known data, skin contamination as a safety-relevant event, preparation of decontamination instructions

Protection technology, protective aids

Subjects: compilation of surveys on commercially sold radiation protection aids and techniques, collection of reports about individual solutions experienced in various areas of application

The participation of some working group members in DIN (Standards)committee activities is an opportunity to directly influence standardization from the critical viewpoint of practical necessity. Also, for the practice-related training of radiation protection officers and groups of persons with the necessary expertise, as e.g. in the area of decontamination, the submission of frequent questions about specific radiation protection problems to the Working Group for Training may be of significance. Similar aspects apply also to cooperative work with other working groups.

The working group would also like to publish the problems by which it is approached and their respective solutions in form of contributions to the journal "Strahlenschutzpraxis".

B. Stolze

What is the WG "Dosimetry of External Radiation" Doing?

The goal of the foundation of the working group Dosimetry of External Radiation (*AKD*) in 1974 was to treat all measuring-technical questions of personal and local dosimetry, i.e. radiation protection measuring technique in a comprehensive manner. In the field of external dosimetry, the *AKD* would like to be a mediator between the practical tasks of radiation protection and the technical progress in the measuring technique. To this end, it offers a forum of discussions for practical radiation protection physicists, representatives of the German Bureau of Standards (*PTB*) and universities, supervisory authorities, engineers designing measuring systems and manufacturers of measuring

system, the goal being to exchange experiences, to improve the measurement and calibration methods, to coordinate the on-going development work, as well as administrative procedures and measuring-technical requirements.

Current issues of radiation protection measuring technique determine the variety of interesting topics, including the information and exchange of experience on new developments, trial and use of instruments and measuring methods, but also the discussion and comments on drafts and publications of national and international bodies, guideline requirements, DIN standards, recommendations of the IEC, ISO, ICRU and ICRP. Although the requirements for radiation protection monitoring are governed by regulations and guidelines, these do not automatically allow the continuous adjustment of the radiation protection measuring technique to the state of the art. The selection and use of radiation protection measuring methods are, therefore, of particular interest to the user.

The catalog of topics comprises comparative measurements, requirements for instruments, qualification tests, calibration regulations, measurement of the natural radiation level, photon radiation fields up to 10 MeV, Beta/Gamma dosimetry, neutron measurement methods, mixed radiation fields. As a result of the comparative measurements organized by the *AKD* in 1978, the test results of 43 dosimetry measuring systems from 17 laboratories were presented. The test program yielded new insights by recommending a measuring method for environmental monitoring using solid body dosimeters taking into account all relevant factors. The results of the FS and Euratom reports have entered into the respective DIN standards and the PTB design approval; on an international level they served as a basis for minimum requirements and technical recommendations for solid body dosimeters used in personal dosimetry and in environmental monitoring. Other comparative irradiations were carried out by the GSF for higher doses, and by CERN in relativistic myon radiation fields.

Over the last ten years, the *AKD* has persistently been concerned with the new ICRU units of measure. The results of the respective AKD-PTB comparison program for personal dosimeters were presented at an *AKD* seminar and in a PTB report. A new comparison program that is presently run by the PTB is testing the long-term use of local dosimeters and doserate measuring systems in the environment and examining the inherent background of the detectors and the response to cosmic radiation.

An important task for the *AKD* is the presentation and discussion of design engineering work at an early stage before its publication, which for all parties involved will result in manifold inspirations, improvements, as well as a productive coordination of the work. One example that may be cited in this context is the current discussion on the state of the art, conference reports, the presentation of developments in the industry, of measurement and calibration methods, the issue of Beta and photon measurement for radiation with low penetration depth. On the annual conferences of the FS on measuring technique in Alpbach (1975), Munich (1982), Aachen (1991) and Karlsruhe (1994) a well-balanced survey on the state of development in dosimetric measuring technique was presented, in addition to individual contributions. On behalf of the Federal Secretary for the Environment, the *AKD* prepared the draft of a guideline for physical radiation protection control of external radiation.

The persistent great interest of the members in meetings of the *AKD*, with an average participation of 30 members, is without doubt the exchange of experience that takes place in a casual, open and discriminating atmosphere and is cultivated with great intensity and professional competence. It offers all parties involved manifold inspirations, improvement of the working foundation for the representatives of the professional bodies, and new impulses to improve radiation protection monitoring for instrument manufacturers and users.

Secretary

Dipl. Phys. Ernst Piesch, born 1930; studied physics at the TU Karlsruhe, graduated in 1955. After working in the industry, scientific assistant at the Research Center Karlsruhe since 1959, since 1968 director of the department Dosimetry, since 1974 secretary of the *AKD*.

Papers on the development and improvement of dosimetric measuring methods, photo luminescence and thermo luminescence dosimetry for personal and environmental monitoring, Beta partial body dosimetry, albedo neutron dosimetry, neutron dose measuring systems, nuclear trace detectors for neutron and radon dosimetry.

Cooperation in DIN, SSK, Eurados, ICRU committees and the Editorial Board of the magazines Radiation Protection Dosimetry and Radiation Measurements. Co-organizer of various international conferences.

What is the WG "Waste Management" Doing?

Radioactive waste is produced whenever people are working with radioactive substances in research, medicine, industry and energy industry. If residual substances cannot be re-used again, they must be disposed off as radioactive waste.

The disposal of radioactive waste includes collection, processing, packaging, transportation, intermediate disposal, and, ultimately, final disposal. Various radiation protection aspects are affected, concerning the staff, the public and the environment, for example, radiation exposure during the individual steps of disposal, the definition of reference values for the release of selected radioactive waste in accordance with the Nuclear Act, proposals for a definition of non-radioactive substances, measurement concepts and methods, proposals for the

harmonization of the Nuclear and Hazardous Goods Act for the transportation of radioactive substances, and the discussion of final disposal concepts, e.g. in deep geological formations or in depots close to the surface. Final disposal must be the ultimate step of disposing radioactive waste, and ultimately it has to guarantee adequate radiological protection of the biosphere over a long period of time.

These examples show that the FS is faced with challenges to meet the goals defined in its statutes. The maintenance and furtherance of the protection against the harmful effects of ionizing and non-ionizing radiation is a scientific and professional task. Working groups are founded to discuss technical issues, and this also applies to the waste management. The foundation assembly of the working group waste management (AKE) was held in 1985 in Switzerland, Mr. E. Stalder was elected secretary of the AKE, who held this office with success until 1992. Mr. G. Eigenwillig was elected as his successor, with Ms. U. Kastl being his assistant. Presently, the AKE has more than 60 members working in research, industry, energy industry, expert organizations and supervisory authorities. This allows the exchange of know-how and experience in different areas of waste management and the professional discussion of different positions. The topics mentioned in the second paragraph as an example are reviewed in working groups. The resulting comments are discussed and passed in the AKE. The AKE meets twice a year for working sessions. Depending on the topic, the comments of the AKE are presented to the Fachverband or to external organizations (e.g. Federal Secretary of the Environment, BfS, BMV, HSK). On this basis, papers for the public relations of the FS are prepared, with Mr. J. Brauns being in charge.

The *AKE* organized the 1995 Annual Meeting of the FS "Waste Management: Re-Use - Disposal". Legal and technical topics, as well as staff requirements, were treated in survey lectures which presented a general summary of waste management. Individual aspects were presented in depth by means of brief lectures and posters. In addition, a scientific program, cultural events and an industry exhibition were organized.

Secretary

Dr. Gerd Georg Eigenwillig, born 1939; studied chemistry at the Phillips University at Marburg, Ph.D. in 1968. Since 1969 jobs in nuclear technology: chemical and radiochemical process techniques, safety analyses, radiation protection, waste management. Responsible official for marketing of waste management facilities and final disposal at Siemens AG. Periodical cooperation in committees of KTA, IAEA, BG FuE, FS, SSK, HVBG and DGB. Secretary of the *AKE* since 1992.

What is the WG "Incorporation Monitoring" Doing?

Incorporation means the absorption of radioactive substances by the body; it has to be monitored for dosimetric purposes when handling open radioactive substances.

This issue raises a wide variety of questions:

- Assessment of incorporation risks at the workplace,
- Definition of suitable monitoring programs (e.g. definition of monitoring intervals),
- Selection of monitoring methods (e.g. room air monitoring) and measuring methods,
- Interpretation of measured results to determine the dose.

This variety is reflected in the structure of the working group "Incorporation Monitoring" (*AKI*): The members of this working group, which was founded as one of the first working groups in 1970, are radiation protection professionals in factories, users in industry and hospitals, government officials and research scientists.

About 40 of the total of 100 members of the *AKI* participate in the semi-annual meetings. Their main purpose is the open and stimulating exchange of experience on measuring-technical, organizational and scientific developments and trends. More comprehensive work is usually done in smaller groups which meet more often and the results are published, after discussion by the entire WG, usually in the form of loose-leaf-collections.

Over the last few months, the *AKI's* attention has focused on the formulation of the drafts of three guidelines. The outcome of this work on behalf of the Federal Secretary for Environmental Protection and Reactor Safety was a consistent framework of rules which, on the basis of unified, scientific knowledge and goals, regulates various aspects of incorporation monitoring: the necessity of monitoring provisions, criteria for defining a monitoring program, procedures for interpreting monitoring data and requirements for the measuring locations to be set up by the supervisory authorities. These guidelines ensure consistent and effective provisions concerning monitoring; in the near future, the second of these guidelines will take effect, the third one is presently being discussed by the competent boards. This kind of devising regulations ensures that different users' experiences and needs, as well as the conflicts involved will be taken into account at a very early stage; this encourages their acceptance and facilitates their rapid transformation into practice.

One aspect which is increasingly gaining in importance is education: the steadily decreasing number of experienced radiation protection professionals is also quite conspicuous in the area of internal dosimetry. In addition, the conversion of the above mentioned guidelines requires new proposals for further education. The *AKI* has, therefore, participated in two workshops, in cooperation with the

Federal Institute for Radiation Protection, which reviewed partial aspects of incorporation monitoring (e.g. the practice of room air monitoring); together with the University of Dresden and the State Institute for Person Dosimetry in Berlin, the tradition of the Reinhardsbrunner Educational Conferences was revived with great success, starting with a conference on the actual trends in incorporation monitoring. At the 25th anniversary of its foundation in November 1995, the working group reflected on its orientation for the years ahead. The discussion focused on issues such as the increased participation on an international level, the presence in the professional world and the public, as well as questions of quality assurance. However, the *AKI* will never lose sight of its primary concern: the intense and open discussion among professionals.

Secretary

Dipl. Phys. Dr. Klaus Henrichs, born 1951; studied physics at the University of Cologne, Ph.D. from the Institute for Medicine of the KFA Jülich, post-graduate studies in Medical Physics. From 1978 to 1992 research on dosimetry and the effects of incorporated radionuclides at the University of Berlin and the GSF Research Center for the Environment and Health. Presently director of the Radiation Protection Section of the Siemens AG. Since 1989 secretary of the *AKI*; his assistant is Dr. A. Dalheimer, Federal Office for Radiation Protection, Neuherberg.

What is the WG "Emergency Planning" Doing?

In 1991, the Board of Directors of the Fachverband Strahlenschutz had the idea of setting up a working group which covers the area of emergency planning. At the foundation assembly held on December 3 and 4, 1991 at the National Alarm Center in Zurich, the secretary of the FS, H. H. Brunner, presented a discussion paper which mentioned a wide variety of topics to be covered, among them the following emergencies:

- industrial accidents involving radioactive substances
- transportation accidents
- emergencies in nuclear power plants
- satellite crash
- accidents involving nuclear weapons.

The working group "Emergency Planning" (AKN) is concerned with the assessment of the effects of such accidents on the environment, with concepts for taking provisions for the protection of the population, with the education of disaster control officials and the information of authorities and the population in case of an emergency.

In the meantime, the field of activities has been specified in detail and published in the appendix to the Munich seminar volume FS-94-74-T. At this seminar "State of Emergency Protection in Germany and Switzerland", the WG Emergency Planning, as it is called now (since we are not planning accidents, but ensure the protection of the population), introduced itself to a larger audience of professionals.

Presently, the WG has 25 members working in the following areas: operators of nuclear facilities, supervisory authorities, disaster control authorities, engineering companies, university and research institutes. This ensures that valuable ideas from all areas will be taken into account and that good results will be obtained. The seminar in Munich has confirmed this. A major privilege of the *AKN* is that its members can discuss any issue on a professional and cooperative basis, free from any objectives that must be reached or pressure exerted by their superiors.

Secretary of the *AKN* is Martin Baggenstos from the main department for safety in nuclear facilities, HSK, of the Swiss supervisory authorities. Although the number of members is quite low compared to other working groups, the *AKN* covers a broad spectrum of interests and responsibilities in the area of emergency planning. The foundation assembly made it quite evident that close cooperation with other working groups, especially the *AKU* (Environmental Monitoring) and the *AKA* (Training and Education), is quite important in certain areas of emergency planning.

In the meantime, the *AKN* has organized eight meetings, each being dedicated to a different leading topic. Typical topics were:

- interference reference values and practical application in emergency planning
- the influence of filtered pressure relief of the containment on foreseen emergency planning provisions
- criteria for triggering warnings and alarms information of authorities and the public

The highlight of our activities so far was certainly the above mentioned seminar "State of Emergency Protection in Germany and Switzerland" in October 1994, with Prof. Dr. Anton Bayer from the Federal Office for Radiation Protection as chairman. The goal of the seminar was to introduce the working group and its field of activity to the professional public. The field was thoroughly investigated in 50 lectures. A broad spectrum of topics was discussed, from the organization of emergency planning, the operator's tasks and the assessment of the situation, to medical aspects, bi-lateral cooperation and information of the public. More than 100 persons participated in this seminar.

The WG Emergency Planning has a special significance for the German-Swiss cooperation since 60% of the Swiss nuclear power plants are located close to the German border (Baden-Württemberg).

The *AKN* puts a special emphasis on practical issues of emergency planning. In this respect, the exchange of experience between Germany and Switzerland is very important. Let us illustrate this by two examples:

- The recommendation for triggering disaster pre-alarm or disaster alarm, respectively is outlined in the operating manual in the alarm regulation, taking into account facility, emission and immission criteria. In a similar manner, criteria for triggering the rapid alarm system for the population (RABE) in Switzerland are stipulated in the emergency regulations of the factories.
- The documentation for the operation of emergency stations after a nucleartechnical accident prepared the ground for planning so-call contact stations in Switzerland that are foreseen for taking care of the population.

The WG Emergency Planning has grown into a body for discussion and exchange of experience. In addition to the conferences and the Munich seminar, 28 publications in the area of emergency planning were exchanged for mutual information. I hope that this portrait will help the *AKN* to gain new members; in particular, the disaster control authorities are numerically under-represented in our working group.

Secretary

Dipl. Phys. Martin Baggenstos, born 1945; studied experimental physics at the Universities Zurich and Basel. Since 1969 reactor physicist at the Swiss Institute for Reactor Research (now Paul Scherrer Institute) at the research reactor SAPHIR. Since 1980 director of the section Effects of Accidents and Emergency Planning at the main department for the Safety of Nuclear Facilities. Member of the Swiss commission for AC protection which is responsible for the preparation of protective measures for the population. Cooperation in various international bodies, i.e. the group "Emergency Matters" which is organizing the international emergency training (INEX). Secretary of the *AKN* since 1991.

What is the WG "Non-Ionizing Radiation" Doing?

Twenty years ago, the Fachverband für Strahlenschutz (Commission on Radiation Protection) has created AKNIR (a division dealing with non-ionizing radiation) as in addition to the ionizing radiation the discussion on "non-ionizing radiation" gained more and more importance. The increasing concern of the public over the effects of non-ionizing radiation due to exposure to static electric or magnetic fields, electromagnetic fields, ultraviolet radiation and laser

radiation, expressed in key words like "Elektrosmog" has required a big interest on information and the need for protection measures.

The daily problems with potential exposures to non-ionizing radiation are accompanied by the rapid development of technology, so that this issue gains importance in the occupational safety area, too. Since all public groups are exposed to non-ionizing radiation the task for health safety and safe technology was created, which is managed by AKNIR.

One of the main goals of AKNIR is the preparation of relevant publications in order to submit information for physics, biology and medicine and inform about the effects of this radiation. These publications give the necessary support to occupational safety experts and inform the public on these subjects in order to undertake the necessary measures, but also to clarify the concerns raised by the media to the public on non-ionizing radiation providing relevant information.

A frequency range division of the electromagnetic radiation with regard to the potential biological effects results in two main areas: ionizing and non-ionizing radiation.

In case of ionizing radiation which is dealt with by other divisions of the Commission on Radiation Protection, the single radiation doses have enough energy to change the chemical status of a molecule by ionization. This shows - an exception are non-stochastic phenomena - that it is impossible to determine safe threshold (levels) limit values where no damages occur, so that the definition of the radiation risk has been defined. Radiation protection is to be supported on a benefit risk assessment.

The radiation doses of the non-ionizing radiation (Table) have in comparison so little energy that biological effects in general depend upon how many radiation doses can be effective at one place at the same time.

Table Spectrum non-ionizing radiation

	Frequency range	Wavelength range
optical radiation	3000 THz - 300 GHz	100 nm - 1 mm
high frequency radiation	300 GHz - 30 kHz	1 mm - 10 km
		5
low-frequency radiation	30 kHz - 3 Hz	10 km - 10° km
static fields	0	
ultrasound	> 10 kHz	< 20 mm
		0.00
infrasound	> 16 Hz	> 20 m

One can specify threshold levels for irradiation, below which no harmful biological effects occur, but lower values below these threshold levels do no longer guarantee any additional safety. The determination of limit values depends on how precise the knowledge of threshold levels and the range of individual sensitivity is.

In fact, the non-ionizing radiation was always a part of the natural human environment, but the technical development has led to an increase of the radiation exposure level. It should be considered, however, that within the broad frequency range of the non-ionizing radiation there are large differences in the radiation physics and the effect on biology of living matter. A statement that, eg "natural radiation is useful - artificial radiation harmful" is wrong. For example, the natural solar radiation which is indispensable for life on earth can initiate the feared melanoma (skin cancer) by the ultraviolet dose of radiation.

The interacting mechanisms of the non-ionizing radiation with the organisms depend very much on the frequency and the wavelength range, so that extrapolations from one frequency range to another are not allowed in most cases.

In many cases the interacting mechanisms are not known and as the biological models are missing so far, the concern of the affected persons remains, even though the "safe" limit values are adhered to.

Secretary

Dipl.-Ing. Norbert Krause, born 1942; studied "Technical Engineering" at University Essen form 1962 to 1965 and "Electrotechnical Science" at Technical University Darmstadt from 1968 to 1972; since 1982 Director of Department Electrical Engineering of the Professional Association of Electrical and Light Engineering, Cologne; expert on non-ionizing radiation, construction and operation of electrical installations

What is the WG "Regulations" Doing?

The working group "Regulations" (*AKR*) is one of the youngest of the 13 working groups of the Fachverband. A rather casual remark or reminder at the Fachverband's meeting in Reinhardsbrunn in November 1991 that the FS should prepare a statement concerning the revision of the basic radiation protection standards of the European Community based on the general ICRP recommendation no. 60 of 1990/91 and the adjustment of the German Radiation Protection Act as a consequence thereof, has caused the Board of Directors of the Fachverband, following a proposal of the then president Jürgen Narrog, to establish a special working group for legal issues and to ask Werner Bischof as

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its interim secretary to arrange for its foundation (Board of Directors Meeting of February 18/19, 1992 in Stuttgart, see FS/RS circular letter 1/92, p. 11).

It should be undisputed that radiation protection, i.e. the protection against the hazardous effects of ionizing and non-ionizing radiation, is to a rather extensive degree controlled by international and national legal regulations and their interpretation and application. This finds its expression in the statutes of the Fachverband passed in December 1988 which stipulate that the Fachverband's task (§ 2, sub-sections 2d, e and g) is to clarify "legal issues arising out of the application of international or national regulations and especially those related to the responsibility of persons occupationally involved with radiation protection by exchanging information with legal experts", to support "standardization in the field of radiation protection by preparing proposals for technical rules and assisting in their revision and passing" and to discuss and comment on "bills concerning the area of radiation protection".

These tasks in accordance with the statutes of the Fachverband also summarize the area of activity of the AKR; it should be borne in mind, however, that the AKR is not authorized, neither by its statutes nor on a regular basis by the Board of Directors, to represent the Fachverband to the outside; rather it is acting as a consultant in legal issues for the president, officers, the board of directors and other working groups and cooperates closely with the bodies and institutions of the Fachverband für Strahlenschutz. The AKR prepares decisions and comments of the Fachverband for the legislative bodies and the responsible Federal and State Departments, as well as international and national organizations in the field of radiation protection.

In accordance with the Board of Directors' decision to found a new working group, the constituent assembly of the *AKR* took place on November 6, 1992 in Göttigen in the conference room of the legal faculty of the university. Up to the time of this assembly, twelve members of the Fachverband had signaled their interest in working for the *AKR*. In accordance with the rules of procedure of the working groups, W. Bischof was elected secretary for four years on the $2^{nd}AKR$ meeting in Offenbach on December 12, 1992.

To emphasize the bi-lateral character of the German-Swiss Fachverband and to adequately take into account the development of the Swiss radiation protection law in the work of the *AKR*, W. Zeiler, section head for physics and biology in the radiation protection department of the Swiss Federal Office for Health in Bern was elected assistant secretary on June 25, 1993. One of his very first tasks was the discussion and preparation of a statement concerning the revised version of the EURATOM basic radiation protection standards, which the *AKR* passed on to the Board of Directors on February 5, 1993 and in a revised version on April 19, 1993. A supplementary statement on the revised version of the EURATOM basic radiation protection standards of July 20, 1993 was submitted on October 11, 1993. The statements prepared by the *AKR* were then

mailed by the Board of Directors of the FS to the Federal Secretary for Environmental Protection and Reactor Safety in Bonn.

The *AKR* which now has 21 members from various areas of practical radiation protection, most of them being concerned with legal matters, has, in the meantime, addressed most current issues pertaining to the legislation and legal application of radiation protection. The number of members of the working group and their professional competence did not require, so far, any discussion of the assignments in special study groups; rather, all issues are regularly prepared by individual members and then reviewed in the working group and settled. It is quite remarkable that both graduated legal experts of the *AKR* do not hold three different opinions (which is quite common among lawyers), but that they agree in most cases.

In autumn 1994 the working group has passed, after thorough preparation, a recommendation concerning the new definition of the term "non-radioactive substance" which, however, shall be discussed again upon request by the working group "Waste Management" with its responsible study group. The *AKR* will provide papers and proposals for topics pertaining to legal issues for the special committee "Points of View of the FS on Radiation Protection", the focus being on the preparation of models for the organization of radiation protection by different users of radiation within their factory. In the future, one of the main tasks of the *AKR* will be to accentuate the point of view of the Fachverband für Strahlenschutz in the forthcoming amendment of the Radiation Protection Ordinance and the Roentgen Ordinance. On behalf of the *AKR*, the secretary is regularly supplying the "*Strahlenschutz*Praxis" magazine with reports under the heading "All Right".

Secretary

Dr. jur. Werner Bischof, born 1928; studied legal and political science at the Universities Münster and Göttingen; 1953 state examination at the Higher Regional Court at Celle, 1958 great state examination in the Department of Justice, Hannover; from 1958 to 1993 staff member of the Institute for International Law at the University Göttingen (Department of Atomic and Radiation Protection Law), responsible official for international and national radiation protection law.

Co-editor of the Göttinger Atomic Law Catalog (so far 33 volumes); editor in charge of the publication series "Nuclear Energy Law" (16 volumes) published by the Federal Department of Atomic Issues/Federal Department of Science and Research/ Federal Department of the Interior; representative of the Federal Government on various panels and symposiums of the IAEA in Vienna and at the OECD/NEA in Paris; fellow-worker in the area of radiation protection law in the EC Commission in Luxemburg.

Numerous publications in the field of international comparison of law and national radiation protection law, editor of the Bonn commentary on the Constitutional Law (section 74, no. 11 a and section 87 c), commentaries on the Roentgen Ordinance (1977) and the Radiation Protection Precaution Act (1988); monograph on French, Italian, Dutch, Belgian, Luxemburgian and Swiss radiation protection law. Since 1993 free-lance member of the Institute for International Law in Göttingen.

What is the WG "Radiation Biology" Doing?

Exposure to ionising radiation is for most of the exposed persons today confined to low doses. Knowledge about the effects of ionizing radiation on biological life on the other hand is derived from rather high doses applied by atomic bombs, industrial accidents or therapeutic application in medicine. Thus the discussion on the biological effects of low doses remains speculative but gains growing interest in the public.

The Fachverband für Strahlenschutz therefore 1991 founded a working group (Arbeitskreis Strahlenwirkungen/Strahlenbiologie)

- to collect scientific information on the effects of low dose radiation,
- to discuss scientific publications on this problem,
- to inform the radiation protection society by joining their meetings with papers and discussion,
- to maintain the contact to scientific societies concerned with radiation research (GAST),
- to prepare information for the public.

The main topics of present interest are:

- molecularbiological markers of radiation effects on the single cell
- prenatal effect of radiation exposure
- epidemiology of the effects of low dosis of radiation and its special problems
- discussion of possible hormesis effects of low dosie radiation

So far the working group was very active in the annual FS-meeting of Rügen 1993 and will organize the annual meeting at Hannover 1996 together with the societies joined in the "GAST" (Gemeinschaftsausschuß Strahlenforschung).

Secretary

Dr.Dr.med. Günter Heinemann, born 10.09.1928; first study of theology with degree of Doctor of theologie; second study of medicine; qualification in Internal Medicine; medical officer of nuclear power plants of PreussenElektra.

What is the WG "Environmental Monitoring" Doing?

The promotional meeting of the **A**rbeits**K**reis **U**mweltüberwachung, AKU (Working Group on Environmental Monitoring) was held in Bonn on April 3, 1973. AKU will convene in Fribourg in March 1996 to hold its 55th meeting. Since its foundation more than 23 years have passed which, in our opinion, reflect successful activities in a field of radiation protection awakening the interest of the population to an extent hardly experienced in any other domain, and, actually, also serving the interest of the population. From the very beginning, monitoring of radiation exposure in the vicinity of nuclear facilities as well as monitoring of environmental radioactivity, improvement of the underlying concepts, harmonization and optimization of methods of measurement applied and their description have been the subject and paramount concern of AKU.

In conformity with the reason of its foundation and its name, AKU has been predominantly committed to elaborating recommendations for practical implementation of environmental monitoring. AKU has not deemed its task to pursue the objectives of radioecological research, but rather to profit from radioecological findings in order to make routine monitoring effective. Although it may appear strange, it has been this restriction to a subject which has motivated members of Fachverband Strahlenschutz (FS) working in very different domains to participate actively in AKU. Among the members of AKU are representatives from supervisory and licensing authorities established under the Atomic Energy Act, from head offices of the Federal Government, from the Federal Office for Radiation Protection, from Technical Inspectorates, from operators of nuclear power plants and other nuclear facilities, from national research institutions, from universities, and from industrial firms manufacturing measuring instruments in Germany and in Switzerland. The strength of AKU originates in its mixed membership: Comments by AKU on environmental monitoring carry the seal of a broad consensus; they are not narrowed to the way an institution or pressure group sees the problems. It was probably one of these reasons why AKU had been requested by the Federal Ministry of the Interior, which at the time was responsible for environmental monitoring, to cooperate in elaborating the "Guideline on Emission and Environmental Impact Monitoring of Nuclear Facilities" which was published in November 1979.

At one of the first AKU meetings already, the decision was taken to publish "Recommendations for Environmental Radioactivity Monitoring" as a loose-leaf edition. The first part delivery (basic rules) was distributed in December 1979, the forth part delivery in December 1992. Meanwhile, the AKU loose-leaf edition comprises nearly 500 pages. It is planned to distribute the fifth part delivery in autumn 1996. And, how could it be otherwise, updating of the leaves has long since become a permanent task.

The Chernobyl event was a particular challenge, above all also to AKU. Complying with a task from the FS directorate, AKU sifted and evaluated more than 20,000 single values of measurement in 1986 and had the courage to take the mean of the measured results applicable to the old federal states of Germany and to four regions of Switzerland. As early as in October 1986, a report including these results was published and in March 1987 the English translation entitled "Radioactivity in the Federal Republic of Germany and in Switzerland after the Reactor Accident at Chernobyl - Results of a Survey of the Working Group on Environmental Monitoring". More than 2000 copies in total were distributed upon request. A compilation of roughly 1000 results of measurement related to strontium was published in October 1987.

Demands and proposals advanced by AKU regarding improvement of precautionary measures are contained in the study "Tasks of Radioactivity Measurement in the Environment following Long Range Transport upon Accidental Release of Radioactive Substances", printed in the FS Circular No. 4/87. AKU gave priority to the task of providing a survey of already available quick methods of determination of artificial alpha-emitters. In November 1990 a comprehensive report was published on "Rapid Methods for the Analysis of Plutonium and Other Actinides in Environmental Samples" in the series entitled "Progress in Radiation Protection", published by Verlag TÜV Rheinland.

By publication in July 1989 of "Recommendations for a Revision of the Guideline on Emission and Environmental Impact Monitoring of Nuclear Facilities" AKU initiated decisively the revision of this guideline. The revised version and its Annex A, applicable to nuclear power plants, prepared by a Subcommittee of the Radiation Protection Commission, was published in August 1993. Also then AKU was given the opportunity of intensive cooperation.

The number of AKU members has increased substantially, above all after the Chernobyl accident. According to the mail list of the secretary membership counts more than 60 persons. The meetings are attended by just more than 30 persons on the average. It is justified to ask whether a working group with such a great number of members is still able to work effectively. We think that we have solved this problem: Since 1986 many small ad-hoc working groups have been established which were charged to elaborate drafts of subjects previously specified by the plenary meeting. At present, five AKU working groups are concerned with the following subjects:

- emission monitoring of non-nuclear facilities
- emission and environmental impact monitoring during the decommissioning phase of a nuclear power plant;
- hot particles in environmental samples;

- practice of in situ gamma-spectrometry;
- uniform way of reporting the results of routine emission and environmental impact monitoring of nuclear facilities.

Besides the opportunity of helping supplement our loose-leaf edition, AKU offers to all its members a forum for presenting results of their own practical experiences, for presenting measuring techniques and measuring results, for asking questions and drawing the attention to problems, or just for getting informed about current developments in our technical field.

Everybody who wants to learn more about AKU should attend one of its meetings. The liberal general rules of procedure of the FS working groups permits to invite guests at any time. Normally, two meetings are held every year, one in spring and one in autumn.

Secretary

Dipl.-Phys. Manfred Winter, born 1935, Head, Environmental Protection Department of Central Safety Department, Karlsruhe Research Center, since 1969 member of Fachverband für Strahlenschutz, since 1974 secretary of FS Working Group on Environmental Monitoring (AKU), 1989 - 1992 member of FS Board of Directors, President of the FS-Annual Conference 1993

What is the WG "Sigma" Doing?

The working Group "AK Sigma" was founded in 1981 as a joint group of "Fachverband für Strahlenschutz" and "DIN" (German Institut für Standardisation). The goal of this working group is to design state-of-the-art definitions of Limit of Detection and Limit of Decision for radioactivity measurement procedures and to standardize the methods for calculation of these values based on mathematical statistics. The basic research at University Hannover is financially supported by the German Federal Minister for Environment, Nature Conservation and Nuclear Safety.

In WG Sigma cooperate 18 experts from university Instituts (Universität Hannover [ZSR, LMS]), research centers (Forschungszentrum Karlsruhe, Forschungszentrum Jülich), federal and state authorities (Physikalisch-Technische Bundesanstalt [PTB]), Bundesamt für Strahlenschutz [BfS, KTA], Bundesamt für Gewässerkunde [BfG], Bayerisches Landesamt für Umweltschutz, Niedersächsisches Landesamt für Ökologie [NLÖ], Nordrhein-Westfälisches Landesamt für Arbeitsschutz [LafA], and several special factories and distributers. The secretary work is done by the German Institute for Standardisation (DIN).

Usually the working group has four two-day meetings a year. After checking the international scientific literature and fixing the main statistical framework in a first national standard (DIN 25482-1), national standards for several different special applications were drafted by ad-hoc task groups built of few members of the working group each. So up now seven national standards are prepared or under preparation concerning the followings topics: Limit of Detection and Limit of Decision for integral radioactivity measurements without and with sample treatment taken into account (DIN 25482-1 and DIN 25482-6), for alpha, gamma and high resolution gamma spectrometry (DIN 25482-4, DIN 25482-2 and DIN 25482-5), for linear scale rate meters (DIN 25482-3), for in-stream radioactivity measurements on filters (DIN 25482-7). Some of them are accompanied by application sheets. Other topics are in discussion.

Parallel to the above mentioned standards more than 25 papers were published in scientific journals or presented as contribution to international scientific meetings giving background or additional information. Beside this these standards were topics of many workshops held with interested users. Some companies converted the contents of these standards into computer programs they added to commercial software packages for computer aided measuring device.

Few years ago some of the national standards were translated into English and proposed to the International Standardization Organisation, Technical Committee 85 (ISO/TC85). The ISO/TC85/WG2 use them as a base for its own standards concerning Limit of Detection and Threshold of Decision for radioactivity measurements. The voting procedure in 1995 resulted in 82 % international acceptance of the first three ISO standards in the field.

Secretaries

1981 - 1983 Prof Dr. Heinrich Schultz, Physicist, University of Hannover; Head of the Radiation Protection Group

Since 1983 Prof.Dr. Klaus Kirchhoff, Physicist, Lower Saxony State Office for Ecology, Head of Radio Ecology Group

Activities of the German Swiss Association of Radiation Protection (FS) within the Nuclear Safety Standards Commission (KTA)

The Nuclear Safety Standards Commission (Kerntechnischer Ausschuß - KTA) was established by public notice of September 1st, 1972 within the portfolio of the Federal Ministry for Science and Education. In September 1986 it was transferred into the competence of the Federal Ministry for the Environment, Nature Concervation and Nuclear Safety.

KTA is responsible for the establishment of safety standards and promotes their application in all those fields of nuclear technology, where - based on the available experience - a common opinion of experts of the nuclear industry, the utilities, the licensing authorities and independent expert organizations can be achieved.

KTA consists of 50 experts representing various aspects of nuclear technology and regulation. The following five fields are represented equally by 10 experts each:

- Nuclear Industry (design and construction of nuclear facilities),
- Utilities,
- Federal and State Licensing and Supervision Authorities,
- Independent Expert Organizations, and
- Other Organizations and Agencies active on the field of nuclear technology (such as FS).

KTA-Subcommittees are formed whenever necessary. At present the following subcommittees have been installed:

- Subcommittee STANDARDS PROGRAMME AND BASIC ISSUES (UA-PG)
- Subcommittee PLANT- AND CIVIL ENGINEERING TECHNOLOGY (UA-AB)
- Subcommittee OPERATION (UA-BB)
- Subcommittee ELECTRICAL ENGINEERING, INSTRUMENTATION AND CONTROL UA-EL)
- Subcommittee MECHANICAL COMPONENTS (UA-MK)
- Subcommittee REACTOR CORE AND SYSTEMS LAYOUT (UA-RS)
- Subcommittee RADIATION PROTECTION TECHNOLOGY (UA-ST)

The Subcommittee Radiation Protection Technology (UA-ST) is responsible for the elaboration of standards proposals in the fields of activity control, radiation protection and radiation monitoring, control and instrumentation. Dr. D. E. Becker and - as his substitute Dr. J. Czarnecki - are representatives of FS in this subcommittee. The subcommittee UA-ST elaborates all draft safety standards (safety standards proposals) for the KTA 1300 series (Work Protection), the KTA 1500 series (Radiological Protection and Monitoring) and the KTA 3600 series (Activity Control and Activity Management). Additionally, all already defined safety standards belonging to the above mentioned three series are re-evaluated in 5 year intervals by UA-ST.

The following KTA safety standards are available in English translation:

- 1301.1 Radiation Protection Considerations for Plant Personnel in the Design and Operation of Nuclear Power Plants; Part 1: Design
- 1301.2 Radiation Protection Considerations for Plant Personnel in the Design and Operation of Nuclear Power Plants; Part 2: Operation
- 1502.1 Monitoring Radioactivity in the Inner Atmosphere of Nuclear Power Plants; Part 1: Nuclear Power Plants with Light Water Reactors
- 1502.2 Monitoring Radioactivity in the Inner Atmosphere of Nuclear Power Plants;

Part 2: Nuclear Power Plants with High Temperature Reactor

- 1506 Measuring Local Dose Rates in Exclusion Areas of Nuclear Power Plants
- 1507 Monitoring the Discharge of Gaseous, Aerosolbound and Liguid Radioactive Materials from Research Reactors
- 1508 Instrumentation to Determine Atmospheric Diffusion of Radioactive Substances
- 3604 Storaging, Handling and On-Site Transportation of Radioactive Substances (other than Fuel Elements) in Nuclear Power Plants

Museum of Radiation Protection

Early in the year 1992 some members of the German-Swiss Association for Radiation Protection (FS) put forward the idea, that FS should actively support the collection of historic material and equipment related to the history of Radiation Protection in Germany. Early activities concentrated on the field of radiation monitoring and measurement, so that - at least in the beginning - the collection of historic hardware was emphasized. That this collection of historic equipment, documents and books should eventually turn out to be the foundations of a Museum of Radiation Protection, hadn't really been in the minds of the organizers at that time. However, the establishment of a Radiation Protection Library in parallel with the collection of historic equipment had already been thought of.

After first public announcements were made, the number of donations offered to the collection rose steadily. However, most donated devices were in a condition that either demanded repair or a thorough reconstruction. Not only the generally poor condition of the donated items turned out to be a major problem, but what also hadn't been foreseen beforehand was the fact, that several donations contained - knowingly or not knowingly - radiation sources or were otherwise contaminated. Therefore it wasn't possible to just let the equipment be picked up by a delivery service or let it be sent by mail, as had been the original idea, rather, the donations had to be handed over in the presence of an expert. For example, a bucket containing a radium sleeping cushion and a radium cup (to produce radon containing drinking water), which had come into the possession of the museum, had to be disposed of under quite substantial cost, because the donor declined to take the item back.

These problems eventually lead to a detailed discussion with the following results:

- The museum should be established in cooperation with the Federal Office for Radiation Protection (BfS). It should be situated in the new office building of the BfS in Salzgitter and should be run by the BfS's Division of Press and Public Information.
- The collection should rather be historic in character than resemble a university collection.
- The presentation of historic equipment should be the main objective, however, the museum should also hold an experimental section.
- The museum should become a museum on radiation protection and not a museum on the various applications of radiation.

- Wherever possible, historical lines of development of measurement instrumentation should be pointed out.
- In order to be able to organize first exhibitions, the donated items should be repaired and short descriptions for the respective pieces of the exhibition should be prepared.
- The establishment of a sponsering club for the raising of funds was discussed.

A directorate meeting of FS was called in Remscheid-Lennep, where the local X-Ray museum was visited and the various problems associated with the establishment and management of a museum of a similar type were discussed with the local museum's director.

On March 2nd, 1995, the first meeting of the newly established "museum-commission" of FS was held:

- The main topic of the meeting was the discussion of the further proceedings, especially concerning the estimated space requirements, finances and general concepts. Reports about the actual inventory of the collection (equipment and documents) were reviewed and a visit to the collection in order to get a first hand view of the items was provided.
- It became apparant, that a basic concept for the museum couldn't be formulated without specific knowledge of the housing situation, which wasn't known at that time. Insofar no detailed concepts with respect to the future of the museum could be developed. A minimum space requirement of 300 square meters for the exhibition was established.
- A committment was made by FS to set aside a yearly amount of 10000 DM for the purposes of the museum, which should be used for purchases of literature and for the provision of general services.
- The founding of a sponsering club wasn't approved. Rather, FS itself should provide the necessary funds and support. This should be announced to the public.
- However, the establishment of a "museum working group" within the framework of FS was approved.
- Not only workplace-based radiation monitoring equipment should be included in the exhibition, but also environmental monitoring devices and systems.

- The complete theoretical and practical reconstruction of a measurement instrument line was considered problematical, especially with respect to the acquisition of missing instruments and the repair of inoperable devices. Not only a significant amount of labour would be required to restore equipment to its original state, possibly even putting it into an operable condition, but it would also be necessary to have access to documents and first hand knowledge from the beginnings of radiation protection, both of which are difficult to acquire.
- The experiences of other institutions should be sought, as the members of the museum-commission don't have an explicit pedagogic or museum related background. It was also considered fruitful to plan future exchanges with other museums.

The historic collection now numbers more than 140 devices and components. Unfortunately, all measurement devices are post-war developments. Instrumentation constructed before 1940 is still in high demand and would be very welcome. The collection of measurement devices built in the former German Democratic Republic is complete.

Some items of the collection were already exhibited in the Berlin and Salzgitter office buildings of the BfS (for example in connection with the Berlin colloqium in 1995). Also a moving exhibition was organized in connection with the FS meeting "Radioactive Waste Disposal" in Wolfenbüttel. Some pieces can be viewed in a glas box situated in the office rooms of the State Office for Human Dosimetry and Education on Radiation Protection (Landesanstalt für Personendosimetrie und Strahlenschutzausbildung). These exhibitions should lead to a steady increase in the public recognition of the Museum of Radiation Protection.

Now, that the space available for the museum in the new office building of the BfS in Salzgitter is roughly known, thought has to be given to define the museum's main objectives. Only by determining a long term strategy, a conceptual framework which lays a solid foundation for the future can be developed. For this purpose it is necessary to build up a continuous experience exchange with other museums and to establish contacts with institutions dealing with museum pedagogical issues. First steps in this direction have already been taken. It is becoming more and more apparent, that the establishment of an effective conceptual framework for the museum, which shall appeal to a broad public, still needs some thinking over. This task, together with the efforts undertaken to complete the collection, is considered to be of high importance.

According to the current time schedule the Museum of Radiation Protection will present itself in the new office building of the BfS at the end of the year 1997.

Jürgen Mielcarek

Tagungen und Seminare des Fachverbandes Congresses and Seminars of the Association

1. Jahrestagung Jülich, 1. - 3. Juni 1966 2. Jahrestagung Neuherberg/München, 11. - 13. Mai 1967 3. Jahrestagung Interlaken, 26. Mai - 1. Juni 1968 4. Jahrestagung Berlin, 28. - 30. Mai 1969 5. Jahrestagung CERN Genf, 26. - 30. April, mit SFRP 1971 6. Jahrestagung Karlsruhe, 17. - 19. Mai 1972 7. Jahrestagung Bern, 21./22. März 1973 Seminar, Bern. 20. März: Nichtionisierende Strahlung Seminar, Karlsruhe, 15./16. Nov, Raum- u. Abluftüberwachung... 8. Jahrestagung, Helgoland, 23. - 28. September 1974 9. Jahrestagung, Alpbach (Tirol), 6. - 8. Oktober 1975 10. Jahrestagung, Giessen, 9. - 12. Juni, mit Strahlenschutzärzten 1976 **IRPA-4** Paris 1977 11. Jahrestagung Karlsruhe. 3./4. November 12. Jahrestagung Norderney, 2. - 6. Oktober 1978 13. Jahrestagung / 7. IRPA-Regionalkongress 15. - 19. Oktober Köln 1979 mit NVS (NL) und ÖVS (A) **IRPA-5** Jerusalem 1980 14. Jahrestagung Jülich, 29. - 31. Mai mit Strahlenschutzärzten 15. Jahrestagung, gemeinsam mit SFRP Lausanne, 30. September -1981 2. Oktober 16. Jahrestagung München, 19. - 22. Oktober, gestaltet von den AK 1982 1983 17. Jahrestagung Aachen, 8. - 10. Juni IRPA-6 Berlin, 7. - 12. Mai 1984 18. Jahrestagung Travemünde/Finniet, 6. - 10. Oktober 1985 Reg. IRPA-Kongress /19. Jahrestagung FS-ÖVS, Salzburg 1986 20. Jahrestagung Basel, 6. - 9. Oktober 1987 IRPA-7 Sydney komb. mit IAEA-Konferenz 1988 21. Jahrestagung Köln, 7. - 9. November Reg. IRPA-Kongress / 22. Jahrestagung Visby (Gotland S), 10. - 14. 1989 September Gemeinsame (23.) Jahrestagung Göttingen, 19. - 22. September (mit 1990 VDSÄ, SGSMP, DGMP) FS-VSS-Seminar Berlin, 19./20. September Kolloquium, Berlin, 6./7. Mai 1991, Messung von Radon und 1991 Radonfolgeprodukten 24. Jahrestagung und Jubiläumstagung Aachen, 30. September -1991 4. Oktober Seminar Johanngeorgenstadt, 28./29. Oktober, Radonschutz bei 1991 Bausanierung (für Bausachverständige) Seminar, Reinhardsbrunn (VSS), 14. - 17. November 1991 1991

- 1992 Gemeinsames Seminar SFRP/FS und Jahrestagung, Fribourg, 15. -17. September
- 1993 25. Jahrestagung Binz auf Rügen, 28. 30. September
- 1994 Seminar, Basel, mit EKS: Ethik und Strahlenschutz, 15. März 26. Jahrestagung Karlsruhe, 24. - 26. Mai Seminar, München, AKN: Stand des Notfallschutzes, 19. - 21. Oktober
- 1995 27. Jahrestagung Wolfenbüttel, 25. 28. September
- 1996 28. Jahrestagung Hannover, 23. 25. Oktober
- 1997 29. Jahrestagung Luzern, 15. 18. September

Publikationen des Fachverbandes Publications of the Association

Jahrestagungen, IRPA-Kongress (Annual meetings, IRPA-Congresses):

(FS-4)	1. Jahrestagung: "Erfahrungen bei der Anwendung von Strahlenschutzregelungen in Kerntechnik und Industrie"
(FS-5)	2. Jahrestagung: "Halbleiterdetektoren in Strahlenschutz und Strahlenmesstechnik", 11 13.5.1967
(FS-6)	Neuherberg/Munchen (vergriffen) 3. Jahrestagung: "Strahlenschutz der Bevölkerung bei einer Nuklearkatastrophe", 26.5 1.6.1968 Interlaken (CONE-680507)
(FS-7)	4. Jahrestagung: "Strahlenschutzprobleme bei der Freisetzung und Inkorporation radioaktiver Stoffe" 28 - 30 5 1969 Berlin
(FS-8)	5. Jahrestagung: "International Congress on Protection Against Accelerator and Space Radiation", 2 Vol. 26. 30.4.1971 (CERN Genf (Report CERN 71-16)
(FS-9)	6. Jahrestagung: "Strahlenschutz am Arbeitsplatz" 17 19.5.1972 Karlsruhe (= KfK-1638)
(FS-10)	7. Jahrestagung: "Die Strahlenbelastung der Bevölkerung durch medizinisch-diagnostische Verwendung ionisierender Strahlen" 21 /22 3 1973 Bern (vergriffen)
(FS-11)	8. Jahrestagung: "Strahlenschutz und Umweltschutz"
FS-75-12-T	9. Jahresteluräfe" 6 8. 40.1075 Alphaeb (Tiral (verriffen)
FS-76-13-T	10. Jahrestagung: Betrieblicher Strahlenschutz Erfahrungen und Konsequenzen aus technischer Sicht"
FS-77-16-T	11. Jahrestagung: "Anforderungen an die Fachkunde von Strahlenschutzverantwortlichen oder -beauftragten im nichtmedizinischen Bereich" 3./4.11.1977 Karlsruhe
FS-78-18-T	12. Jahrestagung: "Radioaktivität und Umwelt", 2 Bde.
FS-79-20-T	13. Jahrestagung + 7th Regional Congress of IRPA (mit NVS und OeVS): "Radioaktive Abfälle" 16 19.10.1979 Köln (Mai 1980)
FS-80-25-T	14. Jahrestagung: Industrielle Störfälle und Strablenevnosition" 29 - 31 5 1980 KEA Jülich (Juni 1980)
FS-82-27-T	15. Jahrestagung: "Radiologische Auswirkungen von Kernkraftwerken und anderen kerntechnischen Anlagen auf den Menschen und seine Umwelt" (mit SFRP)
FS-83-30-T	16. Jahrestagung: "Strahlenschutz-Messtechnik" 1 9 22.10.1982 München (Juni 1983), GSF-Bericht A4/83, ISSN 0721-1694
FS-83-32-T	17. Jahrestagung: "Strahlenschutzaspekte bei radioaktiven Kontaminationen" 8 10.6.1983 Aachen

FS-84-35-T	Compacts 6th International Congress of IRPA (International Radiation Protection Assoc.: "Radiation - Risk - Protection", 3 vol. 6 12.5.1984 Berlin , Verlag TÜV Rheinland, Köln
FS-85-37-T	18BN 3-88585-170-9 18. Jahrestagung: "Strahlenexposition der Bevölkerung"
FS-86-40-T	 10. 10. 1965 Travemunde/Finitet 19. Jahrestagung / 13. IRPA-Regionalkongress Salzburg 15 19. Sept. 1986: "20 Jahre Erfahrung im Strahlenschutz Rückblick und Ausblick -/ Twenty Years Experience in Radiation Protection - Review and Outlook" (OeVS/FS) (Hrsg. A. Hefner) New (1989)
FS-87-44-T:	(Dez 1987)
FS-88-47-T:	21. Jahrestagung: "Nichtionisierende Strahlung", Köln, 7 - 9 Nov 1988 (Okt. 88)
*FS-89-48-T:	22. Jahrestagung / 15. IRPA Regionalkongress: "The Radioecology of Natural and Artificial Radionuclides", Visby, Gotland, Schweden 10 15. Sept. 1989 (NSFS/FS, editor: W. Feldt, Verlag TÜV Rheinland, Köln, Sept. 1989) ISBN 3.88585-668.9
*FS-90-60-T:	23. Jahrestagung "Strahlenschutz im medizinischen Bereich und an Beschleunigern" Gemeinsame Jahrestagung Göttingen 1990, Tagungsband (Compacts), Hrsg.: D. Harder. ISBN 3-88585-860-6, Verlag TÜV Rheinland, Köln 1990
*FS-91-55-T	24. Jahrestagung / Jubiläumstagung: "Strahlenschutz für Mensch und Umwelt - 25 Jahre Fachverband für Strahlenschutz", Tagungsband (Hrsg. Dr. H. Jacobs, Verlag TÜV Rheinland Köln Sept 1991)
FS-92-63-T	Abstracts Jahrestagung 1992 "Umweltauswirkungen kerntechnischer Anlagen", Gemeinsames Seminar FS-
**	Proceedings in: "Radioprotection": "Environmental Impact of Nuclear Installations" Special Issue Feb. 1993.
*FS-93-67-T	"Umweltradioaktivität, Radioökologie, Strahlenwirkungen, 2 Bde. 25. Jahrestagung, Binz auf Rügen 28 30. Sept.93, Hrsg. M. Winter, A. Wicke, Sept. 1993, 1058 S
*FS-94-71-T	"Strahlenschutz: Physik und Messtechnik", 2 Bde. 26. Jahrestagung Karlsruhe 24 26. Mai 1994, Hrsg: W Koelzer R Mausbart Mai 1994
*FS-95-77-T	"Entsorgung", 2 Bde., 27. Jahrestagung, Wolfenbüttel 2529. Sept., Hrsg: J. Brauns, G.G. Eigenwillig

FS Jubiläen etc. (FS anniversaries etc.)

(FS)	"10 Jahre Fachverband für Strahlenschutz" Jubiläumsschrift
*FS-91-54	"25 Jahre Strahlenschutz - Erfahrungen und Ansichten", Jubiläumsband, (Hrsg. R. Maushart, Verlag TÜV Rheinland
	Köln , Juni 1991)
(FS)	"25 Jahre FS - Fakten und Daten" (Hrsg. R. Maushart) Sept. 1991
-> FS-76-16-T; FS-8	36-40-T; FS-91-55-T;

Allgemeine Strahlenschutzfragen (General topics of radiation protection)

FS-90-53-T	"Gemeinsam für den Strahlenschutz - Together for
	Radiation Protection" Tagungsbericht FS/VSS-Seminar
	Berlin 19./20.10.90 (BfS/SSK April 1991)
(FS)	"Standpunkte des FS zu Fragen des Strahlenschutzes",
	Diskussionspapier des Direktoriums, 1986
*FS-94-72-T	"Ethik und Strahlenschutz", Seminar Basel 15. März 1994,
	Hrsg: S. Prêtre, J. Roth, K. Traub, JF. Valley

-> FS-4; FS-11; FS-78-18-T; FS-84-35-T; FS-86-40-T; FS-91-54; FS-91-55-T;

Altlasten, Radon, Uran / AKURA (Mining residues, Radon, Uranium)

*FS-91-56-T	"Messung von Radon und Radonfolgeprodukten"
	Kolloquium 6./7. Mai 1991 Berlin (1991)
FS-92-62-AKURA	"Strahlenexposition und strahleninduzierte
	Berufskrankheiten im Uranbergbau am Beispiel Wismut -
	Radiation Exposure and Radiation Induced Occupational
	Diseases in Uranium Mining Using Wismut as an Example."
	(Red.: G.G. Eigenwillig) April 1992
FS-92-62/2-AKURA	2. erweiterte Ausgabe Nov. 1993
FS-94-75-AKURA	"Übersicht über die Messung von Radon und Radon-Folge-
	produkten", Loseblatt Arbeitskreis Uranbergbau und
	radioaktive Altlasten (AKURA), Sept. 1994

-> FS-90-53-T; FS-84-35-T; FS-85-37-T; FS-86-40-T; <u>FS-94-71-T</u>

Arbeitsplatzüberwachung (Monitoring of workplaces)

FS-2

"Raum- und Abluftüberwachung auf Radioaktivität" Kolloquium Arbeitskreis "Arbeitsplatz-Überwachung Karlsruhe 15./16.11.1973 (= Bericht KfK-1899)

-> FS-5, FS-7, <u>FS-9</u>, FS-76-13-T; FS-83-32-T; FS-84-35-T; FS-86-40-T;<u>FS-94-71-T</u>

Ausbildung / AKA (Education)

FS-81-26-AKA "Lernzielkatalog zur Fachkunderichtlinie"

Loseblattsammlung Arbeitskreis Ausbildung

FS-83-31-AKA "Hinweise zur Durchführung von Belehrungen nach § 39 der Strahlenschutzverordnung" Arbeitskreis Ausbildung (1983) FS-90-52-AKA: "Prüfungsfragen zur Fachkunde nach RöV", Katalog der

FS-90-52-AKA: "Prüfungsfragen zur Fachkunde nach RöV", Katalog der Arbeitsgruppe Prüfungsfragen des Arbeitskreises Ausbildung (Dr.H.G. Vogt et.al.) Nov. 1990

*FS-92-64(/1/2)-AKA"Muster-Strahlenschutzanweisungen", Band 1: Okt. 1992, Band 2: 1993 FS-93-66-AKA Prüfungsfragen zur Fachkunde nach StrlSchV, Arbeitskreis Ausbildung, 1993

-> <u>FS-77-16-T;</u> FS-84-35-T; FS-86-40-T; FS-91-55-T;

Beschleuniger (Accelerator)

-> <u>FS-8;</u> <u>FS-90-60-T;</u>

Dekontamination / AKP (Decontamination)

FS-86-41-APD:	"Empfehlungen für die Personendekontamination in
	Kernkraftwerken", Arbeitsgruppe Personendekontamination
	(1986), in Rundschreiben 2/87 des FS.
FS-89-41-AKK	"Empfehlung zur Personendekontamination - Standpunkt
	des Arbeitskreises Dekontamination", revidierte Ausgabe
	Nov. 1989 (R. Bartels et.al.), ersetzt FS-86-41-APD
FS-94-73-AKK	"Daten und Fakten zum Umgang mit Radionukliden"
	(Nov. 1995)

-> FS-6; FS-9; FS-76-13-T; <u>FS-83-32-T</u>; FS-84-35-T; FS-86-40-T; FS-87-44-T;

Dosimetrie externer Strahlung / AKD (Dosimetry of External Radiation)

FS-3	"Betadosimetrie - Probleme und Tendenzen", Arbeitskreis Dosismessung externer Strahlung (1975) (= Bericht KfK-2185)
FS-78-17-AKD	"Thermolumineszenz- und Phosphatglas-Dosimetersysteme im Bereich kleiner Dosen - Vorstellung eines Test- programmes und Ergebnisse an 43 Systemen" Arbeitskreis Dosismessung externer Strahlung, März 1978 (= Bericht KfK-2626)
FS-79-19-AKD	"Tendenzen in der Personen- und Umgebungsdosimetrie" Seminar Arbeitskreis Dosismessung externer Strahlung und GSF. 30.11./1.12.1978 Neuherberg (März 1979)
FS-82-29-AKD	"Technische Empfehlungen für Festkörperdosimeter zur Umgebungsüberwachung", Arbeitskreis Dosismessung externer Strahlung
FS-86-38-AKD	J. Böhm, E. Piesch, D. Regulla (Hrsg): "Neue Messgrössen für Personendosimeter - Ergebnisse des Vergleichsprogramms 1985 -" Seminar AKD/PTB 26./27.11.1985 Braunschweig PTB-Dos-14, ISSN 0172- 7095

-> <u>FS-5;</u> FS-6; FS-8; FS-75-12-T; <u>FS-83-30-T;</u> FS-84-35-T; FS-86-40-T; FS-90-60-T; FS-91-55-T; <u>FS-94-71-T;</u>

Entsorgung / AKE (Waste management)

- FS-91-61-AKE	Definition nichtradioaktiver Stoffe, 1991, RS 2/91 "Beseitigung von radioaktiven Reststoffe: Übersicht über gebräuchliche Messverfahren" - Disposal of radioactive
	residues: survey on currently used measuring methods" (Red: F.Stalder) Nov. 1991
FS-93-70-AKE	"Konzeptionelle Darstellung der oberflächennahen Deponierung ausgewählter radioaktiver Abfälle", Darlegung des Arbeitskreises Entsorgung (AKE), Dez. 1993

-> <u>FS-79-20-T;</u> FS-82-27-T; <u>FS-87-44-T;</u> FS-91-55-T; <u>FS-95-77-T;</u>

Gesetzgebung (Regulations)

-> <u>FS-4;</u> FS-84-35-T; FS-86-40-T; FS-87-44-T; FS-89-50-AKU; <u>FS-90-53-T</u> FS-91-54; FS-91-55-T; FS-95-77-T;

Inkorporationsüberwachung / AKI (Incorporation monitoring)

FS-77-14-AKI	"Inkorporationsüberwachung auf Tritium"
	Loseblattsammlung Arbeitskreis Inkorporationsüber- wachung 1977/80
FS-81-21-AKI	"Inkorporationsüberwachung auf Jod" Loseblattsammlung Arbeitskreis Inkorporationsüberwachung (1981)
FS-80-22-AKI	"Biokinetisches Verhalten von Radionukliden"
	Loseblattsammlung Arbeitskreis Inkorporationsüber- wachung (1980)
FS-80-23-AKI	Inkorporationsüberwachung auf Uran" Loseblattsammlung Arbeitskreis Inkorporationsüberwachung (Sept. 1980)
FS-80-24-AKI	"Direktmessung der Körperaktivität" Loseblattsammlung
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FS-87-45-AKI:	"Inkorporationsüberwachung auf Plutonium",
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FS-87-46-AKI:	"Inkorporationsüberwachung auf Promethium",
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FS-90-49-AKI:	"Inkorporationsuberwachung auf Tritium"
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	Wachung, revidiente Ausgabe (ersetzt FS-77-14-ANI,
FS-92-05-AKI	Qualitatskontrolle bei der Inkorporationsuberwachung -
	Tell T. Ringversuch bei Ausscheidungsaharysen, Loseblau-
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ES 03 60 AKI	+"Loseblattsammlung THORILIM"
1 0-90-09-AN	
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60-T; FS-91-55-T; <u>FS-94-71-T</u>

Medizinischer Strahlenschutz (Medical radiation protection)

(Gemeinsame Tagungen mit der Vereinigung Deutscher Strahlenschutzärzte)

'Der Strahlenunfall und seine Behandlung", 19./20. Juni
Theme (1971)
'Strahlenbiologische Grundlagen und Praxis des Strahlenschutzes in der Medizin", 9–12 Juni 1976 Giessen
(verbunden mit FS-76-13-T), Strahlenschutz in Forschung u. Praxis XVII, Thieme (1976)
'Industrielle Śtörfälle und Strahlenexposition", 2931. Mai 1980 Jülich, Strahlenschutz in Forschung und Praxis Bd. XXI, Thieme (1980)

-> FS-6; FS-8; <u>FS-10;</u> FS-75-12-T; FS-80-25-T; FS-84-35-T; FS-86-40-T;<u>FS-90-60-T;</u>

Messtechnik (Measuring techniques)

-> FS-2; FS-3; <u>FS-5</u>; FS-6; FS-8; FS-9; FS-10; FS-11; FS-75-12-T; FS-76-13-T; FS-77-14-AKI; FS-78-15-AKU; FS-78-17-AKD; FS-78-18-T; FS-79-19-AKD; FS-79-20-T; FS-81-21-AKI; FS-80-23-AKI; FS-80-24-AKI; FS-80-25-T; FS-82-27-T; FS-82-29-AKD; <u>FS-83-30-T</u>; FS-83-32-T; FS-84-35-T; FS-85-37-T; FS-86-38-AKD; FS-86-40-T; FS-87-44-T; FS-87-45-AKI; FS-87-46-AKI; FS-88-47-T; FS-89-48-T; FS-89-50-AKU; FS-90-51-AKU; FS-90-60-T; FS-91-55-T; FS-92-63-T; FS-93-67-T; FS-94-71-T; FS-95-77-T

Nichtionisierende Strahlung /AKNIR (Non-ionizing radiation)

(FS-1)	"Nicht-ionisierende Strahlung", Informationstagung des FS 20.3 1973 Bern (vergriffen)
FS-83-33-NIR	"Ultraviolettstrahlung" Loseblattsammlung Arbeitskreis
FS-83-34-NIR	"Infraschall" Loseblattsammlung Arbeitskreis
FS-84-36-NIR	"Ultraschall" Loseblattsammlung Arbeitskreis
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FS-92-59/1-AKNIR FS-92-59/2-AKNIR	"Licht" "Laserstrahlung"
FS-92-59/3-AKNIR FS-92-59/4-AKNIR	"Ultraviolettstrahlung" "Strahlung an Bildschirmen"
FS-92-59/5-AKNIR	"Infraschall"
FS-92-59/7-AKNIR	"Infrarot"
FS-92-59/8-AKNIR	

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Notfallschutz (Emergency Planning)

*FS-94-74-T "Stand des Notfallschutzes in der Umgebung der KKW in Deutschland und in der Schweiz", Seminar München 19. -21. Okt. 1994, Hrsg. A. Bayer, M. Baggenstos (AKN)

-> <u>FS-6;</u> <u>FS-80-25-T;</u> <u>FS-82-27-T;</u> FS-83-30-T; FS-83-32-T; FS-84-35-T; FS-86-39-AKU; FS-86-40-T; FS-86-41-APD; <u>FS-87-42-T;</u> FS-87-43-AKU; FS-89-48-T; FS-90-51-AKU; FS-91-55-T; <u>FS-92-63-T;</u>

Öffentlichkeitsarbeit (Public Relations)

- FS-81-28-AKOe "Strahlenschutz bei der friedlichen Nutzuna der Kernenergie" Textheft und Diasammlung (200 Dias) (P.F. Sauermann KFA Jülich, Sept. 1981) (Dias vergriffen) Rundschreiben des FS, vierteljährlich (nur für Mitglieder, FS RS (Nr)/(Jahr) IRPA. Behörden. Fachinstitutionen). Red.: FS-Sekretär (bis 4/94)
- seit 1995: **StrahlenschutzPRAXIS**, Vierteljahreszeitschrift, Verlag TÜV Rheinland Köln, (ersetzt Rundschreiben), Schriftleiter: R. Maushart

-> FS-84-35-T; <u>FS-87-42-T;</u> FS-91-54-T; FS-91-55-T; FS-94-74-T;

Radioökologie (Radioecology)

-> FS-6; FS-7; <u>FS-11; FS-78-18-T;</u> FS-79-20-T; <u>FS-82-27-T; FS-85-37-T;</u> FS-86-39-AKU; FS-86-40-T; FS-87-43-AKU; FS-87-44-T; <u>FS-89-48-T;</u> FS-91-55-T; <u>FS-93-67-T;</u> FS-95-77-T;

Strahlenbiologie, Strahlenwirkungen (Radiation Biology)

- *FS-95-76-AKS "Bewertung epidemiologischer Studien" Fortbildungsseminar Rügen 1. Okt. 1993, Hrsg. H. Pfob, 1994
- -> FS-6, FS-8, FS-10, FS-11; FS-78-18-T; FS-84-35-T; FS-85-37-T; FS-86-40-T; FS-88-47-T; <u>FS-90-60-T</u>; FS-91-55-T;

Tschernobyl

 FS-86-39-AKU
 M. Winter et.al. : "Die Radioaktivität in der Bundesrepublik Deutschland und in der Schweiz nach dem Reaktorunfall in Tschernobyl" Arbeitskreis Umweltüberwachung Okt. 1986
 M. Winter et.al.: "Radioactivity in the Federal Republic of Germany and in Switzerland After the Reactor Accident at Chernobyl" (Translation March 1987) FS-87-42-T: "Bericht über das Arbeitsseminar "Lehren aus Tschernobyl"
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Umweltüberwachung / AKU (Environmental Monitoring)

- FS-78-15-AKU "Empfehlungen zur Ueberwachung der Umweltradioaktivität" Loseblattsammlung des Arbeitskreises Umweltüberwachung,
- FS-89-50-AKU: Teil 1 Dez.: 1979, Teil 2: 1982, Teil 3: <u>1989</u>, Teil 4: 1992 "Empfehlungen zur Aktualisierung der Richtlinie zur Emissions- und Immissionsüberwachung kerntechnischer Anlagen - Standpunkt des Arbeitskreises Umweltüberwachung (AKU)", Juli 1989, (J. Narrog et.al.)
- *FS-90-51-AKU: "Schnellmethoden zur Analyse von Plutonium und anderen Aktiniden in Umweltproben", R. Winkler, E. Frenzel, H. Rühle, J. Steiner, AKU, deutsch + englisch, Verlag TÜV Rheinland Köln 1990.

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Weltraum (Space)

-> <u>FS-8;</u>

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Is there a Young Generation in Radiation Protection? - Situation, Outlook and Challenge

The German-Swiss Fachverband für Strahlenschutz e. V. (FS) is an IRPA associated society with some 1 400 members and 13 "Arbeitskreisen" (Working Groups) devoted to scientific, technical, legal and educational questions. Over the last decade, the number of FS members - as the number of IRPA members in general - has continuously increased and the FS-organized events and meetings were mostly well attended. We may therefore conclude, that today, the FS is a sound and healthy society, and radiation protection is equally sound and prospering. But looking at the age distribution of the FS-members the seemingly positive trend may be a fallacy. What will be the future of the society? Is there a Young Generation waiting eagerly for a job in radiation protection in our countries, and what can we do to stimulate and support trainees in our profession? And what may be the situation in other associated societies, and where and how could we help some of them in their development?

There are, to be sure, more questions than answers. We shall try to discuss at least the main points and hope, with this contribution, to encourage discussion on these vital aspects of the future of our profession among IRPA and its societies.



Age distribution of FS-members



Age distribution of the present FS Membership, - an Elderly Mens' Club?

A first important consideration is the age distribution of the current FS members (Fig. 1). The main group (63 %) is between 40 and 60 years old. Relatively few members are under 40 years of age (20 %). Does the young generation not join the society or are there fewer young people in our profession? Anyway, somewhat simplified, one almost could the impression of an "Elderly Mens' Club" in the FS. The relatively low number (7 %) of members in the age group 61 - 65 years, and 9 % above 65 years may seem to contradict this view. These figures, however, may not be fully relevant because not all - early or on schedule - retired colleagues remain members. The number of old former members may be higher, reinforcing the preponderance of elder membership.

The prospects and motivations for newcomers have changed

What can be learned from this about the evolution of the present situation? What were the motivations of our members above 40, what their expectations when they entered the profession of radiation protection? Many of them probably joined the field at a time of enthusiasm for nuclear energy, applications of radioisotopes in research and industry, and a widespread use of ionizing radiation. Research positions were available, professional careers open, the field had a touch of excitement and high public and political acceptance. This situation has dramatically changed in the last ten or fifteen years. Long ago, one of our British colleagues illustrated the sudden change of public acceptance very pointedly by saying: "You can't date a girl any more just telling her you work at Harwell".

What, then, can we offer today to a newcomer in the field of radiation protection? Do we even need newcomers?

In preparation of an answer, let us analyse the actual situation first in the countries represented by our society. And we are very sure that we need urgently an answer to these crucial questions, because after all we believe it is worthwhile to think about the future of our work, our profession, our jobs, our societies.

The present and future job situation in our countries

When looking at the present professional situation as a starting point, we find a number of striking facts which we have to cope with. We observe a dramatic reduction in the number of research positions in national laboratories and universities. In addition, there is a general trend away from nuclear, radioactivity and radiation. There are no planned new nuclear power plants, many ambitious projects like fast breeders, high temperature reactors or reprocessing plants have been stopped or cancelled. One exception might be the use of radiation and radioactive substances in medicine, but there is also at

least a stagnation to be observed. All this poses rarely perspective or stimulation to young men or women to enter a career in radiation protection.

There is even one more argument: we may have done our jobs too well. Speaking for Germany and Switzerland, radiation protection can be considered to be very well-devised and well-organized on an international standard. Risks are minimized already by existing rules and regulations to a large extent - some even say too far. There are only few real problems left in organisational and occupational radiation protection to challenge young people.

However, we think three things are left to ask for - and to justify - a young generation with a solid knowledge and good training in radiation protection. The first and most important is that the level of expertise reached in our countries must be held or, where necessary, still improved also in the future by competent, dedicated and motivated people. Second, we think that the expertise gained in radiation protection, together with the existing system of limits, levels and surveillance should be more than today adapted and applied to other pollutants and toxic agents in our natural and professional environment. This task also needs persons familiar with and well versed in radiation protection. And third, and this brings us back to IRPA: There are still many countries in the world who are still developing and extending the use of radiation and radionuclides to the advantage of their technologies and standards of living. We have the obligation to help them to deal with radiation safely, and to avoid possible mistakes we have made. This not only means advice but also support of training of their own radiation protection personnel. That is why we need our own good training facilities.

Future needs for education and training

As it is presently the case in Germany and Switzerland, no defined job description for a "Radiation Protectionist" on the academic level does exist. With very few exeptions, there are no professorships for Radiation Protection at universities and no basic educational advancement for our profession. People who presently practise radiation protection as a profession have gained their specific knowledge either on the job, by self-education or, mostly, by attending a course lasting one to four weeks.

This, by itself, is not bad and has proved to be a rather successful way to create radiation protection experts. In view of the limited perspectives and the decrease in need for more trainees, we think that a full-fledged and specialized education at universities on radiation protection is not only unnecessary but ineffective with regard to the future problems. The experiences of the Fachverband particularly in the last six to ten years have clearly shown that an interdisciplinary approach is of great advantage when it comes to embed radiation protection into the framework of general safety measures and procedures.

On the other hand, there may be a need for post-graduation academic courses of studies, where "side-boarders" coming from various other disciplines could acquire the necessary scientific fundamentals. The same system should and does work on the technical level with appropriate courses.

To come back to the age distribution of FS members, we think that particularly the generation who forms the main part of the society and bears most of our expertise in radiation protection has the obligation to safeguard the experience and knowledge gained in the early years of radiation protection, and to pass it on to the new generation what will be, for the reasons discussed, less numerous. The above-mentioned courses on all levels would be a good place to do so.

Conclusions

To enable and insure an internationally equal standard of education and training, and to give newcomers a professional perspective, the job requirements in protection against ionizing and non-ionizing radiation should be, on an international level, well defined and, even more important, officially and socially recognized. In this process, however, we should bear in mind that radiation protection will more and more have to give up its isolated existence and become a part of general safety procedures and will have to cooperate more closely with other related organisations and professions.

Education should be internationally coordinated and supported, which is a noble task for bodies like IRPA or IAEA. The professions and jobs in radiation protection should be made better known to young people in education, international exchange of students and guests should be sponsored, and special efforts by young people should be honoured by awards and financial support, as is already done e. g. by the Health Physics Society.

Finally, the associated societies, as well as IRPA itself should think more intensively about their role as representatives or organisations of a group of professionalists rather than as supporters and coordinators of scientific and technical work.

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