

2ND EC/ISOE WORKSHOP ON
OCCUPATIONAL EXPOSURE MANAGEMENT AT NPPS
Tarragona, 5-7 April 2000

OPENINGS REMARKS

**“TRENDS AND CHALLENGES FOR RADIOLOGICAL
PROTECTION IN NPPs”**

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Distinguished authorities, ladies and gentlemen, good morning.

I would first like to greet you all and say that it is a pleasure to be with you today for the opening session of this second Workshop on “Occupational Exposure Management at Nuclear Power Plants”. Organized by the European Commission Directorate-General for the Environment, Nuclear Safety and Civil Protection and the ISOE European Technical Center (CEPN), and sponsored by NEA and IAEA, this workshop gathers the best European heritage in encouraging scientific and technological progress and promoting contacts between radiological protection managers and experts within the domain of nuclear power plants.

As the Consejo de Seguridad Nuclear’s representative in this act, I wish to convey the Chairman’s greetings on behalf of the entire organization and would like to share some comments on the current development and trends of nuclear and radiation safety regulation.

THE CHALLENGES OF A CHANGING SCENARIO

First of all, let me say that the nuclear activity is constantly evolving even though technical development has reached a state of maturity, and this evolution modifies the mid and long-term challenges. Issues such as, aging and life management, staff restructuring and renovation, maintenance of technological capabilities and waste management and installation decommissioning and dismantling give rise to questions that are being addressed, and should be addressed systematically and sufficiently in advance. It is highly recommended that short and long-term needs systematically be analyzed, and that strategies be established to systematically provide adequate focus. The current Consejo de Seguridad Nuclear established its Strategic Target Plan in 1995 to address the modernization and updating of regulatory activities in Spain. Certainly it has been a useful tool and that in general its goals have been achieved, such as implementation of a new licensing policy, improved standards, improved work procedures, information systems, etc. A short and mid-term analysis is now an established practice both in industry and regulatory bodies, as well as in international

organizations, and this requires periodic refining and upgrading. It is to be expected that new initiatives should stress the importance of research and development programs that may possibly be more relevant than current ones. Work methods should be equal to the challenge, and there is an obvious need to intensify multi-institutional and multinational collaboration, to which end each organization should have a clear idea of its specific goals.

There is today, in my view, whatever the circumstances are, an international trend to gain effectiveness in Regulatory Control, through systematic strategic analysis, formulation and implementation. Within the NEA framework, I have to make reference to the Strategic Plan for the Agency recently approved by the Steering Committee, and also I would like to refer for a more detailed view on regulation, to the document "Future Nuclear Regulatory Challenges" issued by the Committee on Nuclear Regulatory Activities.

Again, the type of challenges foreseen for the next 10-15 years require highly innovative initiatives, in which research, development and innovation plans will play an increasingly relevant role.

DEREGULATION OF ELECTRICITY MARKET

In Spain, the 1997 Electric Industry Law has resulted in competition of different electric power generating sources, where nuclear power generation is no different from the rest. The situation is not very different than in other countries and is leading to deep restructuring in the way nuclear power plants are operated, in an effort to reduce costs and to improve efficiency.

I firmly believe that the new challenges also represent an opportunity to improve the way work is done, and that the new system should lead to greater maturity as business is conducted with enhanced quality, thus resulting in a better situation in all aspects. The two basic tools that the operator has available to face these challenges are innovation and high quality standards in management. Optimization of management and technological enhancement are the tools for reconciling the apparently insolvable dilemmas of increased safety versus cost reduction. Nuclear and radiation safety is an inevitable premise of nuclear activity, and thus it can and should be reinforced by deregulation of the electrical market, along with all those technical and economic parameters required to improve the competitive position within the new regulatory framework. This more advanced framework should stimulate optimal use of the resources involved in production and, I repeat, nuclear safety is an immutable premise of production.

I have already mentioned, and it is worth insisting on the growing importance that I believe technological upgrade, innovation and research and development programs will have in the future, and these should be methodically and systematically established.

QUALITY AND MANAGEMENT

I will now refer more specifically to the demand for higher quality in operational management. Experience demonstrates that a high level of safety is an attribute of excellent management. Safety is therefore not a goal that conflicts with economic or technical operating results. Moreover, safety is not achieved by pursuing it as an isolated objective, but rather it is the result of the series of correct actions that make up management. It is a known fact that there is a relationship between management quality and safety.

In brief the old dilemma of a safety vs. economy is contemplated today as safety and economy. The concept of the Safety Culture refers to this aspect. More attention should be paid to this point, wherein lies a good part of possible safety improvements; electricity market deregulation requires that quality methodologies be developed in order to optimally allocate the limited available resources according to their impact on safety. Operators face a situation in which the range to operate profitably is diminishing and the pressures of an increasingly intolerant public opinion, not only with accidents but with any problem, are increasing, which means the margin for failure is narrowing to very strict limits.

For the operator, the solution again is to maintain high levels of technical competence and to make use of improved management techniques. For the regulator, the task is to ensure that the processes of change do not negatively affect the levels either of the safety culture or of safety itself. The enormous stock of knowledge and the methodologies of scientific management can contribute extensively to systematically help to this task. It is a sensitive issue and should be based on cooperation, such that the regulator does not discourage the operator or relieve it of any of its responsibilities. For the regulator, the objectives should be to identify problems, evaluate them, and make sure that the operator performs its function.

At the end operators will be provided with enhanced tools for their optimization efforts and will help regulators by being able to better understand the concepts associated with safety culture and assure they remain within acceptable limits.

THE REGULATORY PROCESS

The new electrical framework also creates other challenges to the regulatory system. Regulation has proven to be a dynamic process, an active and alive process in which analysis, decisions, implementation, experience gathering and feed back take a key role. Pressure for optimisation affects the potentially different approaches of the Regulatory Process that has to be considered with a holistic vision to assure the overall effectiveness of regulation at any time. The Consejo de Seguridad Nuclear addresses this aspect in its Strategic Target Plan, and the activities in progress are paying increasing attention to the application of knowledge acquired through the developments of probabilistic safety analyses, so that this knowledge can begin to be used to improve evaluation and regulatory decision making.

Last year has witnessed in Spain relevant events that are related to the new regulatory framework of electrical activities. These are the processes of concentration of management, which were begun first in the Ascó and Vandellós power plants, and later in the Almaraz and Trillo plants. From a position of noninterference and respect, the CSN is tracking and monitoring these processes, so that safety will be updated and fortified as a result of the structural modernization of these consortia.

THE REGULATORY SYSTEM IN RADIOLOGICAL PROTECTION

Let me now turn my sight more specifically to the regulatory system in radiological protection. The latest Recommendations of ICRP provide a new conceptual framework and represent a major step forward in the development of a comprehensive system of radiological protection. Much of Publication 60 is concerned with the establishment of dose limits. During the 1980's there were re-evaluations of the risk estimates that claimed for a reduction in dose limits. On this basis, ICRP recommended reduced dose limits of an average of 20 mSv/y for occupational exposure. Within the nuclear industry the emphasis in the principle of optimisation over the last years, and its practical implementation, have led to a world-wide situation in which the assumption of the new limits is not involving excessive difficulties.

In Publication 60 the distinction between practices, activities which add radiation exposures or risks, and interventions, other activities which can decrease the overall exposure, was introduced trying to clarify different principles for decisions on control of exposure. For practices, the system of protection is based on justification, optimisation and limitation, while dose limit does not apply for interventions, but action is being taken to reduce the level of exposure as much as reasonable. In fact, over the years ICRP has extended its advice away from the central core of dose limitation to deal with other exposure situations, such as radon and other natural sources, solid waste disposal or the protection of the public in emergencies, where dose limits do not apply.

ICRP 60 Has put the philosophy in place, which is now in its last stage for application through the regulation. Member States of European Union shall bring into force the laws, ordinances and administrative provisions necessary to comply with the Council Directive 96/29/Euratom before 13 May 2000, which revises the basic standards according mainly to ICRP 60.

Although this transposition process is close to finish, there is now a major task to be undertaken to the right interpretation of the system, and many specific topics will need to be addressed in detail. As the process of optimisation is now constrained by restrictions on doses to individuals at levels below the dose limits, the complex issues involved in establishing dose constraint should be solved. Exposures to significant levels of natural sources at work should be classified as occupational exposure under some type of criteria and the application of radiological protection requirements should be defined. The principles set for intervention also create practical problems that should be considered in the future. Therefore, transposition is not the end of this process but only a significant milestone that has to be followed by additional developments.

FUTURE: PROTECTION OF THE INDIVIDUAL

The NEA Committee on Radiation and Public Health (CRPPH) had pointed out in its 1998 Collective Opinion document that scientific and technological developments in the near future may be expected, which might have a profound influence on the concepts and the practice of radiation protection (“Developments in Radiation Health Science and their Impact on Radiation Protection”). In particular, it has identified a number of lines of research in radiation health sciences, particularly in molecular biology and epidemiology, which might affect in the long run the scientific basis of the system of radiation protection and its practical application.

The not proven linear non-threshold response model selected by the plausible precaution criterion, has been the foundation of our protection system against radiation for more than 30 years. For the last decade, the old and never ending controversy, specially on the existence or non-existence of a threshold for the harmlessness of exposure, has been alive. Because of the continuing lack of definitive scientific evidences that would prove the existence of a dose threshold that would break the consistency of the present system, ICRP has opened a discussion to consider for the future an individual-based protection frame using the concept of controllability of sources. On the basis of comments and the observations received, the Commission will begin to develop the outline of the next Recommendations.

This possible new trend reflects a shift from societal-based values and a reduction in the emphasis on collective dose and cost-benefit analysis. The new scheme is born, according to its proponent, with the vocation of being “more straightforward single scale”, “logically consistent” and “may be complementary to, rather than a fundamental change in, the Commission’s system of protection”, based on acceptable risks. It may be explained more understandably to individuals as multiples or fractions of the natural background and break the link with the linearity, creating a more balance outlook on the public’s perception from radiological risk, somewhat distant from the facts. Within this approach, the Commission’s principle of justification would be removed from their recommendations and the principle of optimisation would need to be redefined and guidance would need to be developed on its application.

Whatever future indications are and beyond the variations in the wording of the optimisation principle and the progress in elaborating mathematical tools to make objective the social and economically reasonable, the most profound evolution has taken place in its praxis and, in particular, within the nuclear power plants organisations. This principle has transformed into a personal challenge for workers and managers, moving from radiological expert to performer’s field, setting a more rational hierarchy of decisions, getting close to the efficient management and the motivation of its workers. Within this context, the collective dose represents an indicator of excellence in management and the reflection of the workers’ positive attitude. This change in mentality, which has taken place in many western countries after a long process of evolution, should not be forgotten in any new definition of this principle.

ON THE ROLE OF ISOE

Throughout the world, occupational exposures at nuclear power plants have been steadily decreasing over the past decade. Regulatory pressures, particularly after the issuance of ICRP 60, technological advances, improved plant designs, improved water chemistry and a global approach to work, consistent with the ALARA principle, usually referred to as “work management”, have contributed to this decreasing trend. To facilitate the exchange of techniques and experiences in occupational exposures reduction, the Information System on Occupational Exposure (ISOE) was created by the OECD Nuclear Energy Agency in 1992, after two years pilot programme. The International Atomic Energy Agency (IAEA) co-sponsored the system for those countries, which are not members of the NEA, as Eastern and South American countries, and formed together with NEA a joint Secretariat.

ISOE provides a world-wide forum for the communication and the debate among radiological protection experts from utilities and regulators in the area of protection of workers at nuclear power plants. Their publications are an international reference for good practice and excellence in practical radiological protection, such as the “Work management in Nuclear Power Industry” translated to several languages, including Russian and Japanese.

In this context, the ISOE programme has played a leading role to extend good practices in occupational exposure and to harmonise the implementation of radiation safety standards all over the world. ISOE represent an excellent watchtower to monitor, over the next years, the effects these regulatory changes will have on occupational exposures. Additionally, the perspective of ISOE participants, which includes representatives from both utilities and regulators, openly expressed in workshops like the present could play a major role to shift the 21st century ICRP’s recommendations from the theoretical to a practical approach.

I wish to congratulate the promoters and participants in this workshop and I wish to express my confidence that this workshop will provide the professionals present here today the opportunity to improve the co-operation and communication among them through open and fruitful discussions, and contribute to the continuous improvement of ISOE and the reduction of doses process.

To conclude, I wish to congratulate all the people involved in the organisation of this ambitious event. Particularly, I congratulate you for the selection of this historical scenario, full of Roman Empire legacy, which is contemplated as a reference milestone of progress and cultural development and should be a source of continuous inspirations.

I formally declare open the second Workshop on “Occupational Exposure Management at Nuclear Power Plants”.

Thank you for your attention.