

ICRP PROPOSES REVISED EXPOSURE LIMITS FOR RADIATION WORKERS

The International Commission on Radiological Protection (ICRP) met to release a statement summarizing newly proposed draft recommendations that call for the first major change in occupational radiation protection dose limits in more than 30 years. Holding a conference in Bethesda, Maryland in late June, the Britain-based Commission submitted a recommendation to reduce the acceptable annual level of exposure for radiation workers — including nuclear medicine professionals — from 50 mSv/yr (5 Rem/yr) to 20 mSv/yr (2 Rem/yr), with provisions allowing for yearly flexibility. Pending the approval from the ICRP's governing body, a final resolution will be formally released early next year.

According to Hylton Smith, PhD, scientific secretary of the ICRP, the Commission is also likely to retain its 1 mSv/yr (0.1 Rem/yr) dose limit for members of the general public. Dr. Smith adds that "increased protection will be provided by limiting the averaging period to five years rather than over a lifetime."

According to ICRP, new data and interpretations of epidemiological data from survivors of the World War II Hiroshima and Nagasaki bombs indicate that the risks associated with ionizing radiation are about three times higher than previously estimated. Dr. Smith says that the ICRP considered the findings from the fifth Biological Effects of Ionizing Radiation (BEIR V) Report of 1989, and the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) Report of 1988 in its deliberations.

The ICRP had distributed an initial draft of these recommendations to an

international constituency of scientific and political organizations in February. "By and large, the voluminous response to our recommendations was favorable," says Dr. Smith. He told *Newsline* that the ICRP has formed a Task Group to prepare a final draft of the recommendations for presentation to the Commission's governing body at a September meeting in Brighton, England. The ICRP anticipates publishing the finalized recommendations in early 1991.

"There was some opposition to the reduction in annual exposure from a few groups who claimed that the epidemiological data [on which the recommendations are largely based] were not good enough to warrant such reductions," says Dr. Smith. "However, on the other extreme, there were people who felt that the annual limits should be reduced by a factor of ten times."

Many professionals in the nuclear field anticipated these reductions coming on the heels of the BEIR V Report, according to David R. Brill, chief of nuclear medicine at the Geisinger Medical Center in Danville, Pennsylvania. "The impact of the recommendations should be enormous upon the nuclear power industry because of the increased cost of regulation and safety that necessarily would be imposed," he says.

Dr. Brill further points out that the Washington-based National Council on Radiation Protection and Measurements (NCRP) will probably be bound to follow the recommendations of the ICRP. "The NCRP is sort of like the 'American chapter' of the ICRP," says Dr. Brill, "and I think they would follow suit on these proposed changes." Although the NCRP is only

an advisory body and does not have the power to legislate, he notes, "it is highly respected and wields a tremendous amount of influence over the political community."

But, according to William Beckner, staff scientist at the NCRP, "although we are well aware of the ICRP's findings, we are not necessarily bound to follow their recommendations." Mr. Beckner says that the NCRP's Basic Radiation Protection Criteria Scientific Committee has been reviewing the findings of both the UNSCEAR and BEIR V Reports and will present its own draft recommendations on radiation exposure limits in early fall. Warren K. Sinclair, PhD, president of the NCRP and a member of the ICRP told *Newsline*, "the Commission retains the basic tenet that all practices causing radiation exposures should be justified, that is, the benefit must be deemed to outweigh the risks."

Dr. Brill surmises that the recommendations' effects upon the nuclear medicine community will be slight. "The exposure to people of our field is not that high, as it is. Furthermore, the radioactive impact of nuclear medicine procedures upon the environment is minimal, so I don't foresee much change in our practices. The recommendations would seriously interfere with facilities that generate substantial amounts of radioactive waste, like nuclear power plants. They are the real targets of these recommendations."

Although Dr. Brill believes the potential enactment of the ICRP's reduced radiation protection standards would not greatly impact the current practice of nuclear medicine, he is concerned about the general climate

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BRC policy would ensure the safety of groundwater.

Warren Sinclair, PhD, President of the National Council on Radiation Protection and Measurements (NCRP), says that the NRC's BRC policy is headed in the right direction but that he has one major reservation, namely, the justification issue. The NRC says, "Justification of practice is recognized by health physics professionals and national and international organizations as one of the three fundamental tenets of radiation protection (justification, dose limits, and ALARA). The Commission has prepared this policy statement in conformance with these basic tenets as appropriate for exemption decisions. The Commission believes that justification decisions involving social and cultural value judgements should be made by affected members of society and not the regulatory agency. Consequently, the Commission will not consider whether a practice is justified in terms of net societal benefit." Dr. Sinclair believes that the NRC "disclaimer" is a mistake and that any agency that is mandated to protect the public has the responsibility to make a decision on whether its practices are justifiable. As Dr. Sinclair notes, "Justification first is the basic tenet of those who deal

with radioactive material."

The U.S. Council on Energy Awareness (USCEA), an organization that represents the nuclear power industry, supports the NRC's contention that there is a level of radioactivity low enough to be below regulatory concern. However, according to Scott Peters, media services manager for the USCEA, the Council will not petition the NRC to implement the new BRC policy at this time, because it anticipates an extremely negative public reaction. Mr. Peters noted that the public's fear of all radiation is unfounded and is based on a lack of radiation education. The USCEA states that the BRC is within range of being workable and safe.

The Society of Nuclear Medicine (SNM) and the American College of Nuclear Physicians (ACNP) favor the concept of the NRC's policy but say it should not be implemented in its present form. In written comments submitted to the House Energy and Environment Subcommittee, the SNM and the ACNP said that the current policy should be refined before it is considered a final policy. "Initial analysis indicated that the figures on which the NRC based its statement are overestimated and incomplete. Should the NRC collect and reorganize the appropriate data, a BRC policy could be

easily argued as reasonable and acceptable." The SNM and the ACNP say the policy should have followed a public education program.

Some of the opposition that the NRC faces over its new BRC policy arises from disagreement over what constitutes acceptable risk. In setting its guidelines, the NRC has relied on the "linear, no threshold" theory, which states that "the chance of developing cancer is linearly proportional to the [radiation] dose and that there is no threshold below which there is no chance of cancer. This chance, or risk, is expressed in terms of probability because a given dose of radiation does not produce a cancer in all cases." The NRC states that its philosophy is to keep radiation exposure "as low as is reasonably achievable" and says the public will face a very small increase in the risk of death from a radiation-induced cancer (1 in 200,000 annually for 10 mrem/yr [0.1 mSv/yr]) as a consequence of easing restrictions.

The new BRC policy will be implemented principally through the NRC rulemaking process, although exemption decisions may also be made through specific licensing actions. As each case is reviewed, the proposed rules will be published for public comment in the *Federal Register*.

Joan Hiam

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among the public and the government towards radiation. "The pendulum seems to be swinging further and further toward a complete phasing out of radiation-related practices," says Dr. Brill. "I am worried that legislators and the public might conclude that if nuclear medicine can function with a 20 mSv/yr limit, why not 15 mSv/yr? Or 10? Or 5? It's getting to the point where the very existence of nuclear medicine could be threatened if these maximum permissible dose limits

continue their downward spiral."

In a draft statement of response to the ICRP's proposed recommendations, The Society of Nuclear Medicine and the American College of Nuclear Physicians (SNM/ACNP) question the validity of the epidemiologic data on which the Commission based its new protection guidelines. The SNM/ACNP statement affirms that the ICRP erroneously makes the assumption that exposure to low dose rates and high dose rates are equally hazardous — and contends that the

high dose/high dose rate data from the Japanese bombings of World War II cannot be applied to the low dose/low dose rate scenario of nuclear medicine. Furthermore, the SNM/ACNP argue that "before adjusting radiation protection policies that have always been on the conservative side even further, it seems appropriate to wait until there is better scientific data upon which to base decisions that impact on the cost and benefits [of] the productive use of radiation in medicine."

Palash R. Ghosh