I R P A 10

TOPICAL SESSIONS
Reports of Co-Chairmen for Highlight Sessions

T-10: International Harmonization of Radiation Protection and Safety Standards

Tuesday, 16 May 2000

Chair and Keynote: A. González Co-Chair: R. Johnson

This topical session included a 30- minute keynote address by Dr. Abel González and four 15-minute papers by Dr. Richard Griffith, Dr. Masahito Kaneko, Dr. Y.O. Konstantinov, and Dr. George Koperski.

The ***keynote address*** presented by ***Dr. González (IAEA)*** was entitled "International Harmonization of Radiation Protection and Safety Standards: The Role of the United Nations Systems". He noted that several events over the past 25 years have led to increased public concerns for radiation safety. The primary events were Three Miles Island and Chernobyl. The public is also concerned for safe transport of radioactive waste, accidents in medical and industrial uses of radioactive materials, and natural radiation exposures including radon in homes.

The global levels and effects of radiation exposure have been reviewed by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) in the UNSCEAR 1993 Report to the General Assembly of the United Nations. The UNSCEAR 2000 Report has just been adopted and will be presented to the General Assembly in October 2000.

In 1991 six organizations, namely the FAO, ILO, NEA/OECD, PAHO, WHO, and IAEA created a Joint Secretariat, coordinated by the IAEA, to establish the International Basic Standards for Protection Against Ionizing Radiation Sources, the so-called BSS.

The IAEA plays the primary role in the United Nations system of international organizations for achieving international consensus on radiation protection and safety standards. The IAEA is the only organization in the UN family with specific statutory functions for establishing international standards.

The focus of IAEA programmes is on safeguards, technology transfer, and safety. IAEA functions include binding conventions and standards. There are four binding conventions, including early notification of incidents, assistance with incidents, nuclear safety, and safety of spent fuel and radioactive waste. The IAEA provides guidance for standards in three levels: safety fundamentals, basic requirements, and safety guides. The scientific basis for IAEA standards is the work of UNSCEAR and the ICRP.

To assist in the application of these standards the IAEA provides sources, technical

support, information resources, training. and research and development. The IAEA also offers services to assure security of radioactive materials, accident assistance, and action plan for lost sources, and environmental studies.

Dr. Richard Griffith (USA) presented a paper "Software for the IAEA Occupational Radiation Protection Standards". He discussed the 1997 software version (SS115) of the International Basic Safety Standards (BSS) for Protection Against Ionizing Radiation Sources. This software was sponsored by FAO, IAEA, ILO, NEA/OECD, PAHO, and WHO. Dr. Griffith explained the three levels of IAEA publications on standards, safety Fundamentals, Basic Requirements, and Safety Guides. Safety Guides are written with "should" statements, whereas the BSS outlines basic requirements as "shall" statements.

The software SS115 is to help users access the 364-page BSS. Access is based on key words, subjects index, or cross referencing between different parts of the document. Text and data can be extracted and printed.

Three safety Guides on Occupational Radiation Protection are now available on disk or CD-ROM (ORP version 4.1). This includes the guides for
- Occupational Radiation Protection
- Assessment of Occupational Exposure Due to Intakes of Radionuclides, and
- Assessment of Occupational Exposure due to External Sources of Radiation.

The ORP Guide version 4.1 also includes the BSS and Safety Fundamentals. This software is more versatile than SS115 and includes a command icon bar, menus, cross referencing, full text search, and graphics.

Dr. Masahito Kaneko, General Manager for Radiation Safety at the Tokyo Electric Power Company, presented a paper on Departure from ICRP-60 in Japanese radiation protection regulations. He explained that Japanese radiation protection regulations are developed by seven regulatory agencies based on opinions of the Radiation Council. This Council submitted opinions on the incorporation of ICRP 1990 Recommendations (ICRP-60) in June 1998. The agencies are supposed to draft regulation amendments and submit them to the Council prior to promulgation.

The Council's opinions differ from ICRP-60 in the following way:
- The quarterly dose limit for female workers was retained and lowered from 13 mSv down to 5 mSv, whereas the ICRP has no special limit for women. The Council says this limit applies to all women unless they declare an unwillingness to bear a child and/or are unable to be pregnant.
- The boundary for control areas was lowered from 0.3 mSv per week down to 1.3 mSv per 3 months.
- The Council endorsed 100 mSv limit for emergency response and recommends 300 mSv for the lens of the eye and 1 Sv for the skin in emergencies.

Dr. Kaneko noted that many invited public comments were opposed to the Council's opinions.

Dr. Y.O. Konstantinov of the Research Institute of Radiation Hygiene, St. Petersburg, Russia, gave a paper on Decision Making Criteria for Radiation Emergency Planning and Response in Russia. He noted that criteria were established in 1996 to guide decisions for radiation emergency response. These criteria were based on ICRP-63, BSS 109, 115, and on existing Russian guidelines and experience after the Chernobyl accident. He described decision criteria for early stages of an accident based on a 10-day projected dose in terms of a Level A below which no action is needed and a Level B where action is requited. In between Levels A and B action is flexible. The decision criteria for whole-body dose in mGy is for

Sheltering	Level A	5 mGy
	Level B	50 mGy
Evacuation	Level A	50 mGy
	Level B	500 mGy.

He gave criteria for relocation and food control as follows in terms of avertable dose in mSv:

Restrictions in food/water	Level A	5 mSv in first year
		1 mSv in following year
	Level B	50 mSv in first year
		10 mSv in following year
Relocation	Level A	50 mSv in first year
	Level B	500 mSv in following year.

Dr. George Koperski, Safety, Health and Environment Superintendent, ILUKA Resources Ltd., Capel, Western Australia, spoke on the Misapplication of the IAEA 1996 Basic Safety Standards to the Minerals Industry and their impact on the NORM and TENORM issues.

Dr. Koperski noted that a verbatim adoption of the IAEA 1996 International Basic Safety Standards would result in many mineral industry operations becoming subject to radiation protection regulations. For the first time, mineral industries would require licencing, monitoring, reporting, and a radiation safety staff. This new regulatory burden would be a great shock to mineral industries and some would stop operations.

The problem is that BSS exemption criteria are very restrictive and not suitable for the minerals industry. Exemption criteria are expressed in terms activity concentration and total activity. These exemption criteria are applicable only for small volumes of wastes and materials from oil production, smelting, coal power production, iron and steel processing, which amount from a few to several hundred kilograms. But, tonnage from minerals industry are several orders of magnitude higher.

The burden on the minerals industry would not have a clearly identified radiation safety benefit and could increase health risks. The BSS are clearly not compatible with minerals industry operations.

The discussion of the five papers in this session focused on the meaning of BSS exemptions and designation of radiation workers. If a radiation worker is someone who works in a radiation-controlled area, then what about a worker who may get the same radiation dose from natural radiation in an uncontrolled ares? Several

comments were made about misunderstanding the BSS which leads to confusion and misapplication. More discussion is needed. Dr. Gonzalez concluded the session by noting that international harmonization of radiation protection standards is not complete.