IAEA Radiation Safety Standards Committee
Report of Meeting 10th –14th November 2008

Introduction;
The main focus of the meeting was the discussion of Draft 1 of the Basic Safety Standard for Protection against Ionising Radiation and for the Safety of Radiation Sources. DS379 forms the basis of requirements for occupational, public and medical exposure and provides a framework for planned, existing and emergency exposure situations.

- **Report from Commission of Safety Standards:**
  a. *Draft requirements endorsed for submission to the IAEA Board of Governors*:
  - DS345 Regulations for the Safe Transport of Radioactive Material (revision of TS-R-1) approved in September 2008
  - DS353 Predisposal Management of Radioactive Waste approved in September 2008
  - DS348 Safety Assessment for Facilities and Activities

  b. Draft Safety Guides endorsed for publication:
  - DS327 Compliance Assurance for the Safe Transport of Radioactive Material
  - DS317 Safety of Uranium Fuel Fabrication Facilities
  - DS318 Safety of MOX Fuel Fabrication Facilities
  - DS344 Safety of Conversion and Enrichment Facilities
  - DS340 Radiation Protection and Radioactive Waste Management in the Design and Operation of Research Reactors
  - DS376 Safety Assessment for Decommissioning of Facilities Using Radioactive Material.

- **Review and Revision of the Safety Glossary**
  The IAEA Secretariat has established a process to produce, review and approve a standardised terminology that will be consistent across all IAEA standards. The IAEA Safety Glossary was last issued in July 2007. New and revised definitions will be incorporated as part of the review of the work associated with the BSS.

- **Nuclear Security Series**
  International Convention for Suppression of Acts of Nuclear terrorism came into force July 2007 and 115 member states are signatory. Ninety percent of IAEA member states are party to the Convention on the Physical Protection of Nuclear Materials has extensive obligations for physical protection for nuclear material in use, storage and transport.

- **Emergency Arrangements**
  The revised chapter on Emergency exposure situations in the BSS has been drafted to be consistent with ICRP 103 and with the requirements for emergency preparedness and response. Safety Guide DS-44 on the 'Criteria for use in preparedness and response to Nuclear and Radiological Emergencies' will be submitted to Member states for comment in early 2009.

The IAEA General Conference has approved a revised INES scale users manual. The manual for First Responders to a Radiological Emergency has been produced in PDA format as a tool for emergency service personnel and practical guidance for radiological specialists is being developed in an 'Extended Response Manual'.

- **General**

a. Radon

ICRP gave a presentation on work they have been doing on the risk of lung cancer from exposure to radon. A statement is planned for early 2009 to include information on the nominal risk per unit concentration of Radon. The work looked at a number of new epidemiological studies in Europe, America and China. The results show that the risk of lung cancer increases with cumulated exposure to radon decay products and that the risk of lung cancer was observed at levels < 200 Bqm^{-3} if the exposure cumulated over a period of 30 years preceding cancer diagnosis. The increase in risk was seen for both smokers and non-smokers. The reference levels for both homes and workplaces are expected to reduce by a factor of 2. The proposals will be taken into account in the revision of the BSS.

b. Events

- John Croft gave a presentation on the response to the 'polonium 210 incident'.
- Details were given of a release of gaseous Iodine 131 from a radioisotope laboratory in Belgium in August 2008. Belgian authorities implemented restrictions on use of local farming produce within 5km of the facility. The quantity of radioactivity released into the environment was estimated at 45 GBq with a corresponding effective dose of 160μSv to a hypothetical person remaining at the site boundary for the duration of the event. 1300 individuals were monitored for Iodine 131 in the thyroid with no positive results recorded

- **BSS Review**

a. Generic Requirements

Views were expressed that the basic principle of optimisation of protection had not been thoroughly addressed. Particularly the simplification of the principle could have led to the conclusion that dose constraints would be used as new lower limits, which was not in line with ICRP 103. The meeting agreed that the text should be written such that dose constraints cannot be interpreted as a limit and that exceeding a constraint does not lead to any regulatory action. Issues were also raised on the requirements for radiation generators and radioactive sources including the use of the new ISO warning sign for category 1 to 3 sources. The IAEA secretariat will address any issues in the redrafting exercise.

b. Cosmic rays

Two issues were raised in this section. The first relating to whether exposure of aircrew was an existing or planned exposure and secondly should space crew be within the scope of the BSS?

- As the source of exposure was not directly under control the thoughts were to treat as existing exposure. The definition of a planned exposure currently in the draft BSS would need to be redefined or clarified to reflect ICRP 103.
- Space Crew exposure is a special case. Requirements in the draft BSS were put in at the request of European and Canadian Space Agencies so

that they could be seen to be operating within the framework of safety standards. However, it was pointed out that space is not part of IAEA remit.

c. Non medical imaging

It was agreed to keep non-medical imaging within the scope of the BSS but to include as part of the generic requirements section. It would be down to member states to justify any non-medical imaging.

d. Planned Exposure-Medical

Issues raised were mainly detailed drafting comments. Specific issues included;

- Establishment of Diagnostic Reference Levels (DRL) and what to do if they were exceeded during a treatment.
- Dose constraints for comforters and carers
- Unintended or accidental medical exposures
- Release of patients
- Record keeping
- Equipment design and failures.

e. Planned Exposure- Public

Issues raised were the use of constraints, authorised discharge limits and the use of the critical group (representative person) concept.

The use of constraints was again re-emphasised as not being a limit. Constraints should not be discussed in the BSS as values for the retrospective demonstration of compliance, assessments or benchmarking. Authorised discharge limits are calculated under conservative assumptions and implemented with the basic aim to comply with dose limits.

There was a strong push for the inclusion of BAT (technique) to be included in the area of authorised discharges whilst other members wished to stay with the 'limit is a limit' approach.

f. Radon

Decisions on the incorporation of any numerical values for radon will be made when the ICRP statement on risk is forthcoming. The current draft of the BSS treats radon exposure as an existing exposure situation except that it is treated as a planned exposure if, after remedial action, the concentration remains over 1000 Bqm^{-3}. The treatment of radon exposure as both an existing and planned exposure situation could be seen as confusing. A proposal is to treat radon as an existing exposure only and to deal with any exceptional circumstances by cross-referencing to areas in the chapter on planned exposures. The IAEA secretariat is to review redrafting the BSS to provide the best solution for the location of radon exposure.

g. Exemption and Clearance

- A proposal to remove activity concentration values for moderate quantities values was made by the EC secretariat but several member states recommended retaining the column because many applications involved non-bulk quantities and removal would have no discernible health and safety benefit. The Transport Safety Committee also wished to maintain the values and continue with the current concept of the existing BSS.

- The meeting endorsed the proposal to remove the use of collective dose as a criterion. This would be consistent with ICRP and individual dose would almost always be the most restrictive criteria.
- A proposal was put forward that exemption and clearance criteria could be presented in the same table. Some concern was expressed that this could lead to confusion unless the definitions were more explicitly defined in the text and the respective applications made clear.
- Existing criterion for automatic exemption is 10μSvpa and there was a proposal to add a 1mSvpa criterion for low probability events. This criterion is used in RS-g-1.7 and is consistent with ICRP 104.
- All values quoted in the table are in terms of Bq or Bq/g. Consideration was also to be given to using the approach taken for the Transport regulations by having the numerical values in a separate document that could be readily updated without having to re-issue the BSS.
- The EC gave a presentation on a study that had been undertaken which looked at the EU BSS and the IAEA safety guide, and look at any differences between the clearance values in RP 122 and RS-G-1.7. Only for a few 'artificial' radionuclides would lowering of the RP122 values to RS-G-1.7 values be a problem. Nothing suggested that introducing the RS-G-1.7 values as exemption values for specific activity concentrations would cause significant problems-as long as the exemption values for total activity are maintained.

7. Programme

Draft 1 of the BSS was sent out to IAEA committees and co-sponsoring organisations in June 2008.The BSS is designed to be comprehensive and a stand alone document but has interfaces to other requirements such as safety and security. There is the possibility of a technical meeting in the early part of 2009and further drafting meetings with cosponsors and experts. The proposal is to have a document available for approval for submission to Member States in June 2009.

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