Report to Maryellen L Giger, PhD, President,
and the AAPM
Regarding the Council on Ionizing Radiation Measurements and Standards (CIRMS)

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The Council on Ionizing Radiation Measurements and Standards (CIRMS) is organized for educational and scientific purposes to analyze the current and future needs of ionizing radiation measurements and standards. CIRMS has a broad-based membership from industry, state, federal government and academia. The main objectives of CIRMS are the advancement and dissemination of the physical measurements and standards needed for applications of ionizing radiations. For more information, see: www.cirms.org.

The CIRMS annual meeting was held on October 19-21, 2009 and had as its theme "Radiation Measurements and Standards for Incident Response." The plenary sessions included presentations on imaging in various applications and measurement technologies. The program is attached.

Breakout sessions were held on Monday and Tuesday for each of the subcommittees, which include Medical Applications, Radiation Protection/Homeland Security, and Industrial Applications and Materials Effects. Drs. DeWerd and Ibbott co-chair the Medical Applications subcommittee although Dr. DeWerd was unable to attend this meeting.

Presentations in the breakout sessions included:

- Dosimetry in targeted radionuclide therapy and radiobiology
- Biomarker challenges in biodosimetry for a nuclear or radiological incident
- External incident response planning in a large medical center
- An anthropomorphic phantom for proton dose verification
- Independent dosimetry audits and the prevention of error
- Errors and accidents in radiation therapy
- An EndNote electron/photon transport bibliographic database

The meeting ended with student presentations, two of which were related to medical issues. These talks included the design of an anthropomorphic phantom for evaluating proton therapy dose distributions, and the use of a polymer gel to evaluated dose distributions from x-ray beams in the range 30 kVp to 250 kVp.

CIRMS produces a NEEDS report on approximately a 3 year basis. The NEEDS report delineates the areas for measurements and standards needed in the community. The present NEEDS report includes the following Measurement Program Descriptions (MPDs):

1. A.2.3 - Radioactivity Standards and Techniques for Nuclear Medicine – this MPD has been completed.
2. A.3.4 - Dose Mapping Systems for 3D Conformal Radiation Therapy and Intensity Modulated Radiation Therapy – this MPD has largely been addressed through other resources.
3. A.7.3 - Absorbed Dose Standards for Brachytherapy Sources – this MPD will be revised.
4. A.8.1 - Liquid-Based and Micro-Brachytherapy Sources – this MPD will be revised.

For the Medical Subcommittee portion there were a number of suggestions given for the needs for MPDs in the Medical community. From the discussions that ensued in the Medical Subcommittee, the following title descriptions will probably be developed:

1. Development of a dosimetry standard for electronic brachytherapy.
2. Development of a HDR ^{192}Ir standard. This has been requested by the AAPM.
3. Construction of cryogenic microcalorimeters for measurement of incorporated activity and emitted power of low-dose rate low-energy photon-emitting brachytherapy sources
4. Accurate determination of the spatial distribution of absorbed dose from low-dose rate low-energy photon-emitting brachytherapy sources.
5. Calibration standards for small-field radiation therapy
6. Alanine/EPR dosimetry for quality assurance of dose delivery in small-field radiation therapy
7. Creation of a national measurement standard for absorbed dose from charged particle beams used in radiation therapy
8. Development of water calorimeter-based absorbed-dose standard for high-energy electron beams used in radiation therapy
9. Development of dosimetry standards for digital mammography
10. Methods for accurate measurement of CT dose
11. Program for standards and measurement services for patient-specific, image-based radionuclide therapy treatment planning
12. Establishment of measurement quality assurance programs for nuclear medicine diagnostic imaging departments participating in clinical trials
13. Development of standards for use in quantitative radionuclide imaging

We have enjoyed representing the AAPM at the CIRMS meetings.

Respectfully submitted by
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