

Review of GPG14

Clare Lee

24th November 2004

Why?

- GPG14 published in March 1999
- IRMF policy to review all GPGs within 5 years of publishing
- Review began May 2003 with election of WG
- Web based form for submission of comments
- Very few comments received
- Original deadline of March 2004 extended
- Still not many comments received...

- Bill Croydon, Thermo Electron Corp.
 - EPDs
- Max Pottinger, BNFL Instruments
 - Various
- David Thomas, NPL
 - Quantities and Units

- IRR 99 and associated ACOP 1999
- BS ISO 4037 (X and γ reference radiations) 1999(3) & 2004(4)
- IEC 60846 (β , X and γ dose equiv rate monitors) Draft
- BS IEC 60325 (α and β contamination monitors) 2002
- BS ISO 6980 (reference β radiations) (part)
- BS ISO 8529 (reference neutron radiations) 2000 (2) & 2001(1)
- IRR 99 and associated ACOP 1999

- Remove
 - IEC 61005 (neutron ratemeters)
 - IEC 10647 (calibration of neutron measuring devices)
 - Various withdrawn UKAS documents
- Add
 - Various new ICRU documents
 - GPG49
 - Draft IEC document (photon contamination monitors)

- Wide range of tests in Type Test
- Periodic test as for passive dosimeters rather than portable dose rate monitors
- Test at single low energy dose rate
 - Further tests if problem identified
- Presently GPG14 tests are more extensive than should be required

- 2 point linearity test
 - Lower dose rate comparable with controlled area dose rates
- β element tested separately with β radiation
- Directional dependence in TBU
- Overload test to no more than 20% of alarm level

- More tests required than contained in GPG14
- Are directional dependence and linearity tests really necessary?
- How many facilities can successfully overload them?
- Could use BS IEC 61526 as a basis for tests
- Could split guidance into instrument types
 - G-M based
 - Multiple diode based
- Ask manufacturers to help define tests as type specific

- Add dual phosphor probes specifically
- Directional dependence of γ and neutron d-r monitors at 45° according to IEC 60846
- Compromise between β rejection and LE α sensitivity for α contamination monitors - test with ^{238}U
- Remove requirement for uniformity testing of γ monitors
- Modify criterion for uniformity of small area α and β probes in alignment with IEC

- Divide into response to reference sources and variation in response with energy
 - Limit maximum variation from ref response for workplace nuclides
- Limit requirement for semi-infinite geometry to TT, use source dimensions to match detector area for PT and apply response factor

Contiguous Portions Technique

- Unwieldy for photon sources
- Inappropriate beyond 1000 cm² (max allowed averaging area)
- Cap CP area to 900 cm² for γ and large β monitors
 - TT and TBU only to derive a response factor for a smaller source area

The Way Ahead?

- Extend deadline and encourage more people to comment?
- Meeting of working group to critically review comments received
- Decide whether or not a second edition /addendum is necessary
 - Include EPDs or write separate document?
- Secure funding if required