

	<b>DEPARTMENT OF COMMERCE</b> National Institute of Standards and Technology National Voluntary Laboratory Accreditation Program	<b>ISSUE DATE:</b> November 13, 2009
	<b>LAB BULLETIN</b>	<b>NUMBER:</b> LB-46-2009
		<b>LAP:</b> Ionizing Radiation Dosimetry
<b>SUBJECT:</b> Revised ANSI N13.11 and ANSI N13.32		

This bulletin announces the implementation by NVLAP of proficiency testing (PT) against ANSI N13.11-2009 and ANSI N13.32-2008 for ionizing radiation dosimetry (DOS) laboratories. In addition, effective January 1, 2010, the procedure for participation in proficiency testing described in NIST Handbook 150-4, 3.4.1.5, will be superseded by the information contained in this lab bulletin and on the proficiency testing registration forms.

NVLAP-accredited ionizing radiation dosimetry laboratories are required to begin testing in January 2010 against the revised standards, ANSI N13.11-2009, *American National Standard for Dosimetry – Personnel Dosimetry Performance – Criteria for Testing*; and ANSI N13.32-2008, *Performance Testing of Extremity Dosimeters*. ANSI N13.11 is used for whole body dosimeters and electronic personnel dosimeters (EPDs). ANSI N13.32 is used for extremity dosimeters.

The quarterly proficiency testing schedule remains the same as indicated:

- 1<sup>st</sup> quarter – Extremity/EPD (Initial/Renewal)
- 2<sup>nd</sup> quarter – Whole Body (Initial/Renewal/Retest)
- 3<sup>rd</sup> quarter – Extremity/EPD (Retest ONLY)
- 4<sup>th</sup> quarter – Whole Body (Initial/Renewal/Retest)

ALL laboratories are required to have satisfactorily tested against ANSI N13.11-2009 by the end of 4<sup>th</sup> quarter 2011. In January 2012, after NVLAP receives the PT results, the scope of accreditation for each laboratory will list only the dosimeters and categories passed from ANSI N13.11-2009. Likewise, the phase-in period for ANSI N13.32-2008 will be two years.

Prior to January 2012, as each NVLAP-accredited dosimetry laboratory passes proficiency testing against the revised standards, the laboratory's scope of accreditation will be revised accordingly.

### **ANSI N13.11-2009**

Performance criteria are consistent with ANSI N13.32-2008. The tolerance equation is now  $B^2 + S^2 \leq L^2$ , where B is the bias, S is the standard deviation, and L is the tolerance level. The value of L is 0.24 for the accident photon category and 0.3 for all other categories.

The photon conversion coefficients remain unchanged; however, the neutron fluence to personal dose equivalent conversion coefficients were changed to those currently promulgated by the International Organization for Standardization (ISO). The change to the ISO coefficients provides technical consistency with the coefficients for other types of radiation used in the standard.

The polymethylmethacrylate (PMMA) phantom will continue to be used.

The test schedule has been tightened by requiring the proficiency testing laboratory (PTL) to return dosimeters to the processor (test participant) within 15 calendar days from the completion of each round of testing, and the processor should report results within 15 calendar days from receipt of the dosimeters from the PTL.

### **ANSI N13.32-2008**

Conversion coefficients for photons, listed in ISO 4037-3, *X and gamma reference radiation for calibrating dosemeters and dose rate meters and for determining their response as a function of photon energy – Part 3: Calibration of area and personal dosemeters and the measurement of their response as a function of energy and angle of incidence*, were used with the digitized spectra of the National Institute of Standards and Technology (NIST) x-ray beams to determine coefficients to convert air kerma to personal dose equivalent for the x-ray testing fields.

An additional test category was added to evaluate the response to the beta/photon mixtures (new Category IV).

The ratios of contributing shallow doses from betas and photons were modified to range from 1:1 to 5:1 (beta:photons).

The PMMA rod phantom will continue to be used for testing of finger dosimeters. A solid PMMA phantom was chosen to replace the aluminum-core PMMA phantom that was previously used for testing wrist/ankle dosimeters.

The requirements of the lower limit of detection and angular response testing were removed.

This bulletin has been posted to the NVLAP web site at (<http://www.nist.gov/nvlap>).

Questions concerning the DOS requirements for accreditation should be directed to Betty Ann Sandoval at 301-975-8446, or <[betty.sandoval@nist.gov](mailto:betty.sandoval@nist.gov)>.