ATTESTATION LETTER REGARDING USE OF PERSONAL PROTECTIVE EQUIPMENT IN THE FLUOROSCOPIC IMAGING SUITE:

PROTECTIVE EYEWEAR

I the undersigned attest that I wear x-ray attenuating protective lenses while performing or assisting in fluoroscopically-guided diagnostic examinations and/or fluoroscopically-guided therapeutic procedures in clinical practice at Barnes-Jewish Hospital.

The exact amount of x-ray attenuation provided by protective lenses will vary by user and work conditions. Leaded lenses of **0.75mm Pb** equivalence are considered the acceptable norm and have been demonstrated to reduce lens exposure >75%. Accordingly, for 0.75mm Pb lenses, a correction factor of **0.25** will be applied to the raw LDE for the fraction of wear attested below unless established otherwise. It is noted 0.25 is a conservative factor for 0.75mm Pb lenses[1]. An alternate correction factor may be assigned via quantitative field measurement or relevant literature reference if alternate materials of construction are specified or if an individual's lens dose warrants further investigation. [2,3]

The annual State of Missouri regulatory limit is **50 mSv (5000 mrem).** Exposures above this quantity will require a radiation safety investigation.

I recognize it is my responsibility to notify the Radiation Safety Office (radsafety@wustl.edu) in the event there is a change to my use of this personal protective equipment.

Estimated % of Cases Worn:_____

Manufacturer:_____

Model:_____

Lead Equivalent (Front lens, mmPb): _____

Side Shields?: YES / NO

If YES, Lead equiv (mmPb): _____

NAME: (Print) _____

SIGNATURE: _____ DATE: _____

For administrative use only:

REVIEWED BY: _____ DATE: _____

ASSIGNMENT: _____

1 Strategies for Operator Eye Protection in the IR Suite; J Vasc Interv Radiol 2010; 21:1703–1707; Raymond H. Thornton, MD

2 The Case for Radioprotective Eyewear/Facewear: Invest Radiol 1987; 22:688-692; Alan J. Cousin, MD, PhD

3 Vascular and Interventional radiology: principles and practice [Textbook]; Curtis W. Bakal, 2002

1 Strategies for Operator Eye Protection in the IR Suite; J Vasc Interv Radiol 2010; 21:1703–1707; Raymond H. Thornton, MD, Lawrence T. Dauer, PhD, Joaquin P. Altamirano, BS, Keith J. Alvarado, MS, RRA, Jean St. Germain, MS, and Stephen B. Solomon, MD
"*Use of leaded glasses alone reduced the lens dose rate by a factor of **five(0.2) to 10 (0.1)**; scatter-shielding drapes alone reduced the dose rate by a factor of five to 25…"*

2 The Case for Radioprotective Eyewear/Facewear: Practical Implications and Suggestions
Alan J. Cousin, MD, PhD, Peng; Richard B. Lawdahl, MD; Invest Radiol 1987; 22:688-692
Photogrey 73% transmission, primary beam of 80kVp xrays. Therefore 27% attenuation, minimum. Note: Expect this factor to be higher with less energetic scattered radiation.

3 Vascular and Interventional radiology: principles and practice [Textbook]
Curtis W. Bakal, James Silberzweig, Jacob Cynamon
"photochromatic lenses that turn dark in sunlight result in 70% attenuation" [6] of 84kVp xrays

4 TAM-B.6 10:15 Lens Dose Equivalent Assessment of an Interventional Radiologist
GM Sturchio*, Mayo Clinic ; BA Schueler, Mayo Clinic; MD Hindal, Mayo Clinic; RG Landsworth, Mayo Clinic; DJ Magnuson, Mayo Clinic The 54th Annual Meeting of the Health Physics Society; July 12-16, 2009; Minneapolis, MN

Abstract: The interventional radiologists are instructed to wear their dosimeter at the collar, above the protective apron. This dosimeter location allows us to assess the radiologist's effective dose equivalent (EDE) using the one-badge method recommended in NCRP Publication 122. The dosimeter location, due to the non-uniform scatter radiation field, is not representative of the potential dose to the eye; therefore, correcting the dosimeter result is needed to determine the lens dose equivalent (LDE). We developed a LDE correction factor for a staff physician whose practice is primarily direct access to the abdominal area (i.e., no vascular access). A "large" patient phantom was placed on the fluoro table and another phantom was used to represent the physician. Dosimeters were placed on the physician phantom's apron pocket, apron collar, left eye, and right eye. The exposures were made with the image intensifier set in three different orientations: AP, toward the operator, and away from the operator. The average eye:collar correction factor equaled 0.56, with a range of 0.02-1.08. The average eye:pocket correction factor equaled 0.29, with a range of 0.01-0.56. Since the orientation of the image intensifier has such a great influence on the LDE, it was decided to observe the physician and weight the correction factor for the fraction of time that the image intensifier is in each orientation. The average weighted eye:collar correction factor equaled 0.44 and the average weighted eye:pocket correction factor equaled 0.22. The LDE correction factor can be further reduced by the inclusion of a protective eyewear correction. Our evaluation of three commercially available eyewear products indicated an eyewear correction factor range of 0.10-0.69, depending on the incident angle of the radiation. Clearly, it is prudent to develop an LDE correction factor to provide the physician with a better understanding of the potential dose and concomitant risk to their eyes.