



University of Pittsburgh

Radiation Safety Office

Room G-7 Parran Hall
Pittsburgh, Pennsylvania 15261
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May 2, 2005

United States Nuclear Regulatory Commission
ATTN: Randolph Ragland
Nuclear Materials Safety Section
Division of Radiation Safety and Safeguards
475 Allendale Road
King of Prussia, PA 19406-1415

MS-16
L2

License No. 37-00245-09
Docket: 03029418
MC No. 135625

Dear Mr. Ragland

The following information is provided in order for you to complete the renewal process for the University of Pittsburgh's Gamma Knife License No. 37-00245-09. Included in this submission is a request to add Mubina Quader, Ph.D. to the license as an authorized medical physicist, confirmation of our discussions held on March 29, 2005 and a response to questions posed in an E-mail on March 24, 2005. A written response to questions raised on February 11, 2002 was provided to you during your inspection of the facility in March of this year.

Dr. Quader is a boarded medical physicist and has completed all in house training related to the three gamma knives on our license, including safety training, dosimetry, annual calibration, daily and monthly spot checks and NRC regulations, including program modifications related to Confirmatory Action Letter No. 1-05-002. Dr. Quader's application to the Radiation Safety Committee was approved by its Executive Committee on April 26, 2005 and the Committee's approval was signed by the Chair at that meeting. A copy of Dr. Quader's CV and American Board of Radiology Certification are attached.

In response to your questions of March 24, 2005 and March 29, 2005:

- 1) Amendment 20 to the License should be rescinded, in light of Confirmatory Action Letter No. 1-05-002
- 2) No decision has been made with respect to decommissioning the Model 23016 unit. A determination about reloading the Unit should be made within the next two years.
- 3) A letter regarding the removal of Zhen Zheng has already been submitted to you under separate cover.

If you have questions regarding this submission, please contact me at 412-624 2728.

Sincerely,

Jerry Rosen
Radiation Safety Officer

cc: N. Wald, M.D., Chair
Radiation Safety Committee

RECEIVED
REGION 1
MAY -3 110 58
135625
NRC/RGNI MATERIALS-002

CURRICULUM VITAE

Name: MUBINA AKHTAR QUADER

Business Address : University Of Pittsburgh
Department of Radiation Oncology
200 Lothrop Street, Scaife Hall A-351
Pittsburgh, PA 15213

Business Phone: (412)-647-3944 , Fax-(412)-647-6477

E-mail Address: quaderma@upmc.edu

EDUCATION

Undergraduate

<u>Dates attended</u>	<u>Name, Location of institution</u>	<u>Degree, Year</u>	<u>Major Subject</u>
1974-1977	Dhaka University, Bangladesh	B. Sc. 1977	Physics

Graduate

1977-1979	Dhaka University, Bangladesh	M. Sc. 1979	Theoretical Physics
1979-1981	SUNY at Stony Brook, NY	M.A. 1981	Physics
1979-1984	SUNY at Stony Brook, NY	Ph. D. 1984	Nuclear Physics

PhD Thesis Advisor: Prof. D. B. Fossan

Postgraduate

1985-1988	Purdue University (Nuclear Structure Studies) with Prof Patrick Daly
1989-1990	University of Rochester Cancer Center (Medical Physics) with Prof. Dale Kubo

ACADEMIC APPOINTMENT

2004	Clinical Associate Professor, UPMC, Chief Physicist at PUH
1994-2004	Assistant Professor, University of Pittsburgh, Chief Physicist at PUH
1990-1994	Senior Instructor, University of Rochester

SPECIALITY CERTIFICATION

Certifying Board - American Board of Radiology 1995 Therapeutic Radiology Physics

MEMBERSHIP

American Association of Physicist in Medicine

CONFERENCES

Invited Speaker: Workshop on Nuclear Structure at Moderate and High Spin, Oct. 13-16, 1986, Lawrence Berkeley Laboratory, Berkeley, CA.

Participant: Conference on High-spin Structure and Novel Nuclear Shapes, April 13-15, 1988, Argonne National Laboratory, Argonne, Ill.

Participant: Gordon Research Conference on Nuclear Chemistry, 1985, Colby-Sawyer College, New London.

Attended and presented papers at different meetings of the American Physical Society and AAPM.

PUBLISHED ABSTRACTS (Medical Physics)

1. H. Kubo and M.A. Quader. Comparison of the N_{gas} values of the parallel-plate chambers determined in high-energy photon and electron beams. Med. Phys. 17, 520 (1990).
2. M.A. Quader and H. Kubo. Material dependence of the cavity-gas calibration factors: TG-21 protocol. Med. Phys. 17, 533 (1990).
3. M.A. Quader and H. Kubo. Material and beam energy dependence of the cavity gas calibration factors: TG-21 protocol. World Congress on Med. Phys. and Biomedical Eng. (1991).
4. M.A. Quader and R.B. Chin. An efficient method of determining midline doses of total body irradiation patients. Med. Phys., 20, 931 (1993).
5. A.M. Kalend, Z.P. Chen, M.A. Quader, D.Gutti, J.Flickinger and J.Greenberger. A Pencil Beam Model Prediction of Dynamic Wedging in Photon Beams. Med. Phys., 21, 6 (1994).
6. A.M. Kalend, Z.P. Chen, M.A. Quader, May Lim, M. Izadbakhsh and J. Greenberger. Dose Optimization of 3-D Multileaf Collimation (MLC) Conformation by Minimization of Integral Dose. Med. Phys., 21, 6 (1994).
7. K. Blodgett, A.M. Kalend, Z.P. Chen, M.A. Quader, G.King and J. Flickinger. In vivo Mid-plane Lung Dose By Average of Entrance and Exit Diode Dosimeters. Med. Phys., 21, 6 (1994).

8. G. King, A.M. Kalend, **M. A. Quader**, S. Gomes and R. Fuhrer. Fewer Versus Many Dwell in Treatment of High Dose Linear Implant. Med. Phys., 21, 6 (1994).
9. A.M. Kalend, Z.P. Chen, K. Blodgett, G. King, **M.A. Quader** and J. Greenberger. Asymmetric Effects of Multi-Leaf Collimator in Static and Dynamic Photon Beams. Med. Phys., 21, 6, (1994).
10. **M.A. Quader**, A.M. Kalend, M Deutsch and J. S. Greenberger. Shallow and Deep Breath Lung Tumor Volume as Estimated by Spiral Volumetric CT in Comparison to Standard Axial CT Using Virtual Simulation . Int. J. Rad. Onc. Bio. Phy. Vol 32 Supp.1 (1995).
11. A.M. Kalend, **M.A. Quader**, M. Muthuswamy, J. Flickinger, M. Lim and J. S. Greenberger. Dosimetry Factors Expressing the Dosimetric Advantage of Multifield Non-Coplanar Conformal Radiotherapy. Int. J. Rad. Onc. Bio. Phy., Vol 32 Supp.1 (1995).
12. K. Blodgett, A.M. Kalend, **M.A. Quader**, M Deutsch and J. S. Greenberger. Dynamic Beam Compensator of the Breast ID vs 3D Dose Intensity Modulation for Missing Tissue. Int. J. Rad. Onc. Bio. Phy., Vol 32 Supp.1 (1995).
13. **M.A. Quader** and A.S. Beddar. Evaluation of a New Scintillator Detector System for Radiotherapy Quality Assurance. Radiother. Oncol., 37, Suppl.1, (1995).
14. A.S. Beddar , **M.A. Quader** , K.M. Ojomo, R.A. Brasacchio, M.C. Schell and L.S. Constone. The University of Rochester Cancer Center Experience in Total Body Irradiation: Techniques and Outcome. Radiother. Oncol., 37, Suppl.1, (1995).
15. A.M. Kalend, **M.A Quader**, and K. Blodgett. An Analytical Corollary Explaining a Low Limit Value Observed in the Virtual Transmission Factor of Photon Beam Dynamic Wedges. Med. Phys., 23, 6 (1996).
16. A.M. Kalend, and **M.A. Quader**. A Method of Extraction of Time Dependent Scatter in Dynamic Photon Beams Determined from Time Derivative Ionizations Measured with a Multiple Chamber Array Detector. Med. Phys., 23, 6 (1996).
17. **M.A. Quader** and A. Wu. Comparison of Multileaf-Collimated and Alloy-blocked fields. Med. Phys., 28, 6 (2001).
18. **M.A. Quader**, Y. Arai, and A. Wu. Evaluation of a Novel In-Vivo Glass Dosimeter System. Med. Phys., 29, 6 (2002).
19. Y. Arai, **M.A. Quader**, R. Selvaraj, and A. Bukovitz. Silver Activated Phosphate Small Glass Element, Novel Properties for Clinical Radiation Oncology Dosimetry: Stable Radiophotoluminescent Center and Pulsed Laser Readout. Int. J. Rad. Onc. Bio. Phy., Vol 54 Supp.2 (2002).

20. M.T. Carpenter, J.C. Flickinger, **M.A. Quader** and C. E. Miles . Improvements in Technique for Whole- Brain irradiation. ASCO, 2004

PUBLICATION

1. **M.A. Quader**, W.F. Piel, Jr., S. Vajda, W.A. Watson III, F.C. Yang and D.B. Fossan. Proton-Hole Induced Band Structure in Odd-Odd Sb and I Nuclei, Proceedings of the Conference on High Angular Momentum Properties of Nuclei, Oak Ridge, Tennessee, Vol 1, p. 80 (1982)
2. S. Vajda, W.F. Piel, Jr., **M.A. Quader**, W.A. Watson III, F.C. Yang and D.B. Fossan. Proton-Hole Induced Bands in Odd-Odd 118, ¹²⁰Sb, Phys. Rev. C27, 2995 (1983).
3. **M.A. Quader**, W.F. Piel, Jr., S.Vajda, W.A. Watson III, F.C. Yang and D.B. Fossan. Proton-Hole Induced Bands in Odd-Odd ¹¹⁶⁻¹¹²I Nuclides, Phys. Rev. C30 1772, (1984).
4. P.D. Cottle, J.F. Shriner, Jr., F. Dellagiacoma, J.F. Ennis, M.Gai, D.A. Bromley, J.W. Olness, E.K. Warburton, L. Hildingsson, **M.A. Quader** and D.B. Fossan. Level Structure and Deexcitations in ²²⁰Ra and Their Systematic Behavior as a Function of Neutron Number, Phys. Rev. C30, 1768 (1984).
5. W.F. Piel, Jr., **M.A. Quader**, P. Chowdhury, U. Garg, P.M. Stwertka, S. Vajda and D.B. Fossan. Collective Structure in the Odd-Z Transitional Nuclei ^{115,117}I and ^{121,123}Sb, Phys. Rev. C31, 456 (1985).
6. J.F. Shriner, Jr., P.D. Cottle, J.F. Ennis, M. Gai, D.A. Bromley, J.W. Olness, E.K. Warburton, L. Hildingsson, **M.A. Quader** and D.B. Fossan. Level Structure of ²²⁰Ra, Phys. Rev. C32, 1988 (1985).
7. **M.A. Quader**, C.W. Beausang, P. Chowdhury, U. Garg and D.B. Fossan. Band structure change in Z>50 Region: Doubly Odd ^{120,122}Cs and ^{126,128}La, Phys. Rev. C33, 1109 (1986).
8. T.Lonnroth, C. Beausang, D.B. Fossan, L. Hildingsson, W.F. Piel, Jr., **M.A. Quader**, S. Vajda, T. Chapuran and E.k. Warburton. Excited States in Neutron-Deficient ¹⁹⁵Bi, Phys. Rev. C33, 1641 (1986).
9. M. Piiparinen, M.W. Drigert, R.V.F. Janssens, I. Ahmed, J. Borggreen, R.R. Chasman, P.J. Daly, H. Emling, U. Garg, Z.W. Grabowski, R. Holzman, T.L. Khoo, W.C. Ma, D.C. Radford, **M.A. Quader** and W.Trzaska. Level Structure of ¹⁴⁸Gd up to I=44, Phys. Lett. B194, 468 (1987).

10. R. Holzman, I. Ahmed, B.K. Dichter, H. Emling, R.V. F. Janssens, T.L. Khoo, W.C. Ma, M.W. Drigert, U. Garg, D.C. Radford, P.J. Daly, Z.W. Graboswki, H. Helppi, **M.A. Quader** and W. Trzaska. Evolution of Nuclear Structure with Increasing Spin and Internal Excitation Energy in ^{152}Dy , Phys. Lett. **B195**, 321 (1987).
11. M.W. Drigert, R.V.F. Janssens, R. Holzman, R.R. Chasman, I. Ahmed, J. Borggreen, P.J. Daley, B.K. Dichter, H. Emling, U. Garg, Z.W. Grabowski, T.L. Khoo, W.C. Ma, M. Piiparinen, **M.A. Quader**, D.C. Radford and W. Trzaska. Evidence for Superdeformation in ^{148}Gd , Phys. Lett. **B201**, 223 (1988).
12. W.C. Ma, **M.A. Quader**, H. Emling, T.L. Khoo, I. Ahmed, P.J. Daly, B. Dichter, M.W. Drigert, U. Garg, Z.W. Grabowski, R. Holzman, R.V.F. Janssens, M. Piiparinen and W. Trzaska. Structure Changes Along and Above the Yrast Line of ^{154}Dy , Phys. Rev. Lett. **61**, 46 (1988).
13. R. Holzman, T.L. Khoo, W.C. Ma, I. Ahmed, B.K. Dichter, H. Emling, R.V.F. Janssens, M.W. Drigert, U. Garg, P.J. Daly, M. Piiparinen, **M.A. Quader** and W. Trzaska. Structure in the E2 Quasicontinuum Spectrum of ^{154}Dy , Phys. Rev. Lett. **62**, 520 (1989).
14. H. Emling, I. Ahmed, P.J. Daly, B.K. Dichter, M.W. Drigert, U. Garg, Z.W. Grabowski, R. Holzman, R.V.F. Janssens, T.L. Khoo, W.C. Ma, M. Piiparinen, **M.A. Quader**, I. Ragnarsson and W. Trzaska. Lifetime Measurements of Terminating and Collective High-Spin States in ^{155}Dy and ^{156}Dy , Phys. Lett. **B217**, 33 (1989).
15. M.W. Drigert, M. Piiparinen, R.V.F. Janssens, R.H. Emling, U. Garg, Z.W. Grabowski, T.L. Khoo, W.C. Ma, **M.A. Quader**, D.C. Radford and W. Trzaska. Discrete and continuum gamma-ray studies of ^{147}Gd and ^{148}Gd , Nucl. Phys. **A515**, 466 (1990).
16. R. Broda, **M.A. Quader**, P.J. Daly, R.V.F. Janssens, T.L. Khoo, W.C. Ma and M.W. Drigert. Inelastic and transfer reactions in $^{92}\text{Mo} + 255 \text{ MeV } 60\text{Ni}$ collisions studied by $\gamma\gamma$ coincidences. Phys. Lett. **245** (1990).
17. H. Kubo, **M.A. Quader** and Peter J. Spacher, Determination of Replacement Correction Factors for "homogeneous" Cylindrical Chambers. Med. Phys., **22**, 4 (1994).
18. F. V. de Mello-Filho, **M.A. Quader**, E.R. Cano, R.L. Carrau, E.N. Myers, and C.E. Miles, Effect of Mandibular Titanium Reconstructive Plates on Radiation Dose. American Journal of Otolaryngology, **24**, 4 (2003)
19. E.R. Cano, J. Johnson, R. Carrau, S. Agrawala, J. Flickinger, and **M. Quader**, Brachytherapy in the Treatment of Stage IV Carcinoma of the Base of the Tongue. Brachytherapy (2004).

Teaching: 1) Trained nine Medical Physicists, PhD level and MS level, to perform special procedures and quality assurances in the Medical Physics division at Presbyterian University Hospital and University of Rochester.

2) Taught Radiation Oncology Residents at University of Rochester for Five years. Two oncologists, who were my students at university of Rochester, Dr. Gerszten and Dr. S. Bahri are currently working at our Department at University of Pittsburgh.

3) Currently responsible for teaching Medical Physics to resident in our Department.

4) Have trained six dosimetrists to perform routine treatment planning work at PUH. Several therapists were also trained by me to operate specialized radioactive devices.

Service

1) Serving as chief physicist at PUH- Oversee all medical physics operations at PUH. Which includes supervise daily operation, purchase new devices, implementation of new equipments, prepare capital budget and hire new personnel. Since I joined as a chief physicist at PUH, several state of the art devices, e.g. CT scanner, HDR, IVB and IMRT were implemented under my guidance.

2) Severed in committees to hire new faculty members in Radiation Oncology Department.

The American Board of Radiology

*Organized through the cooperation of the
American College of Radiology, the American Roentgen Ray Society,
the American Radium Society, the Radiological Society of North America,
the Section on Radiology of the American Medical Association,
the American Society for Therapeutic Radiology and Oncology, the Association of
University Radiologists, and American Association of Physicists in Medicine*
Hereby certifies that

Mubina Akhtar Quader, Ph.D.

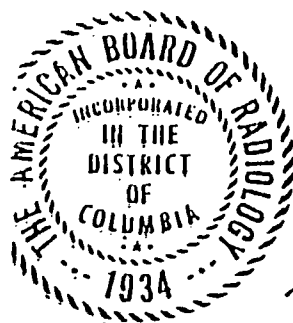
*Has pursued an accepted course of graduate study
and clinical work, has met certain standards and qualifications and
has passed the examinations conducted under the authority of*

The American Board of Radiology

On this seventh day of June, 1995

*Thereby demonstrating to the satisfaction of the Board
that she is qualified to practice the specialty of*

Therapeutic Radiological Physics



Douglas Maynard MD
President

Walter Jernette MD
Secretary-Treasurer

M. Paul Capp, M.D.
Executive Director



University of Pittsburgh

Center for Image-Guided Neurosurgery

This is to Certify That

Mubina Quader, Ph.D.



Attended

Principles and Practice of Gamma Knife® Radiosurgery

from March 14-18, 2005

A handwritten signature in black ink, appearing to read "L. Dade Lunsford".

L. Dade Lunsford, M.D., FACS

A handwritten signature in black ink, appearing to read "Ann H. Maitz".

Ann H. Maitz, M.Sc.



A handwritten signature in black ink, appearing to read "Douglas Kondziolka".

Douglas Kondziolka M.D., M.Sc., FRCS(C)

A handwritten signature in black ink, appearing to read "John C. Flickinger".

John C. Flickinger, M.D.