

Yale University

OFFICE OF THE PROVOST
New Haven, Connecticut 06520

NM562

February 26, 2008

Re: Amendment Request

License 06-00183-06 (03006886)

License 06-00183-03 (03000582)

License SNM-52 (07000053)

VIA FAX & CERTIFIED MAIL

Mr. Todd Jackson
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

Dear Mr. Jackson,

We are writing in follow-up of your telephone conversation with Peter Reinhardt to formally request your approval to amend the above-referenced licenses to authorize Peter A. Reinhardt to serve as Yale University's Radiation Safety Officer (RSO). As Mr. Reinhardt discussed with you, Agnes Barlow, our former RSO, has resigned. Yale is proceeding expeditiously with a national search to fill this position. Until the search is successfully completed, Mr. Reinhardt will serve as Yale University's RSO for the above-referenced licenses.

In addition to Mr. Reinhardt's interim leadership, Yale's radiation safety program is currently supported by the University Radiation Safety Committee, two Assistant RSOs (both of whom are Certified Health Physicists), and many other Office of Environmental Health and Safety staff. Be assured that Yale's radiation safety program will continue to perform at a high level, and that the University is committed to both safety and compliance.

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NMSS/RCN1 MATERIALS-002

Mr. Todd Jackson
U.S. Nuclear Regulatory Commission

February 26, 2008

The following information is provided in accordance with your procedures:

- 1). Name of RSO: Peter A. Reinhardt;
- 2). Description (enclosed) of Mr. Reinhardt's training and experience, demonstrating his qualifications to perform the duties required under the license;
- 3). Position description (enclosed), which delineates the duties and responsibilities of Yale University's RSO; and
- 4). Radiation Safety Officer Delegation of Authority letter (enclosed) signed by Andrew D. Hamilton, Yale University's Provost.

If you have any questions on this matter, please call Mr. Reinhardt at 203-737-2123.

Sincerely,



Dr. Stephanie S. Spangler
Deputy Provost for Biomedical and Health Affairs



Peter A. Reinhardt, Director,
Office of Environmental Health & Safety
Radiation Safety Officer

Enclosures

Cc: Dr. William Summers, Chair, Yale University Radiation Safety Committee
Dr. Edward Wilds, State of Connecticut Dept. of Environmental Protection

Radiation Safety Officer

Yale University Office of Environmental Health and Safety

Yale Position Title: Manager 6 (MP 28)

General Purpose

This is a key position in Yale University's Office of Environmental Health and Safety, responsible for management of its Radiation Safety Section. This person will plan, implement and improve the University's radiation safety compliance program. Advanced knowledge and skills in radiological science, medical and health physics, laboratory research, health and safety hazards, and nuclear and environmental regulation is required. Excellent writing skills are essential to prepare required plans, compliance documents, safety guidance and regulatory communications. Excellent oral communication and presentation skills are needed to meet the position's objectives of risk communication, safety training and positive working relations with regulatory agencies. This position needs to maintain a professional, service-oriented relationship with customers, and possess excellent interpersonal skills. This position needs to build, support and be part of work teams in our multi-disciplinary and highly collaborative office. Also important are managerial and supervisory skills for program planning, prioritization, resource allocation, creative problem-solving, delegation of responsibilities and process improvement.

Essential Duties of Position

Position Objective: Compliance with Federal and State Standards for Radiation Safety

Serve as Radiation Safety Officer for all University radiation protection licenses, including registration of x-ray producing equipment and other radiological imaging systems. Represent the University in regulatory matters, including licensing, reporting, inspections and other communications. Review training programs, equipment, facilities and procedures to ensure that U.S. Nuclear Regulatory Commission (NRC) licensed material and other sources of radiation are secure and are stored, used and disposed of safely. Serve as the University's technical expert on radiation related issues.

Evaluate federal, state, and local regulations. Plan, implement and review a radiation safety compliance program to meet University needs and expectations of the, State of Connecticut Department of Environmental Protection, and other regulatory agencies.

Maintain compliance to ensure continued access of all authorized users to radioactive materials and radiation-producing equipment. When possible, anticipate and prevent problems. Mitigate and resolve hazards, other problems and items of non-compliance.

Document compliance. As necessary, prepare license applications, amendments, compliance reports and other regulatory communications.

Lead a comprehensive radiation safety program through planning and supervision of the radioactive materials procurement program, radiological surveys, leak testing of sealed sources, surveys of x-ray machines and other radiation producing devices, the isotope use authorization program, consultation with authorized users and pregnant workers, receipts and shipments of radioactive materials, training, meter calibration, medical uses of radioactive materials at the Nuclear Cardiology clinic and the Positron Emission Tomography (PET) center, facility security and the implementation of security procedures. Prepare the Radiation Safety Program annual report.

Manage Yale's ALARA program, including review of dosimetry and other personnel monitoring, taking appropriate action to minimize and prevent exposures, and preparing ALARA reports. Specify dosimetry vendor requirements and monitor vendor performance.

Evaluate the transport and shipping of radioactive material; train students, faculty and staff, and facilitate their shipments to ensure DOT, IATA and export compliance.

Schedule, plan, organize and facilitate effective meetings of the University Radiation Safety Committee (RSC). Work through the RSC to identify risks, resolve compliance problems and take corrective actions. Facilitate the effective use of subcommittees for special issues. Keep the RSC Chair informed of all significant regulatory and programmatic developments. Maintain minutes.

Monitor developments and trends in regulatory requirements, advisory agency guidelines, and best practices, and advise OEHS staff, other departments and University leadership about their potential impact on University operations. Design and implement new programs as required.

Position Objective: Maintenance of a Comprehensive University Radiation Safety Program

Plan, organize and direct a comprehensive radiation safety program to meet University needs and support its research and teaching. Assess radiation safety risks that pertain to radioactive material and radiation-producing devices. Incorporate suggestions from authorized users and radiation workers. Set Section priorities and goals. Make strategic plans to meet Section and Office goals.

Oversee and support the medical health physics activities of the PET Center; review protocols and operations to ensure best practices, minimal exposures and releases, and compliance; investigate and resolve incidents and releases.

Track key radiation safety indicators. Prepare quarterly performance, activity, progress and accomplishment reports for OEHS' quarterly and annual reports.

Lead by communicating OEHS' mission, vision and values, taking responsibility for your Section's performance, creating responsibility for others, as well as through your contributions and exemplary reliability.

Develop and implement policies and procedures to meet program responsibilities as well as Section and Office goals.

Plan and supervise the addition and removal of facilities for using radioactive material and radiation-producing devices. Review plans and advise on shielding, security and safe construction. Prepare, review and supervise plans for decontamination and decommissioning of radiation areas.

Take initiative to solve radiation safety problems, and make creative improvements.

Provide excellent radiation safety services to students, faculty, staff, visitors and other stakeholders. Excellent service is prompt, friendly, convenient, high quality and anticipates needs. Promote radiation safety through consultation, training, campus outreach and other services.

Plan, implement and review both the research and clinical laser safety programs. Oversee the work of Yale's Laser Safety Officer (LSO). Address safety and health issues of other non-ionizing radiation activities, as necessary.

Support, advise and work collaboratively with the Environmental Services Section to manage low-level and mixed waste. Establish waste management procedures and conduct periodic waste audits to ensure compliance and safety.

Emergency Planning and Preparedness: Plan, prepare for, and prevent emergencies involving radiation and radioactive material, including security incidents. Collaborate in all-hazard campus emergency planning. Review procedures and evaluate responses. Serve on the OEHS Emergency Response Team and designate Radiation Safety Section staff to the OEHS Emergency Response Team. Facilitate training and exercises for radiation emergency responders.

Work collaboratively with the co-managers of the Safety Advisor program to ensure that the Safety Advisor program meets the oversight needs of the University's radiation safety compliance program, including inspections, contamination monitoring, authorization amendments and renewals and compliance with exposure limits. Provide feedback to authorized users and radiation workers regarding their compliance status. Assist with Safety Advisor development.

Position Objective: Effective Management Radiation Safety Section Resources

Manage the Radiation Safety Section staff through effective recruitment, hiring, training, work planning, motivation, making assignments, delegation, coaching, supervision, performance review, retention and, as necessary, discipline.

Promote staff continuing education and development. Encourage and support professional and personal development of staff by the annual drafting of a personal development plan with each employee. Identify and provide opportunities for professional enrichment and advancement of staff.

Delegate, assign and schedule staff responsibilities to meet Section responsibilities.

Effectively communicate with Section and Office staff. Manage confidential and sensitive information appropriately.

Promote teamwork, cooperation, communication, organizational integration, helping others, task flexibility, cross training, inclusiveness and program integration within your Section, with other OEHS staff, and with other university support staff.

Build, advance and maintain effective OEHS working relationships with key partners, customers and stakeholders—both on and off campus.

Appropriately manage information. Maintain and develop records, data and information systems.

Evaluate and acquire new technologies, equipment, and services with potential to reduce radiation safety risks, improve operational efficiency, or streamline customer service.

Anticipate needs and report them to the Director. Allocate new resources effectively. Be a prudent steward of financial, human and other resources.

Promote environmental health and safety standards in all operations. Ensure that all of your employees receive appropriate and required safety training and occupational health exams; work with your employees to assess risks and prevent accidents; utilize appropriate safety procedures, personal protective equipment and other safety controls.

Position Objective: Collaboration, Assistance and Participation in the Management of the Office of Environment, Health and Safety

Advise and participate in Office strategic planning and goal setting. Develop Section goals and individual work plans that synergize and are supportive of the Office.

Keep the OEHS Director informed of important campus, regulatory, media and University leadership concerns. Frequently report to the Director on Section activities, progress and problems, both verbally and in writing. Meet as scheduled to report your progress in completing assignments and work plans, meeting Section goals, as well as to update strategic plans.

Provide frequent, complete, timely and appropriate communications to University leadership, subordinates, peers and key university support staff, including verbal and written updates. Provide and receive feedback appropriately.

Use good judgment to appropriately seek approval and respect reporting relationships.

Emergency Response: As a member of the OEHS Emergency Response Team, respond appropriately to all types of emergencies. As scheduled, carry the after-hours hot pager. Supervise radiological emergency response so that OEHS responds appropriately. Provide 24-hour on-call support. Report spills, exposures, releases and security breaches as required. Facilitate the continuity and recovery of Yale and OEHS operations.

Assist the Director and other Office managers as necessary in order to meet Office goals.

Position Objective: Other Environmental Health and Safety Responsibilities

Know, implement and comply with University and OEHS policies and procedures.

Perform other duties as requested by the Director, Deputy Provost or other campus administrators. Complete other assigned duties so that they are of high quality, accurate and on time.

Take corrective action to reduce risks identified by you, your staff and OEHS inspections.

Immediately report to the Director: a) items of non-compliance, or potential items of non-compliance; b) any spills, releases, accidents, injuries, emergencies or other incidents; or c) any problems with facilities and equipment.

Continue to develop professionally.

Education and Experience

Ten years or more of progressively responsible health physics experience in a radiation safety program at a research university.

Master's or doctorate degree in health physics, radiological health or other functionally-relevant field. Alternatively, a bachelor's degree in health physics, radiological health or other functionally-relevant field and comprehensive certification by the American Board of Health Physics.

Comprehensive certification by the American Board of Health Physics is highly preferred.

Advanced knowledge of radiation, radioactive materials and radiation-producing devices.

Advanced knowledge of occupational and public health risks of radiation, including principles of health physics, standards and variables of exposure. Ability to understand, interpret and convey exposure, measurement and dosimetry information.

Advanced knowledge of the practice of radiological hygiene, including workplace monitoring, analysis, sampling, shielding, and the selection and use of personal protective equipment and administrative, engineering and work practice controls.

Knowledge of medical health physics.

Broad knowledge of local, state and federal radiation safety laws, interpretations and advisory guidelines, and university license conditions pertaining to radiation safety.

Advanced knowledge of laboratory science, operations and objectives, including chemical, biological and physical processes, procedures, techniques and instrumentation commonly used in research, teaching and clinical laboratories.

Knowledge of emergency planning, preparedness and response, including risk assessment, contingency analysis and incident command.

Advanced knowledge of environmental science principles and environmental impacts of radioactive material use, including air emissions.

Advanced knowledge of radioactive waste management principles, including proper waste handling, storage and disposal methods.

Skills and Abilities

Leadership, vision, creativity and management skills to effectively solve problems, craft safety programs and motivate staff.

Capable of working both independently and collaboratively, as a member of the senior management team.

Ability to facilitate effective operational integration, collaboration and teamwork within OEHS and Yale.

Ability to prioritize and effectively manage multiple tasks simultaneously. Exercise good judgment in managing time.

Ability to establish and maintain professional, collaborative, service-oriented, cooperative and effective working relationships with students, faculty, staff, unions, customers, the public, regulatory agencies and co-workers through effective and positive communication.

Ability to use health physics equipment and information technologies, including advanced database, spreadsheet, presentation design software and word processing editing features.

Advanced written communication skills, including the ability to write clearly and actively on complex topics. Ability to edit for clarity, content and technical content. Ability to simplify guidance for students and staff, and to prepare thoroughly documented technical/legal reports.

Advanced oral communication and presentation skills, including the abilities to communicate risks effectively, prepare professional-quality presentations, speak clearly and engagingly about complex issues before small and large groups, and negotiate compliance issues with regulatory authorities.

Advanced skill in using and applying the above knowledges, including using measurement devices and calculating exposures. Ability to understand, interpret and convey exposure and measurement.

Active membership in relevant professional organizations, working to disseminate specialized information and knowledge developed or acquired during the course of work at the University to broader audiences through talks, seminars, presentations, and/or publications.

Possess/complete and maintain HAZWOPER certification.

Stand, walk, and negotiate occasional awkward work locations and paths of travel.

Work in a variety of physical environments, including weather/temperature extremes, potential confined spaces, elevated locations, etc.

Periodically perform short duration physical exertions, including light-medium weight lifting, pushing/pulling, stair or ladder climbing, etc. in support of a safety investigation, area or operations survey, decommissioning or emergency response.

OEHS Director Signature	OEHS Director (print)	Date
Position Incumbent Signature	Position Incumbent (print)	Date

Peter A. Reinhardt

Training and experience pertinent to the responsibilities, skills and knowledge
for Yale University's Radiation Safety Officer

RADIATION SAFETY TRAINING

Bachelor of Science, University of Wisconsin-Madison, September 1973 to May 1977.
Major: Biochemistry. Dean's Honor List, Senior Honors Thesis, Honors Convocation.

27 credits of additional advanced coursework in biochemistry and toxicology,
University of Wisconsin-Madison, 1977 to 1981.

Master of Arts in Public Policy and Administration, University of Wisconsin-Madison
La Follette School of Public Affairs, January 1989 to August 1991. GPA: 4.0/4.0

University coursework included chemistry, physics, physiology, genetics, mutagenesis,
carcinogenesis and statistics. As part of that coursework, studies included radiation,
radioactive materials, health and environmental effects of radiation, and radiation
measurements. Laboratory coursework involved the use of ionizing radiation and
radioactive materials.

Radiation Worker On-the-job Training, University of Wisconsin-Madison. May 1977 to
September 2000. Initial and periodic training in the use, handling and management of
radioactive material, radioactive waste, radiation-producing equipment and radiation
measurement devices. See below for related job duties.

RADIATION SAFETY EXPERIENCE

University of Wisconsin-Madison. The following positions and experience were in
laboratory setting and as part of UW's radiation safety program.

Research Specialist, Biochemistry and Pharmacy Departments, June 1977 to June 1979.

Health Physics Technician, Safety Department, June 1979 to July 1980.

Health Physics Technician Supervisor, Safety Department, July 1980 to March 1981.

Hazardous Waste Program Supervisor, Safety Department, (March 1981 to March 1988)

Chemical Safety Program Supervisor, Safety Department, (March 1988 to September
1991)

Assistant Safety Director, Chemical & Environmental Safety, Safety Department,
(September 1991 to 2000)

- Used radionuclides in laboratory research as a trained radiation worker. Regularly used GM meter and liquid scintillation counting.
- Received and surveyed incoming shipments of radioactive material.
- Performed thyroid tests and urine bioassays for workers using I-125 and H-3.

- Performed surveys of areas where radioactive materials were used and stored, and radiation-producing equipment was used (e.g., laboratories, X-ray equipment, research accelerators, X-ray Synchrotron), utilizing wipe tests, GM meter and multichannel analyzers.
- Calculated external and internal radiation doses for research and medical protocols.
- Performed shielding calculations for planned storage and use. Recommended designs and protocol to keep exposure as low as reasonably achievable. Performed post-implementation surveys to verify calculations.
- At UW Hospitals, monitored administration of therapeutic I-131; decontamination of hospital areas where I-131 was used.
- Reviewed plans for the use of radioactive materials in UW Hospitals for diagnosis and Nuclear Medicine.
- Responsible for management of UW radioactive and mixed (radioactive-chemical-biological) waste, including decay in storage program, sanitary sewer disposal and operation of two incinerators for solid, pathological and liquid waste.
- Negotiated key regulatory approvals for UW's \$5M Environmental Management Center (EMC) for managing hazardous and radioactive waste (1996-2000).

University of North Carolina at Chapel Hill

Director of Department of Environment, Health and Safety, September 2000 to February 2007. Direct, manage and plan a comprehensive environment, health and safety program, including radiation safety and occupational health. Radiation safety experience included:

- Directly supervised UNC's Radiation Safety Officer.
- Member of UNC's Radiation Safety Committee: review, advise and decide on policy changes, authorizations, renewals, ALARA program, as well as all other aspects of UNC's radiation safety program.
- Member of UNC's Enhanced Security Subcommittee to implement NRC enhanced security orders: developed policies, obtained funds to provide security enhancements, and facilitated the implementation of new procedures.
- Helped develop new UNC policies addressing clearances for purchase of regulated items and decommissioning of areas where radioactive material was used.
- Lead development of information system to track radiation safety training, occupational health, exposures, authorizations, safety violations and radioactive waste. This system provides on-line training and requests for waste pickup.
- Planned and helped design a new liquid radwaste storage facility.
- Provided leadership and expertise to clean a '70s era UNC low level radioactive waste site, a \$3M project.
- After 9/11, made numerous improvements to UNC's emergency preparedness, communications, and campus guidance on terrorism preparedness.

- Designed and led tabletop dirty bomb emergency exercise for UNC leadership, Hospital, Town and County emergency responders.
- Represent UNC when inspected by state regulatory agencies: escort inspectors, draft response letters, etc.

Yale University

Director of Department of Environment, Health and Safety, March 2007 to present.

Direct, manage and plan a comprehensive environment, health and safety program, including radiation safety and occupational health. Radiation safety experience included:

- Directly supervised Yale University's Radiation Safety Officer.
- Member of Yale University's Radiation Safety Committee: review, advise and decide on policy changes, authorizations, renewals, ALARA program, as well as all other aspects of Yale University's radiation safety program.

RELEVANT PROFESSIONAL ACHIEVEMENTS

UW-Madison Chancellor's appointment to the Dane County Local Emergency Planning Committee (LEPC); Elected Vice Chair 1987 to 1992, Elected Chair 1992 to 2000. Catalyst for upgrading area hospitals and procedures to prepare for contaminated patients.

Appointed to the National Research Council's subcommittees on Mixed Waste (1993 and 1994), which led to *Prudent Practices in the Laboratory*, Washington, D.C.: National Academy Press, 1995. Contributing expert on mixed waste.

As Chair of the American Chemical Society's Task Force (1995-2000), ACS staff and I successfully led a coalition of industry and other universities to spur EPA to change their rules for mixed waste.

"Medical Waste Management," contributed chapter to *Hospital Epidemiology and Infection Control*, Third ed., Chelsea, Michigan: Lippincott Williams & Wilkins, 2004 (C. Glen Mayhall, ed.) Coauthor with Judith G. Gordon and Gerald A. Denys.

Invited by the International Association of Campus Law Enforcement Administrators to consult on best practices for university hazardous material security (2005).

26 February 2008

YALE UNIVERSITY
P.O. BOX 208365
NEW HAVEN CONNECTICUT 06520-8365
(203) 432-4444

THE PROVOST

February 26, 2008

Re: Delegation of Authority for Radiation Safety Officer
License 06-00183-06
License 06-00183-03
License SNM-52

VIA FAX & CERTIFIED MAIL

Mr. Todd Jackson
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

Dear Mr. Jackson,

In accordance with NRC procedures, this letter is to confirm the appointment of Peter A. Reinhardt as Yale University's Radiation Safety Officer (RSO) for the above-referenced licenses. As Yale's RSO, he is responsible for ensuring the safe use of byproduct material. More specifically, he is responsible for the management of the radiation safety program; identification of radiation safety problems; recommendation and initiation of corrective actions; oversight and verification of the implementation of corrective actions; and assurance of compliance with regulations for the use of byproduct material.

The University has delegated to the Radiation Safety Officer the authority necessary to exercise the responsibilities of the position. More specifically, the RSO is authorized to immediately stop any operations involving the use of byproduct material in which health and safety may be compromised or that may result in non-compliance with NRC requirements.

This letter accompanies our license amendment request to affect this delegation.

Please let me know if you have any questions.

Sincerely,



Andrew D. Hamilton, Provost
Benjamin Silliman Professor of Chemistry
Professor of Molecular Biophysics and Biochemistry

Enclosure

Cc: Dr. Stephanie S. Spangler, Deputy Provost for Biomedical and Health Affairs
Dr. William Summers, Chair, Yale Radiation Safety Committee
Peter A. Reinhardt, Director, Office of Environmental Health & Safety

This is to acknowledge the receipt of your letter/application dated

2/26/2008, and to inform you that the initial processing which includes an administrative review has been performed.

☒ Append. 06-0083-06 / 06-0083-03 / SNM-52
There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

☐ Please provide to this office within 30 days of your receipt of this card

A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned **Mail Control Number** 142066 / 142067
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260. 142068