UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 2, 2001

Ms. Patricia C. Gorman
Deputy Director
Conference of Radiation Control
Program Directors, Inc.
205 Capital Avenue
Frankfort, KY 40601

Dear Ms. Gorman:

In response to the Conference of Radiation Control Program Directors, Inc. (CRCPD) July 24, 2001 request, it gives me great pleasure to nominate Mr. Joel O. Lubenau for the annual John C. Villforth Lecture Series to be held on Sunday, May 5, 2002 during the 2002 Annual CRCPD meeting. Joel proposes to speak on "Orphan Sources," a matter of worldwide concern that the CRCPD has had significant involvement with. I have enclosed the Nomination Form, a one page resume for Joel, a three page listing of his previous publications, and the September 2001 issue of the Health Physics Society's Newsletter summary of a paper he presented at the annual Health Physics Meeting.

Joel's long and illustrious career as a health physicist with both the State and Federal Government has extended over a wide spectrum of health physics areas, such as radium safety, medical x-ray protection, safety standards for analytical x-ray and accelerator sources, and industrial applications of radiation. He has been a leader for both Federal and CRCPD efforts to improve controls of radioactive sources to prevent their entry into the public domain in an uncontrolled manner. He is the recipient of the Meritorious and Distinguished Service Awards for Excellence in Health Physics from the NRC and a Meritorious Service award from the CRCPD. He has been a certified health physicist since 1969.

Throughout his career, he has been an ardent supporter of the CRCPD and has made significant contributions to the goals and objectives of the CRCPD as a member of the Pennsylvania Bureau of Radiation Protection and as a Technical Assistant to NRC Commissioners E. Gail de Planque and Greta Joy Dicus, as well as managing NRC oversight of the Agreement State Program. Throughout his career with the government, he has been committed to fostering Federal and State relations and support for the CRCPD. I believe that his selection as the 2002 John C. Villforth Lecturer Recipient will greatly enhance the annual meeting in Wisconsin.

Thank you for this opportunity. If you have any questions, please contact me at (301)415-3340.

Sincerely,

Paul H. Lohaus, Director
Office of State and Tribal Programs

Enclosure:
As stated

Nomination Form for the John C. Villforth Lecture Series

For Criteria and Details, refer to the John C. Villforth Lecture Series Fact Sheet.

Nominee: (Provide name, address, phone, fax, E-mail)	Joel O. Lubenau, CHP 89 S. Heck Rd Lititz, PA 17543-8560 Tel 717-625-4854 Fax 717-625-0436 email lubenau@supernet.com
Nominee's background:	See attached resume.
Nominee's proposed lecture topic:	"Orphan Sources"
Nomination submitted by:	(Provide contact information if nomination is submitted by someone other than the nominee.) Paul H. Lohaus, Director Office of State and Tribal Programs U.S. NRC - MS-03C10 Washington, DC 20555 (301) 415-3340

Submit nomination form and abstract of proposed lecture topic to:

Ms. Patricia Gorman, Deputy Director
Conference of Radiation Control Program Directors, Inc.
205 Capital Avenue
Frankfort, KY 40601

Tele: 502/227-4543, Ext. 2227
Fax: 502/227-7862
E-mail: pgorman@crcpd.org

Submission deadline:
Submit nomination information no later than August 15 of the current year for the next year's Annual Meeting.

Joel O. Lubenau
Certified Health Physicist

89 S. Heck Road
Lititz, PA 17543-8560, US
tel 717-625-4854 fax 717-625-0436 email lubenau@supernet.com

Joel Lubenau graduated in 1961 from The Cooper Union with a Bachelor of Civil Engineering degree. From 1963 through 1965 he studied at Rutgers University's Nuclear Science Center and Brookhaven National Laboratory as a U.S. Public Health Service Fellow, and received a Master of Science in Radiological Health.

In 1961, after a short term in the private sector as a civil engineer, Joel accepted a Commission in the U.S. Public Health Service and began his career as a health physicist. From 1961-1963 he was assigned to the Pennsylvania radiation control program. From 1965-1972 he was employed by the Commonwealth of Pennsylvania, his last position being Chief of the Division of Radiation Control, Bureau of Radiation Protection. At that time he was one of the seven state members of a joint state-Federal task force that created the Nationwide Evaluation of X-ray Trends (NEXT) program. He then joined the Bureau of Radiological Health's Winchester Engineering and Analytical Center as a branch chief and served as Executive Secretary of NEXT during it's first year of operation. In 1973 he moved to the U.S. Atomic Energy Commission's compliance office in King of Prussia, Pennsylvania, where he conducted health and safety inspections at nuclear power and research reactors and nuclear fuel fabricators. In 1975, he transferred to the Commission's Office of State Programs where he managed NRC oversight of the Agreement State Program. From 1992-1995 he served as a Technical Assistant to NRC Commissioner E. Gail de Planque. Following that assignment he was a Senior Health Physicist in NRC's Office of Nuclear Safety and Safeguards and then joined Commissioner Greta Joy Dicus' staff when she took office. After Commissioner Dicus was appointed Chairman of the NRC by President Clinton, Joel served as Senior Assistant until his retirement. He is now a radiation protection consultant.

Joel is the author, coauthor or editor of over 30 professional publications, has served as editorial reviewer for *Health Physics* and is an Associate Editor of *Operational Radiation Safety*. He was a member of the NRC Three Mile Island Nuclear Reactor Accident Response Team where he served as an NRC liaison to the State of Pennsylvania. He was a member of Georgia Governor Joe Frank Harris' task force which reviewed an irradiator incident involving a leaking source. He is a longtime member of the Conference of Radiation Control Program Directors, Inc. (CRCPD) and served as a resource person for several of its committees.

Joel's health physics experience extends over a wide spectrum that includes radium safety, medical x-ray protection, safety standards for analytical x-ray and accelerator sources and industrial applications of radiation. His recent efforts have focused on improving controls of radioactive sources to prevent their entering the public domain in an uncontrolled manner ("orphan sources"), exposing the public to radiation and causing contamination of property.

Joel received Meritorious and Distinguished Service Awards for Excellence in Health Physics from the NRC and a Meritorious Service award from the CRCPD. He is a member of the Society of the Sigma Xi.

Joel was originally certified by the American Board of Health Physics in Comprehensive Health Physics in 1969 and is recertified through 2005. He chaired the Board's Panel of Examiners and was elected Treasurer and member of the Executive Committee of the American Academy of Health Physics (AAHP). He is an adjunct member of the National Council on Radiation Protection and Measurements and expert consultant to the International Atomic Energy Agency (IAEA). He has been an invited lecturer, panelist, session chair, rapporteur and keynoter at meetings, symposia and training sponsored by the Harvard School of Public Health Center for Continuing Professional Education, the Health Physics Society, the AAHP, the CRCPD, the International Radiation Protection Association, and the IAEA.

Professional Publications (Author, co-author, or editor)

"Survey of Radium Sources in Offices of Private Physicians," *Public Health Reports* 80:1 (1965).

"Results of the Pennsylvania Department of Health Dental X-Ray Survey Program," *Health Physics* 14:151-155 (1968).

"Analytical X-Ray Hazards: A Continuing Problem," *Health Physics* 16:739-746 (1969).

"Radiation Control," *Pennsylvania's Health* 31:3 (1970).

"Advanced Dosimetry and Exposure Evaluation," *Radiation Safety in X-Ray Diffraction and Spectroscopy,* DHEW Publication No. (FDA) 72-8009, BRH/DEP 72-3. USGPO (1971).

"Radiation Incidents Registry - Pennsylvania Experience," *Health Physics* 21:605-607 (1971).

"Nationwide Evaluation of X-Ray Trends," *Proceedings of the 3rd International Congress of the International Radiation Protection Association, September 9-14, 1973,* USAEC Publication No. CONF-73097-P2 (1974).

"A Survey of Accelerator Radiation Safety Systems," *Health Physics* 30:306-308 (1976).

"A Possible Hazard: Pressure Build-up in Sealed Ampoules of radionuclides in Aqueous Solutions," (letter) *Health Physics* 51:147-148.

"Performance Characteristics of Selected Integrating Ion Chambers," *Health Physics,* 33:199-203 (1977).

Regulation of Naturally Occurring and Accelerator-Produced Radioactive Materials, U.S. Nuclear Regulatory Commission, Publication No. NUREG-0301. National Technical Information Service, Springfield, Virginia 22161 (1977).

Final Task Force Report on the Agreement States Program, U.S. Nuclear Regulatory Commission, Publication No. NUREG-0388. National Technical Information Service, Springfield, Virginia 22161 (1977).

Impacts of NRC Programs on State and Local Governments, U.S. Nuclear Regulatory Commission, Publication No. NUREG-1041 (Co-editor). National Technical Information Service, Springfield, Virginia 22161 (1983).

"NRC Responses to the NGA Study of the Agreement State Program," *Proceedings of the 15th Annual Conference on Radiation Control,* May 16-19, 1983. Conference of Radiation Control Program Directors, Inc., Frankfort, Kentucky 40601 (1984).

Regulation of Naturally Occurring and Accelerator-Produced Radioactive Materials - An Update, U.S. Nuclear Regulatory Commission, Publication No. NUREG-0976. National Technical Information Center, Springfield, Virginia 22161 (1984).

Workshop on Large Irradiator Radiation Safety, U.S. Nuclear Regulatory Commission, Publication No. NUREG/CP-0073, National Technical Information Service, Springfield, Virginia 22161 (1985).

"Radioactive Contamination of Manufactured Products," *Health Physics,* 51:409-425 (October 1986)

"Radioactive Contamination of Steel," *Radiation Protection Practice: 7th International Congress of the International Radiation Protection Association,* Pergamon Press (1988).

"Radioactive Contamination of Metal Products: A Continuing Problem," *Proceedings of the 20th Annual Conference on Radiation Control,* May 15-19, 1988. CRCPD Publication 88-6, Frankfort, Kentucky 40601 (1988).

Funding the NRC Training Program for States, U.S. Nuclear Regulatory Commission, Publication No. NUREG-

1311, National Technical Information Service, Springfield, Virginia 22161 (1988).

Leakage of an Irradiator Source - the June 1988 Georgia RSI Incident, U.S. Nuclear Regulatory Commission, Publication No. NUREG-1392, National Technical Information Service, Springfield, Virginia 22161 (1990).

"Discoveries of Radioactive Materials in Metal Scrap," *Newsletter of the Conference of Radiation Control Program Directors, Inc*, Summer 1990, Frankfort, Kentucky.

"A Radiation Protection Primer," *Scrap Processing & Recycling*, 48:2 (March/April 1991).

"Radioactive Materials in Recycled Metals," *Health Physics*, 68:440-451 (April 1995).

"Radioactive Contamination of Recycled Metals," *Proceedings of the 1996 International Congress on Radiation Protection*, International Radiation Protection Association, Seibersdorf, Austria (1996).

"The Continuing Problem of Radioactive Metal Scrap," *Proceedings of the 27th National Conference of Radiation Control*, CRCPD Publication 95-4, Frankfort, Kentucky 40601 (1997).

"Problems in the United States With Control of Radioactive Sources," *Proceedings of the International Conference on the Radiological Accident with Cs-137 in Goiania - 10 Years Later, October 26-31, 1997*, International Atomic Energy Agency, Vienna, Austria (December 1998).

"Radioactive Materials in Recycled Metals - An Update," *Health Physics* 74:293-299 (March 1998).

"Spanish Steel Mill Melts Large Cesium Source," *Health Physics Society Newsletter* (September 1998).

"Optimizing the Radiation Monitoring of Recycled Metals," *Proceedings of the 1998 Midyear Topical Meeting of the Health Physics Society*. Republished in *Good Practices in Health Physics*, G.R. Komp & M.A. Thompson, editors, pp 55-58, Medical Physics Publishing, Madison, WI (1998).

"Learning From Operational Experience: Safety of Radiation Sources in the United States in the Twentieth Century," *Proceedings of the International Conference on Safety of Radiation Sources and Security of Radioactive Materials, Dijon, France, 14-18 September 1998*, International Atomic Energy Agency.

"Unwanted Radioactive Sources in the Public Domain: An Historical Perspective," *Operational Radiation Safety*, a supplement to *Health Physics* v. 76, no.2 (February 1999).

"A Century's Challenges: Historical Overview of Radiation Sources in the United States," *IAEA Bulletin* 41/3/1999 (September 1999).

"Status on the Safe Management of Disused Radioactive Sources," Safety of Radioactive Waste Management, Proceedings of an International Conference, Cordoba, Spain, 13-17 March 2000; International Atomic Energy Agency, Vienna, Austria, STI/PUB/1094, 2000.

"International Agencies Act on Disused Source Problem," *Health Physics Society Newsletter* (May 2000).

"A Historical Overview of Orphan Sources and Radioactivity in Scrap Metals," Proceedings of the 10th Annual International Radiation Protection Congress, Hiroshima, Japan, May 2000.

"Spent/Disused/Orphan Sources: Action is Needed," (Editorial) *Health Physics Society Newsletter* (July 2000).

"Orphan Source Overview," Proceedings of the 34th Midyear Topical Meeting, Radiation Safety and ALARA Considerations for the 21st Century, February 4-7 2001, Anaheim, CA, pp 131-136, Medical Physics Publishing, Madison, WI.

"New Paradigms for Radioactive Sources & Radioactive Scrap," invited presentation for American Academy of Health Physics special session, New and Changing Paradigms for Radiation Safety as We Enter the 21st Century,

46th Annual Meeting of the Health Physics Society, June 10-14, 2001, Cleveland, OH. A summary of this paper was published in the *Health Physics Scoiety's Newsletter* XXIX:9, p18. The complete paper will be published in *Operational Radiation Safety,* January 2002 supplement to *Health Physics* under the title, "Too Many Notes?"

Other Publications

"Toy Trains for Health Physicists," *Health Physics Society Newsletter* (December 1997)

"Toy Trains for Health Physicists: Kusan's Atomic Train," *Health Physics Society Newsletter* (March 1998)

"Toy Trains Used by Health Physicists," *Health Physics Society Newsletter* (June 1998)

"Toy Trains for Health Physicists: Three Mile Island Cars," *Health Physics Society Newsletter* (July 1998).

"Atomic Toy Trains," *Train Collectors Quarterly* (July 1999).

Recent Speaking Experience

Recent invited presentations include International Conferences on Safety of Radiation Sources and Security of Radioactive Materials (Rapporteur), September 14-18, 1998, Dijon, France and on Safety of Radioactive Waste Management, 13-17 March 2000, Cordoba, Spain (Keynote Speaker); Institute of Scrap Recycling Industries seminar, June 28, 1998, Orlando, FL; Health Physics Society Topical Meeting (Session Chair and Overview Statement), Anaheim, CA, February 4-7, 2001; and American Academy of Health Physics special session, New and Changing Paradigms for Radiation Safety as We Enter the 21st Century, 46th Annual Meeting of the Health Physics Society, June 10-14, 2001, Cleveland, OH.

Lecturer and discussion leader, NRC Technical Training Center, 1981-1998.

Harvard School of Public Health Continuing Professional Education lecturer, 1993-1998

Health Physics Society Professional Enrichment Program Lecturer, 1996, 1997.

Panelist, "Safety of Large Radiation Sources," and Refresher Course Lecturer, 1996 International Congress on Radiation Safety, Vienna, Austria, April, 1996.

Speaking experience also includes representing the NRC at State legislative hearings, industry, professional, and public meetings and as chairperson, instructor, course coordinator, and guest speaker at other professional training courses and meetings.

National Council on Radiation Protection and Measurements

Adjunct Member
Advisor, Scientific Subcommittee 87-4, Managment of Waste Metals Containing Radioactivity
Member, Scientific Committee 46, Operational Radiation Safety

New and Changing Paradigms in Radiation Safety

Last month we introduced what is to be a series of articles based on the 13 June American Academy of Health Physics session at the 2001 American Radiation Safety Conference and Exposition. Last month's article, contributed by Roger Clarke, was based on the opening paper at the session and reported on the thoughts of the International Commission on Radiological Protection, and some of Roger's vision, about recommendations for protection in the new millennium. This month we move several presentations ahead in the session program and look at possible changes to deal with specific source problems. Joel Lubenau summarizes his thoughts on changes that might mitigate some of the problems being introduced by "orphan" radioactive sources—including one potentially controversial and some benign recommendations.

Charles Roessler, AAHP Past President and Session Organizer

New Paradigms for Radioactive Sources

Joel O. Lubenau, CHP

Summary of paper: Following a short review of current U.S. and international initiatives to address the orphan source problem, the question was asked whether additional measures were needed—new paradigms for radioactive sources? There appear to be two promising possibilities. The first deals with the question of whether current uses of radioactive sources meet the principle of justification especially as developed by the International Commission on Radiological Protection (ICRP). The second deals with whether current provisions for low-level radioactive waste disposal exacerbate the orphan source problem and need to be changed.

Although the term is relatively new, the concept of justification can be traced to the 1960 Federal Radiation Council guidance of "balancing the biological risks and benefits from radiation use." ICRP recommendations call for assessments of justification not only for new practices using radiation but also for existing practices when there is new information about their efficacy and consequences. Assessments should also consider the management and disposal of radioactive wastes resulting from a practice. In the United States, there are ample historical examples of practices using radiation that were discontinued because of new information about their efficacy or consequences, for example, discouraging the use of radium solution medicines, developing alternatives to radium sources for medical applications, and eliminating the use of shoe-fitting fluoroscopes (which at one time numbered about 10,000 in the United States).

It is possible that some current uses of radioactive sources could be similarly treated. For example, orphan ^{241}Am nuclear gauges are frequently found in scrap metal intended for recycling. Nuclear gauges are commonly used in the food and beverage industries to measure the fill content of containers (estimated to number about 10,000 in the United States). However, alternative technologies are available for this purpose. One gauge manufacturer offers to replace ^{241}Am sources in its gauges with x-ray sources. An international beverage company limits its use of nuclear fill-level gauges to products packaged in cans and is encouraging the conversion of nuclear gauges to x-ray gauges. Optic technology is used for products in bottles.

Limiting the number of radioactive sources to those which are justified would limit the number of potential orphan sources.

Presently, there are in the United States as many as one-half million unwanted radioactive sources, each representing a potential orphan source. For persons possessing unwanted radioactive sources, the present system for providing for the disposal of radioactive sources is not well known, especially to general licensees and persons who unexpectedly find themselves in possession of a source (such as scrap metal users). Further, the system is complex, not easily understood, and unexpectedly expensive. Not surprisingly, in many cases, unwanted sources are placed into extended storage where they become vulnerable to loss, theft, and abandonment. A new approach is needed that encourages prompt transfer of unwanted sources to safe, secure storage sites pending final disposition.

To help develop new approaches, communication is essential. For example, alternative technologies that could be used to replace radioactive sources are not well known to users or regulators. There is a need for alternatives for dispositioning unwanted sources and for improved communication of such information to persons needing to know. The time is ripe to organize a symposium as a means to exchange information on these points. Such a symposium would be an important first step towards developing new paradigms for radioactive sources that are needed to solve the orphan source problem.

Note: The complete paper is scheduled for publication in the January 2002 issue of *Operational Radiation Safety.*

Patricia C. Gorman October 2, 2001

Distribution:
DIR RF (1-147) DCD (SP02) Joel Lubenau
SDroggitis PDR (YES✓)
CRCPD FILE

DOCUMENT NAME: G:\KXS\joel for villforth lecture.wpd
To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	STP	E	STP:DD		STP:D					
NAME	KNSchneider:gd		FCombs		PHLohaus					
DATE	10 09/ /01		10/2/01		10/2/01					

STP-C-7