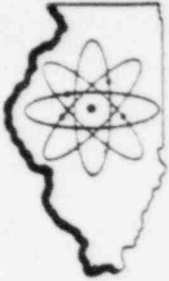


ILLINOIS DEPARTMENT OF NUCLEAR SAFETY



December 10, 1981

U.S. Nuclear Regulatory Commission
Material Licensing Section
799 Roosevelt Road
Glen Ellyn, Illinois 60137

RE: Application for NRC License, Control Number 04298

Gentlemen:

The following is submitted as supplementary information to our application for a NRC license in response to your request for additional information.

Item 3 - Person to be Contacted. George M. McCann has left the department. The new contact is Paul Eastvold, Chief of Nuclear Materials Safety Division.

Item 5 - Places of Use.

- A. Dose calibrator and nuclear medicine sources will be used at temporary job sites throughout the State of Illinois. They may also be stored at the Central Office at 1035 Outer Park Drive, Springfield, Illinois and at 560 North Street, Springfield, Illinois.
- B. Cesium 137 sealed sources used for calibration of radiation survey instruments will be used at the department's calibration laboratory at 525 West Jefferson Street, Springfield, Illinois.
- C. Environmental samples will be obtained in the vicinity of nuclear power plants (temporary job sites) throughout the state and will be transferred to the Illinois Department of Public Health for analysis. The Department of Public Health possesses License #12-08948-01. A possession limit is requested for these samples while they are in the possession of state personnel.

Item 6 - Authorized Users. Some individuals have left the department and some duties have changed. In order to clarify this section, we are relisting the individuals who should currently be listed as users of material.

Paul Eastvold	Authorized on License #12-08948-01
Maury H. Neuweg	Authorized on License #12-08948-01
John Papendorf	Authorized on License #12-08948-01
Steve Dunas	Authorized on License #12-08948-01

John Cooper	Training attached
Thomas Conley	Training attached
Gregory Crouch	Training attached
Arthur Carlson	Training attached
James Blackburn	Training attached

Item 7 - Radiation Protection Officer. Paul Eastvold has been designated as Radiation Protection Officer and Thomas Conley has been designated as Assistant RPO. Paul Eastvold was previously listed as an authorized user on License #12-08948-01. A summary of training and experience is attached for Mr. Conley. A description of the duties, responsibilities and authority of the RPO is also attached.

Item 8 - Licensed Material. In order to clarify this section, the list of licensed material requested is resubmitted.

- A. Any by-product material between Atomic Nos. 3-83.
Sealed sources.
Not to exceed 3 millicuries per source. Not to exceed 20 millicuries per radionuclide.

To be used for calibration checks of dose calibrators and nuclear medicine equipment at temporary job sites throughout the State of Illinois.

- B. Cesium 137.
Sealed source.
3 curies.

To be used in a J.L. Shepherd Model 81-8A instrument calibrator for calibration of survey instruments. The source will be used in the department's instrument calibration facility at 525 West Jefferson Street, Springfield, Illinois.

- C. Cesium 137.
Sealed source contained in J.L. Shepherd Model 10 instrument calibrator.
30 millicuries.

To be used for calibration of radiation survey instruments at the department's instrument calibration facility at 525 West Jefferson Street, Springfield, Illinois.

- D. Xenon 133.
Free gas in sealed ampules.
80 millicuries.

To be used for calibration checks of dose calibrators and nuclear medicine equipment at temporary job sites throughout the State of Illinois.

- F. Any by-product material between Atomic Nos. 3-83.
Any form.
500 millicuries.

Environmental and effluent samples to be transferred to the Department of Public Health Laboratory for analysis. Also, as a contaminant on samples for leak tests, to be transferred to the Department of Public Health Laboratory for analysis.

Attachment D - Calibration of Survey Instruments

The current calibration procedure describes Radium 226 (14.5 mCi) as the calibration source. The instruments will be calibrated using the Cesium 137 calibration sources listed in Items 8.B. and 8.C. of the application. Both sources are being supplied to the department by the Bureau of Standards as part of a regional calibration laboratory, and are therefore directly traceable to NBS ($\pm 5\%$).

Attachment F - Radiation Protection Program

Sealed Source Leak Test Program

Sealed sources emitting gamma radiation will be tested for leakage/contamination using a Geli detector in the Department of Public Health Laboratory. Dry wipes are counted for approximately 200 minutes and the data processed by a PDP unit. Minimum detectable activity is less than 10pCi.

Sealed sources emitting alpha or beta radiation are tested by analyzing dry wipes in a gas flow proportional counter for about 200 minutes. Minimum detectable activity is about 5 pCi for alpha and 10 pCi for Beta. This is also performed in the Department of Public Health Lab.

In all cases, results of analyses are returned to the Department of Nuclear Safety, reviewed for results and placed in permanent file (RPO) if results are negative. If results are positive, source will be considered leaking and disposed of in radioactive waste.

Attachment H - Emergency Procedures

The emergency procedures in the original license application will be used in those cases where non-contained material is on hand or in transport, i.e., environmental samples.

In the case of sealed sources, our primary use, procedures applicable to such sources will be used.

1. Radiation levels will be determined with a portable survey meter.
2. Source will be shielded, if possible, and area will be secured to unrestricted area (0.6 mR/hr).

3. Radiation Safety Officer will be notified.
4. Source will be secured with remote handling tools and placed in shield.
5. Area and source will be checked for leakage and/or contamination.

Appendix H - General Rules for the Safe Use of Radioactive Material

The rules contained in the original application are designed for nuclear medicine departments and should be deleted from the application. The following set of rules should be substituted in their place:

1. All areas where radionuclides are stored are to be secured at all times when unattended. This includes areas containing sealed sources and non-contained sources (environmental samples).
2. Monitor hands and clothing for contamination after handling environmental samples.
3. Do not eat, drink, smoke or apply cosmetics in area where non-contained samples are stored or handled.
4. Wear personnel monitoring devices at all times while in areas where radioactive materials are used or stored.
5. Wear TLD extremity badges (fingers) when handling calibration sources or calibrating instruments.
6. When calibrating instruments, do not make adjustments with hands in beam (source exposed).

Waste Disposal

All non-contained radioactive materials (environmental samples) are transferred to the Illinois Department of Public Health Laboratory (License #12-08948-01) for analysis and disposal under their license.

All sealed sources will be returned to the manufacturer for disposal. Sealed sources obtained from the National Bureau of Standards or Bureau of Radiological Health will be returned to the respective agency for disposal.

Transport of Sources

1. All sealed sources will be transported in original shipping container or in larger lead container available in the department. Container will be surveyed with portable survey instrument prior to transport. Radiation levels will be below DOT regulations, or source will be repackaged and resurveyed to meet criteria.
2. Sources will be transported only by individuals listed on license as authorized users. Transporting individuals will also have

available a portable radiation survey instrument (properly calibrated). Driver will be film badged.

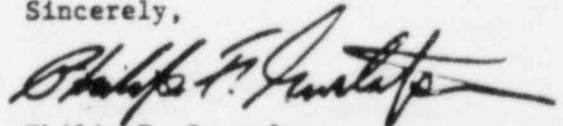
3. Sources will be transported in the trunk of a car or van, secured away from the driver or passenger area. Storage area will be locked during transport period.
4. In case of emergency (accident, etc.), sources will not be left unattended. Area of vehicle and source container will be checked with survey instrument to ensure integrity has been maintained. RSO will be notified if repairs on vehicle are required, sources will be removed and transferred to another vehicle.
5. If environmental samples are transferred, the same procedure will be used. However, the container and vehicle will be surveyed for contamination when transport is completed.

Duties and Responsibilities of RSO

1. Establish and supervise operating procedures and to review them periodically for radiation safety and to maintain personnel exposures as low as reasonable achievable. Procedures shall be reviewed to assure compliance with NRC regulations and license conditions.
2. Instruct personnel on proper radiation practices, including subjects described in 10CFR19.12.
3. Conduct or have conducted radiation surveys and sealed source leak tests, review of results of such surveys and tests, and maintain records of above, including summaries of corrective measures undertaken.
4. Assure that personnel monitoring devices are used, that records are kept of the results of such monitoring, and that such results are reviewed monthly.
5. Investigate each known or suspected instance of excessive or abnormal exposure to determine the cause and to take steps to prevent its recurrence.
6. Maintain NRC license and copies of 10CFR 19 and 20.
7. Review field offices, labs, and storage areas annually when storing radioactive material at these locations.

I hope this is sufficient to complete our application. If additional information is needed, do not hesitate to contact us.

Sincerely,


Philip F. Gustafson,
Director

James Andrew Blackburn

PERSONAL DATA

Age
Birthdate
Place of Birth
Marital Status
Children
Military Status
Citizenship

PROFESSIONAL EMPLOYMENT

Present Position	Health Physicist IV
1980 - Present	ILLINOIS DEPARTMENT OF NUCLEAR SAFETY
1980 - Present	Project Manager, Development & Installation of Remote Effluent Monitoring System - LaSalle Nuclear Generating Station.
1980 - Present	Chief, Division of Environmental Monitoring
1968 - 1980	ILLINOIS DEPARTMENT OF PUBLIC HEALTH
1979 - 1980	Project Manager, Development of Technical Functions - Illinois Radiological Emergency Response Plan.
1978 - 1979	Development, supervision and participation in Health Physics program to support US Geological Survey Horizontal Boring Research Project at the Sheffield Low-Level Nuclear Waste Disposal Site.
1977 - 1980	Emergency Planning around Production and Utilization Facilities in Illinois.
1977 - 1979	Inspection and Supervision of Sheffield Nuclear Waste Disposal Site.
1977 - 1979	Inspection of Uranium Hexafluoride Conversion Facility (Metropolis Works).
1977 - 1979	Member "Radioactive Waste Disposal" Task Force. (Conference of Radiation Control Program Directors, CRCPD).

PROFESSIONAL EMPLOYMENT (cont'd.)

1976 - 1979	Coordination of State activities regarding the Transportation of Radioactive Materials.
1976 - 1977	Resource person to USNRC Task Force "Regulation of Naturally Occurring and Accelerator Produced Radioactive Materials" (NUREG 0301).
1975 - 1977	Member "Naturally Occurring and Accelerator Produced Radioactive Materials" Task Force (HEW Publication FDA77-8025).
1973 - 1979	Team Captain and Alternate Team Coordinator for Illinois Radiological Assistance Team (ILLIRAT).
1973 - 1977	Manager of Radioactive Materials Licensure.
1972 - 1977	Hospital Consultant concerning "Care of Radiation Accident Patients".
1972 - 1973	Project Coordinator for "Comprehensive Radiation Assessment Study".
1971 - 1976	Data Processing Coordinator for Office of Environmental Health.
1969 - 1972	Development of Comprehensive Data Management System for Medical X-ray Inspections".
1968 - 1977	Health Physics evaluations of major medical and industrial radiation facilities.
1967 - 1968	V. A. HOSPITAL, IOWA CITY, IOWA
1967 - 1968	Operator for Whole Body Counter.

EDUCATION

1976 - Present	Sangamon State University, Springfield, Illinois. 38 semester hours towards Masters Degree in Business Administration.
1970 - 1971	Lincoln Land Community College, Springfield, Illinois. 4 semester hours, "Computer Concepts".
1965 - 1968	University of Iowa, Iowa City, Iowa. B.S. in Nuclear Medical Technology.
1964 - 1965	Bethel College, Saint Paul, Minnesota. 48 semester hours towards B.S. in Pre-Medicine.
1960 - 1963	Jeffers High School, Jeffers, Minnesota.

SPECIAL EDUCATION

1979	USNRC, USFEMA Radiological Emergency Response Planning Course, Allerton Park, Illinois
1977	USNRC Radiological Emergency Response Operations Course, Las Vegas, Nevada
1977	USNRC Radiological Accident Assessment Course, Minneapolis, Minnesota
1975	USNRC Oil and Gas Well Logging Course, Houston, Texas
1970	USAEC Orientation Course in Regulatory Practices and Procedures, Bethesda, Maryland
1970	Oak Ridge Associated Universities 10 week Health Physics Course, Oak Ridge, Tennessee
1968	USPHS Radium Hazards and Control, Argonne National Laboratory, Argonne, Illinois

PROFESSIONAL CERTIFICATIONS

NM (ASCP)	Nuclear Medical Technologist, American Society of Clinical Pathologists
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PROFESSIONAL PRESENTATIONS

December	1980	Illinois Commission on Atomic Energy, "Radiological Monitoring and Assessment".
August	1980	Unpublished manuscript, "Occupational Exposure to Dial Painters and Assemblers of Radioluminous Timepieces". (Submitted for consideration for publication in Health Physics Journal - principle author is Robert Simpson with USFDA)
April	1980	Statewide Health Coordinating Council "Nuclear Safety"
March	1980	Guest lecturer, Sangamon State University, "Radioactive Waste Disposal in Illinois"
September	1979	Co-author "Interagency Task Force Report on the Proposed Decommissioning of the Sheffield Nuclear Waste Disposal Site."
June	1979	Guest panelist, Quincy College Alumni Seminar, "Nuclear Energy and the Energy Crisis"
May	1978	National Governor's Association - principle author, "Transportation of Radioactive Materials".

PROFESSIONAL PRESENTATIONS (cont'd.)

June	1977	9th Annual National Conference on Radiation Control, Seattle, Washington, "Illinois Experience with Low-Level Waste Management".
May	1977	Symposium on Management of Low-Level Radioactive Wastes, Atlanta, Georgia, "Illinois Experience with Low-Level Waste Management".
April	1977	Testimony before Advisory Committee on Reactor Safeguards regarding "Emergency Planning in Illinois".
May	1976	8th Annual National Conference on Radiation Control, Springfield, Illinois, "Illinois Comprehensive Radiation Assessment Study".
October	1974	XIII International Congress of Radiology, Madrid, Spain, "Nationwide Evaluation of X-Ray Trends: An Organ Dose Index System for Evaluating the Effectiveness of X-Ray Control Programs" (Paper was read by the principle author, Mr. Jerry Gaskill, USFDA).
January	1974	Midwest Chapter Health Physics Society, "Comprehensive Radiation Assessment Study".
October	1971	American Public Health Association "A Comprehensive Data Management System for a State Medical X-ray Inspection Program".
March	1971	Joint meeting, Midwest Chapter Health Physics Society and the American Association of Physicists in Medicine, "A Comprehensive Data Management System for a State Medical X-ray Inspection Program".
Various		Various hospitals and emergency services agencies, "Care of Radiation Accident Patients", "Guidelines for Emergency Personnel in Peacetime Nuclear Incidents", etc.

RESUME
GREGORY P. CROUCH

Present Address

Phone: [

Permanent Address

Phone: [

CONTACT HERE

Career Objective

Desire a career in environmental quality, particular interests being radiological health and health physics.

Education

Bachelor of Science: Major-General Biology
May 1975 Purdue University, West Lafayette, Indiana
Graduation Index: 5.4/6.0

Master of Science: Bionucleonics, Concentration-Health Physics
May 1977 Purdue University, West Lafayette, Indiana

Work Experience

Includes 2½ years in the administration of university radiological health programs.
Duties included environmental surveillance, personnel monitoring, processing incoming shipments of radionuclides for distribution, radioactive waste processing and shipment, and instruction of students in health physics.

Extracurricular Activities

Music Group Leader - St. Thomas Aquinas, West Lafayette, Indiana
Student Board - St. Thomas Aquinas, West Lafayette, Indiana
Music Director - St. Francis Parish, Muncie, Indiana
Parish Board - St. Francis Parish, Muncie, Indiana

Interests and Hobbies

[Guitar, Voice, Golf, Camping, Canoeing]

Personal Data

Date of Birth: []
Height: []
Weight: []

Marital Status: []
Health: []

*References and transcripts available upon request

THOMAS ALAN CONLEY

CAREER OBJECTIVES: To work as a Health Physicist, become a recognized expert in a wide range of radiation protection activities and an effective manager of programs and personnel.

OCCUPATIONAL SUMMARY:

Illinois Dept. of Nuclear Safety and Illinois Dept. of Public Health	Health Physicist 7-79 to present
Stillwater Public Schools (Okla.)	Custodian 2-77 to 7-79
Conoco, Inc., Ponca City, OK	X-ray Fluorescence Tech. 5-75 to 5-76 and X-ray Diffraction Tech. 5-74 to 8-74

DEGREES:

Bachelor of Science, Health Physics Oklahoma State University, Stillwater, OK Earned 50% of expenses (approximate).	May 1979
Associate of Science, Chemistry Northern Oklahoma College, Tonkawa, OK Earned 75% of expenses (approximate).	May 1976

RELATED SHORT COURSES:

Radiological Emergency Response Operations.	U.S. N.R.C. sponsored
Safety Aspects of Industrial Radiography.	U.S. N.R.C. sponsored
Inspection Procedures.	U.S. N.R.C. sponsored
Medical Use of Radionuclides.	U.S. N.R.C. sponsored
Time Management.	Ill. Dept. of Public Health sponsored

PROFESSIONAL AFFILIATIONS:

American Nuclear Society
Health Physics Society

PERSONAL DATA:

Date of Birth: []
Marital Status: []
Hobbies and Interests: [Sailing, Billiards, Camping]

SUMMARY OF PROFESSIONAL EXPERIENCE:

1979 to present

Illinois Dept. of Nuclear Safety

Transferred from Ill. Dept. of Public Health upon the formation of the Illinois Dept. of Nuclear Safety in October 1980. Given increased responsibilities under the Chief, Div. of Nuclear Materials in the supervision of statewide field inspectors. This involves the evaluation of inspection reports, insuring that work assignments and standards are maintained, and providing guidance in problem areas.

Additionally, the review of license applications and preparation of licenses has been assigned to maintain the licensing program due to inadequate staffing.

The position requires working closely with medical practitioners, technologists, administrative and radiation safety officers regarding the proper use, handling, storage and disposal of radioactive materials.

Designated as the Field Nuclear Data Analyst during radiological emergencies.

This required a self taught mastering of the Nuclear Data ND-6600 computer system for gamma spectroscopy analysis. Currently learning the operation of a Digital Equipment Corporation PDP 11/70 computer interfaced with a Canberra series 80 multichannel analyzer.

5-75 to 5-76 and
5-74 to 8-74

Conoco, Inc.

Operated x-ray diffraction and x-ray fluorescence analyzers. Assisted in interpreting results of uranium field sample analysis.

Assisted in operation of a PDP 11/05 computer interfaced with an Ortec multichannel analyzer and x-ray fluorescence analyzer.

Resume of
Arthur H. Carlson

Arthur H. Carlson

Present Address: []

Telephone: []

Education: Bogan High School (Chicago, Il.) Graduated 1964
Bogan Junior College: 1964-1966; General Subjects
Moraine Valley Com. College: 1968-1970; Assoc. of Applied Sci
Majored in Radiologic Technology
DeVry Institute of Technology: 1972-1975; Home Entertainment
Electronics
Sangamon State University: 1980-present; Broadcasting
Communications/Computer Science

Supplemental

Education: Eberline Instruments Co.: Radiation Detection Instrumentation
Technology
E&R Block: Basic Income Tax Course
U.S. Nuclear Regulatory Commission: Radiological Emergency
Response Operations Training
Cook County Graduate School: Radiation Safety in Diagnostic
Radiology

Work History:

Christ Community Hospital, Oak Lawn, Il. 6-68 to 10-70
Part-time while attending college. Radiologic Technologist
Illinois Central Hospital, Chicago, Il. 10-70 to 4-72
Radiologic Technologist in X-ray Department
Illinois Department of Public Health 4-72 to 11-80
Title: Health Physics Technician II 4-72 to 6-77
Job description: Inspect X-ray facilities within
Cook County using the Rules and Regulations as a guide.

Arthur H. Carlson

Title: Health Physics Technician III 6-77 to 2-79

Job description: Inspect X-ray and Nuclear Materials facilities using the Rules and Regulations and Issued Radioactive Material Licenses.

Title: Health Physicist II 2-79 to 11-80

Job description: Inspect X-ray and Nuclear Materials facilities . Formulate inspectional procedures for and inspection of laser light shows.

Transferred to Springfield Office Oct. 79 to develop and manage 1st Regional Calibration Lab for Radiologic Instrumentation.

Troubleshoot and repair instruments.

Manage division-wide inventory programs.

II. Department of Nuclear Safety 11-80 to Present

Title: Health Physicist II

Job Description: Manage the design and implementation of the Regional Calibration Lab.

Co-manage the Medical Compliance Program.

Calibrates and maintains performance criteria of all Radiologic Instrumentation. Tests new equipment for rated specifications, prepares and maintains records.

Repairs Radiologic Instrumentation and makes electronic repairs.

Functions as communication officer in radiologic emergency command center during nuclear or radiologic emergencies, exercises or drills.

Arthur H. Carlson

Gives presentations to organizations and groups
regarding general radiation protection standards.

Supplemental: Work History (Part time)

Lafayette Radio-Audio Sales

A.C. Electronics (self owned) Electronic repair
on audio and video equipment.

H&R Block-Tax Consultant

John W. Cooper
Department of Nuclear Safety
Office of Technical Support
Springfield, IL

Education

B.S. Drake University, Pharmacy, 1960
M.S. University of Iowa, Pharmacy, 1964
Ph.D. University of Iowa, Radiation Biology, 1972

Experience

1968 - 1971 University of Iowa, Radiopharmacist and Department Safety Officer.
Handled multi-curie quantities of gamma and beta emitting radio-
nuclides, including I-131, I-125, Tc-99m, In-113m, Sr-85, Hg-203,
C-14, H-3, Co-60 and Cs-137.

1971 - 1975 Research Scientist, Radiopharmacist and Safety Officer, Allegheny
General Hospital, Pittsburgh, PA. Handled multi-curie quantities
of I-125, I-131, Co-57, H-3, C-14, Ce-144, Cs-137, Co-60.

1975 - 1981 U.S. NRC, Glen Ellyn, IL.

1981 - Present Illinois Department of Nuclear Safety