

APPLICATION FOR MATERIAL LICENSE

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

FEDERAL AGENCIES FILE APPLICATIONS WITH:

U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF FUEL CYCLE AND MATERIAL SAFETY, NMSS
WASHINGTON, DC 20555

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS, IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND, MASSACHUSETTS, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIAL SECTION B
631 PARK AVENUE
KING OF PRUSSIA, PA 19406

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION II
MATERIAL RADIATION PROTECTION SECTION
101 MARIETTA STREET, SUITE 2900
ATLANTA, GA 30323

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION III
MATERIALS LICENSING SECTION
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
MATERIAL RADIATION PROTECTION SECTION
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TX 76011

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION V
MATERIAL RADIATION PROTECTION SECTION
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CA 94596

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTION.

1. THIS IS AN APPLICATION FOR (Check appropriate item)

- ☐ A. NEW LICENSE
☐ B. AMENDMENT TO LICENSE NUMBER _____
☒ C. RENEWAL OF LICENSE NUMBER 34-18805-01

2. NAME AND MAILING ADDRESS OF APPLICANT (Include Zip Code)

The Bionetics Corporation
16 Triangle Park Drive
Cincinnati, Ohio 45246

3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED.

The Bionetics Corporation
16 Triangle Park Drive
Cincinnati, Ohio 45246

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

L. B. Littlefield

TELEPHONE NUMBER

(513) 771-0448

SUBMIT ITEMS 5 THROUGH 11 ON 8 1/2 x 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL

a. Element and mass number, b. chemical and/or physical form, and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANA:

8508120752 850731
REG3 LIC30
34-18805-01 PDR

12. LICENSEE FEES (See 10 CFR 170 and Section 170.31)

FEE CATEGORY 170-3P AMOUNT ENCLOSED \$ 120.00

13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, AND 40 AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948, 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

SIGNATURE—CERTIFYING OFFICER

TYPED/PRINTED NAME

TITLE

DATE

14. VOLUNTARY ECONOMIC DATA

a. ANNUAL RECEIPTS

<\$250K	\$1M-3.5M
\$250K-500K	\$3.5M-7M
\$500K-750K	\$7M-10M
\$750K-1M	>\$10M

b. NUMBER OF EMPLOYEES (Total for entire facility excluding outside contractors)

c. NUMBER OF BEDS

d. WOULD YOU BE WILLING TO FURNISH COST INFORMATION (Dollar and/or staff hours) ON THE ECONOMIC IMPACT OF CURRENT NRC REGULATIONS OR ANY FUTURE PROPOSED NRC REGULATIONS THAT MAY AFFECT YOU? (NRC regulations permit it to protect confidential commercial or financial—proprietary—information furnished to the agency in confidence)

FOR NRC USE ONLY

TYPE OF FEE REN FEE LOG May 20 1985 FEE CATEGORY 3P

COMMENTS

AMOUNT RECEIVED

CHECK NUMBER

\$120

1610

RECEIVED
MAY 1 1985
REGION III

REGION III

CONTROL NO. 7

APPROVED BY

DATE

10 Jackson
8976

PRIVACY ACT STATEMENT

Pursuant to 5 U.S.C. 552a(e)(3), enacted into law by section 3 of the Privacy Act of 1974 (Public Law 93-579), the following statement is furnished to individuals who supply information to the Nuclear Regulatory Commission on NRC Form 313. This information is maintained in a system of records designated as NRC-3 and described at 40 Federal Register 45334 (October 1, 1975).

1. **AUTHORITY:** Sections 81 and 161(b) of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2111 and 2201(b)).
2. **PRINCIPAL PURPOSE(S):** The information is evaluated by the NRC staff pursuant to the criteria set forth in 10 CFR Parts 30, 32, 33, 34, 35 and 40 to determine whether the application meets the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations, for the issuance of a radioactive material license or amendment thereof.
3. **ROUTINE USES:** The information may be (a) provided to State health departments for their information and use; and (b) provided to Federal, State, and local health officials and other persons in the event of incident or exposure, for their information, investigation, and protection of the public health and safety. The information may also be disclosed to appropriate Federal, State, and local agencies in the event that the information indicates a violation or potential violation of law and in the course of an administrative or judicial proceeding. In addition, this information may be transferred to an appropriate Federal, State, or local agency to the extent relevant and necessary for an NRC decision or to an appropriate Federal agency to the extent relevant and necessary for that agency's decision about you.
4. **WHETHER DISCLOSURE IS MANDATORY OR VOLUNTARY AND EFFECT ON INDIVIDUAL OF NOT PROVIDING INFORMATION:** Disclosure of the requested information is voluntary. If the requested information is not furnished, however, the application for radioactive material license, or amendment thereof, will not be processed. A request that information be held from public inspection must be in accordance with the provisions of 10 CFR 2.790. Withholding from public inspection shall not affect the right, if any, of persons properly and directly concerned need to inspect the document.
5. **SYSTEM MANAGER(S) AND ADDRESS:** U.S. Nuclear Regulatory Commission
Director, Division of Fuel Cycle and Material Safety
Office of Nuclear Material Safety and Safeguards
Washington, D.C. 20555

- Item 5. Material: Ni ⁶³
Form: foil
Maximum amount: less than 15 m.c.
- Item 6. Purpose: Sealed source in electron capture detector in
Tracor 560 gas chromatograph.
- Item 7. Persons responsible for radiation safety program:
- a. L.B. Littlefield
 - b. Ken Edgell
- Resume's are enclosed
- Item 8. NA
- Item 9. NA
- Item 10. NA
- Item 11. Detector will be returned to the manufacturer in case of
repairs or for disposal.

RESUME

NAME: DR. LORY B. LITTLEFIELD

PROPOSED POSITION: PROJECT MANAGER

QUALIFICATION HIGHLIGHTS: Dr. Littlefield holds a Ph.D. in Organic Chemistry and has eleven years of experience in academic, government and government contractor environments. As an employee of EPA he worked with the Quality Assurance Branch becoming proficient in EPA's methods of analysis of water samples, particularly the use of GC/MS techniques of analysis. As the current Project manager, he has directed the construction and staffing of a Microbiological laboratory, the expansion of the lab into a larger facility, and the purchase and installation of a major instrumentation system, the Finnigan GC/MS.

Dr. Littlefield is thoroughly familiar with all aspects of the current contractual effort and works well with the EPA Contract Officer and Project Manager.

EDUCATION:

Ph. D. Organic Chemistry, N.C. State University, Aug. 1976.
B.S. Chemistry, The Citadel, June, 1968.

SPECIALIZED TRAINING:

Postdoctoral studies, Duke University, 1976-1978
GC/MS training Finnigan, 1980

EXPERIENCE:

1982 Organization: The Bionetics Corporation, Hampton, VA
to
Present Position: Project Manager

Primary Duties and Responsibilities: Under contract to EPA, Dr. Littlefield plans, conducts and directs all projects assigned by the EPA Contract Officer. He has total responsibility for the successful scheduling, implementation, and completion of these projects within the time constraints imposed by the government. To accomplish this task he has a staff of sixteen professionals. The supervision of the contract requires that he interface with senior corporate management in the areas of Contract Administration, Finance, Purchasing, Personnel, and Operations. Dr. Littlefield must also work closely with the Contract Officer, the Contract Manager, and the Technical Project Managers to assure all projects are executed exactly to EPA's specification.

As the senior professional, Dr. Littlefield utilizes his knowledge of chemistry to develop and apply new techniques in water/wastewater analysis. He assists his staff in an advisory and problem solving capacity, particularly with the laboratories analytical

instrumentation. Typical water/wastewater analytical procedures used under his direction include: trace organic compounds by GC/MS, GC and HPLC, trace metals by flame and carbon rod Atomic Adsorption, physical parameters, demand series, nutrient series, and microbiological analyses. Samples analyzed include both aqueous and solid matrices and involve a variety of clean up procedures including column chromatography and gel permeation chromatography.

The production of QC samples for laboratory quality control and monitoring is carried out under Dr. Littlefield's direction as one of the principal contract tasks. He is responsible for maintaining a rigid quality assurance program on these samples as well as for the other analytical tasks performed by his staff. To accomplish this program he requires replicate analyses, preparation of standard curves, analysis of spiked and unknown solutions, and analysis of primary standards using second source standards.

Dr. Littlefield writes or reviews all technical reports and contract documentation. He submits to the government bimonthly a report which includes a summary of all current projects, data generated during the past two months, work anticipated during the next two month period, problems encountered and their resolution, and financial resources expended.

1978
to
1982

Organization: U.S. Environmental Protection Agency

Position: Staff Scientist

Dr. Littlefield was a member of the Quality Assurance Branch of the Environmental Monitoring and Services Laboratory. He was responsible for the GC/MS analyses of a wide variety of sample types and matrices. He designed, developed and produced a wide variety of Performance Evaluation samples, including full volume water samples, GC/MS Pesticides and GC/MS Base Neutral sample series. During this period, Dr. Littlefield participated in an evaluation of commercially available GC/MS systems.

1976
to
1978

Organization: Duke University

Position: Postdoctoral Research Fellow

At Duke University Dr. Littlefield worked on a variety of organic synthesis problems with a number of research groups. Together with graduate students, he developed and directed the synthesis of compounds of specific interest to other researchers. These compounds consisted of crown-ether, phosphorus heterocycles, and model phosphorus compounds.

1968 Organization: Charleston Naval Shipyard
to
1970 Position: Chemist

Dr. Littlefield was employed by the Quality And Reliability Branch (QRAB) of the Charleston Naval Shipyard. There he became familiar with a wide variety of procedures for the chemical analysis of: ferrous and non-ferrous alloys, plastics, elastomers, lubrication products, and water. Later Dr. Littlefield became certified in Reactor Water Chemistry and worked in support of the Naval Nuclear Power Program. This work required extreme precision of technique and cleanliness due to the nature of the samples.

RESUME

NAME: KENNETH W. EDGELL

PROPOSED POSITION: ANALYTICAL
CHEMIST, WATER

QUALIFICATION HIGHLIGHTS: Mr. Edgell holds a M.S. in Environmental Science and a B.S. in Biological Sciences with a minor in Chemistry, plus 34 additional credit hours in chemistry. He has practiced his profession since 1972 in industrial, city government, and federal government contractor environments. Originally he was involved with supervising the laboratory section of the NPDES project from 1980 to 1984. He was then promoted to head the Full Volume performance evaluation project for hazardous waste laboratories. Mr. Edgell has good general knowledge of analytical chemistry with emphasis on gas chromatography/mass spectrometry using capillary and packed columns, gas chromatography utilizing flame ionization, Hall and electron capture detectors and the use of an atomic absorption spectrophotometer (flame and flameless) for the determination of most metals. He possesses good organizational skills related to packaging, labelling, and verification testing of performance evaluation/quality control samples and the delegation of duties to accomplish assigned tasks.

EDUCATION: M.S. Environmental Science, University of Cincinnati, Cincinnati, OH, 1983.

B.S. Biological Sciences, University of Cincinnati, Cincinnati, OH, 1972.

CONTINUING EDUCATION: 34 Additional credit hours of chemistry, University of Cincinnati, Cincinnati, OH.

SPECIALIZED TRAINING COURSES: Source Sampling for Particulate Matter
Hydrocarbon Sampling and Analysis
Air Pollution Microscopy
Gas Chromatography Applications Technology in
Environmental Control
Human Relations and People Management
Introduction to Environmental Statistics
Laboratory Safety

EXPERIENCE:

1980 Organization: The Bionetics Corporation, Hampton, VA
to
Present Position: Senior Chemist, Technical Services Laboratory,
Cincinnati, OH

Primary Duties and Responsibilities: Coordinate the Full Volume performance evaluation project for hazardous waste laboratories under the auspices of the Environmental Monitoring and Support Laboratory, EPA, Las Vegas. To design, test, produce, distribute, and analyze hazardous substance list compounds spiked into secondary effluent for

national distribution in a double blind performance evaluation study.

Mr. Edgell directs the Full Volume program that distributes approximately 50 coolers quarterly, containing two liter bottles spiked with hazardous compounds in diluted secondary effluent. Each quarter a new sample design for composition and concentrations must be formulated and tested for recovery.

Hazardous compounds used in this program consist of; volatiles: halogenated methanes, ethanes or ethenes; acids: phenols; base neutrals: halogenated benzenes, PNA's, nitrosamines, phthalates and several ethers; and pesticides. He utilizes extraction and concentration techniques such as purge & trap, Soxhlet, liquid liquid, and Kuderna-Danish for sample preparation. He also operates the Finnigan OWA 1020 GC/MS/DS for sample analysis. Supervises the packaging and distribution of the tested samples in coolers according to EPA directives.

Former duties included the supervision of the laboratory section of the NPDES project. For this project he organized and directed the production and testing of over 1,000,000 ampuls for the NPDES program and the QC samples program. Mr Edgell also directed or conducted verification analyses in the following areas: spectroscopy (UV/visible): for nitrate-nitrogen, ammonia-nitrogen, Kjeldahl-nitrogen, orthophosphates, and total phosphorus; gravimetrics: for suspended solids and oil & grease; atomic absorption (flame and flameless): for Al, As, Ba, Be, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, Fe, V, and Zn; gas chromatography: for determining PCB's in oil; Technicon autoanalyzer: for determining phosphorus and nitrate-nitrogen; and total organic carbon analyzer: for the analysis of total organic carbon.

Mr. Edgell provided technical assistance to NPDES permittees to assist them in analyzing the performance evaluation samples. He was also responsible for packaging/mailling NPDES sample kits, and for logging/filing returned NPDES data report forms.

1973
to
1980

Organization: City of Cincinnati, Cincinnati, OH

Position: Air Pollution Control Chemist

Primary Duties and Responsibilities: Responsible for performing routine analysis in the following areas: spectroscopy (UV/visible): for total oxidant testing in ambient air samples; gravimetrics: for total suspended solids in ambient air samples; atomic absorption (Perkin Elmer 306 with background corrector): for Be, Cd, Pb, Mn, Ni, and Zn determination in total suspended solids samples; hot acid extraction techniques used for dissolution; gas chromatography (Perkin Elmer 900 with flame ionization and Hall detectors): for general unknown organic contaminants in industrial wastewater. He constructed and implemented a purge and trap apparatus for the Cincinnati Sewer

Department for analyses of trihalomethanes in effluent water: Technicon autoanalyzer: for nitrogen dioxide and sulfur dioxide testing of ambient air samples; and Zeiss universal microscope (polarizing with phase contrast and photographic capabilities): for identification of unknown particulate samples.

Mr. Edgell supervised the stack testing program including crew training, equipment maintenance/calibration, and coordination of schedules to provide personnel as verification witnesses for all stack tests.

He also initiated a quality assurance program for the gravimetric, autoanalyzer, and atomic absorption analyses to include replicate, blind, and QC samples. He organized and wrote the agency's annual Air Quality Report which included data summaries and technical information concerning data collection.

1972 Organization: Sun Chemical Corporation

to

1973 Position: Research Technician, Pigments Division, Cincinnati, OH

Primary Duties and Responsibilities: Conducted pilot plant scale pigment salt grinds in an attempt to improve pigment color development. Conducted color matching tests. Responsible for overseeing of plant scaleup batches to ensure conformity with pilot plant procedures.

Revised: October, 1984