Virginia Department of Health
Radioactive Materials Program
(804) 864-8150

APPLICATION FOR A NEW RADIOACTIVE MATERIAL LICENSE AUTHORIZING THE USE OF MATERIAL IN WELL LOGGING, TRACER, AND FIELD FLOOD STUDY

The Virginia Department of Health (VDH) is requesting disclosure of all information for the purpose of obtaining a radioactive material license. Failure to provide any information may result in denial or delay of a radioactive material license.

Instructions – Complete all items. Refer to VAREG 'Guidance for Well Logging, Tracer and Field Flood Study'. Use supplementary sheets where necessary. Retain one copy and submit original of the entire application to: Virginia Department of Health, Radioactive Materials Program, 109 Governor Street, Room 730, Richmond, VA 23219.

APPLICATION TYPE

Item 1 Type Of Application (Check box)

☐ New License

CONTACT INFORMATION

Item 2 Name and Mailing Address Of Applicant:	**Item 3 Person To Contact Regarding Application:**
, -	Name: E-mail: Telephone Number (Include area code) ( ) - x
Applicant's Telephone Number (Include area code): ( ) - x	

LOCATION OF RADIOACTIVE MATERIAL

Item 4 Location of Radioactive Material (Do not use Post Office Box):

(Attach additional pages if necessary)

☐ Used ☐ Stored ☐ Used and Stored	Address: , -	Telephone Number (Include area code): ( ) - x
☐ Used ☐ Stored ☐ Used and Stored	Address: , -	Telephone Number (Include area code): ( ) - x
☐ Used ☐ Stored ☐ Used and Stored	Address: , -	Telephone Number (Include area code): ( ) - x

Are sources going to be used and/or stored at field stations? ☐ Yes ☐ No

Are sources going to be used and/or stored at temporary jobsites?: ☐ Yes ☐ No

If yes, check the following boxes:

- ☐ We will perform and maintain documentation of radiation surveys to ensure that radiation levels are less than 2 mR in any one hour and 100 mR/yr at all temporary job site storage locations.
- ☐ We will store the source(s) at the temporary job site in a locked room, trailer, or other secure location to prevent unauthorized removal.
- ☐ We will minimize exposures for occupational and non-occupational workers when selecting storage location.
- ☐ We will limit storage at a temporary job site to 180 days per calendar year.

RADIATION SAFETY OFFICER

Item 5 Radiation Safety Officer (RSO) (Check all that apply)

☐ The name of the proposed RSO and other potential designees who will be responsible for ensuring that the licensee's radiation safety program is implemented in accordance with approved procedures.

RSO Name:

Tel (Include area code): ( ) - x

E-mail:

AND

☐ We will demonstrate that the RSO has sufficient independence and direct communication with responsible management officials by providing a copy of an organizational chart by position and will confirm that the RSO has day-to-day oversight of the radiation safety activities.

AND EITHER

☐ We have included documentation showing the RSO's qualifications and experience.

OR

☐ We will provide alternative information demonstrating that the proposed RSO is qualified by training and experience (e. g., listed by name as an authorized user or the RSO on an VDH, NRC, or another Agreement State license that requires a radiation safety program of comparable size and scope) including documentation to show that the RSO has obtained formal training in the establishment and maintenance of a radiation protection program.

TRAINING FOR LOGGING SUPERVISORS AND LOGGING ASSISTANTS

Item 6 Training For Logging Supervisors, Logging Assistants, and Tracer/Field Flood Study Users (Check box and attach requested information)

☐ We will submit an outline of the training to be given to prospective logging supervisors and logging assistants and have enclosed our training procedures given to experienced logging supervisors. We have also submitted a typical examination given, the correct answers to the questions, and the passing grade.

AND

☐ We have included the qualifications of our instructors and their experience with well logging activities or have included the course title, name, course outline (if available), address, and telephone number of the company who will provide training.

AND

☐ We have submitted a description of the field examination given to prospective logging supervisors and assistants.

AND

☐ We have submitted a description of our program including the annual refresher training with the topics and how they will be covered, and the inspection of each logging supervisor and logging assistants job performance, as described in **12VAC5-481-3151**.

RADIOACTIVE MATERIAL

Item 7 Radioactive Material (Attach additional pages if necessary)
Include sealed sources activity greater than 3.7 MBq (100 μCi)

Element and mass number	Sealed source manufacturer and model number
Maximum activity per source and total maximum activity in possession	Source changer manufacturer and model number

Are unsealed tracer materials used? ☐ Yes (complete below information) ☐ No

Element name and mass number	Chemical/physical form
Maximum activity per tracer material and total maximum activity in possession Maximum amount per study by physical/chemical form	If volatile, anticipated rate of volatility or dispersion Intended use

Are energy compensation sources used? ☐ Yes (complete below information) ☐ No

Element name and mass number	Manufacturer's name and model number

FINANCIAL ASSURANCE AND RECORDKEEPING FOR DECOMMISSIONING

Item 8 Financial Assurance And Recordkeeping For Decommissioning (Check both boxes)

☐ We shall maintain drawings and records important to decommissioning and will transfer these records to a new licensee before licensed activities are transferred in accordance with **12VAC5-481-500 B** or assign the records to the agency before the license is terminated.

AND

☐ If financial assurance is required, submit evidence per **12VAC5-481-450 C.**

FACILITIES AND EQUIPMENT

Item 9 Facilities And Equipment (Check box and attach requested information)

☐ We will submit the required information as listed in the section titled 'Facilities and Equipment' of VAREG 'Guidance for Well Logging, Tracer, and Field Flood Study'.

RADIATION SAFETY PROGRAM

Item 10 Radiation Safety Program (Check box)

☐ We have included our radiation safety program for agency review.

Item 10.1 Well Owner/Operator Agreement (Check box)

☐ We will obtain a written agreement prior to commencement of operating any well logging operation with a sealed source as specified in **12VAC5-481-3160.**

Item 10.2 Radiation Safety Audit Program

The applicant is not required to, and should not, submit its audit program to the agency for review during the licensing phase. This matter will be examined during an inspection.

Item 10.3 Termination of Activities (Check box)

☐ We will notify VDH, in writing, within 60 days of the decision to permanently cease radioactive material use **(12VAC5-481-510).**

Item 10.4 Radiation Monitoring Instruments (Check all boxes that apply)

☐ We will possess and use radiation survey meter(s) that meets the Criteria in the section titled 'Radiation Monitoring Instruments' in VAREG 'Guidance for Well Logging, Tracer, and Field Flood Studies'. We reserve the right to upgrade our survey instruments as necessary.

AND EITHER

☐ If calibration is performed by a person or firm outside the applicant's organization, the calibration will be performed by a VDH, NRC or another Agreement State licensee specifically authorized to perform instrument calibration.

OR

☐ We will follow the survey meter calibration procedures in accordance with Appendix N in VAREG 'Guidance for Well Logging, Tracer, and Field Flood Study'.

OR

☐ We will submit alternate procedures. (Procedures are attached)

Note: Identify the qualifications of the individuals who will perform the calibrations if performed by the applicant.

Item 10.5 Material Receipt And Accountability (Check box)

☐ Semi-annual physical inventories will be conducted of all licensed material, including byproduct, tracer materials, and depleted uranium and the information contained in the discussion section titled 'Material Receipt and Accountability' in VAREG 'Guidance for Well Logging, Tracer, and Field Flood Studies' will be documented.

Item 10.6 Leak Tests (Check one box)

☐ Leak tests analysis will be performed by an organization authorized by VDH, the NRC or another Agreement State to provide leak testing services to other licensees; or by the licensee using a leak test kit supplied by an organization licensed by VDH, the NRC or another Agreement State to provide leak test kits to other licensees according to kit suppliers' instructions.

List the name and license number of organization authorized to perform or analyze leak test (Specify whether VDH, NRC, or another Agreement State):

Organization Name _____ License Number _____

Issuing Entity _____

Note: An alternate organization may be used to perform or analyze leak test, without amending the license, provided the organization is specifically authorized by VDH, the NRC or another Agreement State.

OR

☐ We will perform our own leak testing and sample analysis. We will follow the procedures in Appendix R of VAREG 'Guidance for Well Logging, Tracer, and Field Flood Study'.

OR

☐ We will submit alternative procedures. (Procedures are attached)

Item 10.7 Occupational Dosimetry (Check all boxes that apply)

☐ We will provide required dosimetry that will be processed and evaluated by a NVLAP-approved processor that is exchanged monthly or quarterly, as appropriate, and worn by well logging personnel.

AND/OR

☐ We will provide a bioassay program when using unsealed tracer materials.

OR

☐ We will provide a commitment that no individual will use more than 50 millicuries of Iodine-131 at any one time or in any 5-day period at field stations or temporary job sites.

Note: If intend to use an excess of amounts described or request permission to repackage or process Iodine-131 tracer materials at field stations, it is necessary to describe in detail the bioassay program

OR

☐ We will contract a vendor for bioassay services who is licensed or otherwise authorized by VDH, NRC, or another Agreement State to provide required bioassay services.

Item 10.8 Public Dose

No response is required, in this license application, however the licensee's evaluation of public dose will be examined during an inspection.

Item 10.9 Maintenance

Item 10.9.1 Daily Maintenance (Check both boxes)

☐ We have included procedures for conducting daily visual inspection.

OR

☐ Visual daily inspection will be conducted and records maintained in accordance with the criteria listed in 'Daily Maintenance' of the VAREG 'Guidance for Well Logging, Tracer, and Field Flood Study' to ensure that well logging equipment is in good working condition and is labeled as required.

Item 10.9.2 Semi-Annual Visual Inspection and Routine Maintenance (Check both boxes)

☐ We have included procedures for semi annual visual inspection and routine maintenance of source holders, logging tools, injection tools, source handling tools, storage containers, transport containers, and uranium sinker bars to ensure that the labeling required by **12VAC5-481-3250** is legible and that no physical damage is visible.

AND

☐ Semi-annual inspections and routine maintenance will be conducted and records maintained for source holders, logging tools, injection tools, source handling tools, storage containers, transport containers, and uranium sinker bars in accordance with the criteria in 'Semi-Annual Visual Inspection and Routine Maintenance' of VAREG 'Guidance for Well Logging, Tracer, Field Flood Study' to ensure that well logging equipment is in good working condition with no physical damage evident and that required labeling is present.

Item 10.9.3 Maintenance Requiring Special Authorization (Check both boxes)

☐ Prohibited activities described in 'Maintenance Requiring Special Authorization' of VAREG 'Guidance for Well Logging, Tracer, Field Flood Study' will not be conducted unless approved by VDH.

OR

☐ Submit detailed procedures of each different tasks (including source removal procedures) for any prohibited activities, including radiation safety precautions that individuals will be expected to follow when performing these tasks and the minimum qualifications of these individuals.

Item 10.10 Operating and Emergency Procedures

☐ Operating and emergency procedures or an outline or summary as described in **12VAC5-481-3151** and **12VAC5-481-3280** have been attached for agency review.

Item 10.11 Transportation

No response is needed from applicants during licensing phase. This matter will be examined during an inspection.

WELL LOGGING, TRACER, AND FIELD FLOOD STUDY OPERATIONS

Item 11. Well Logging, Tracer, and Field Flood Study Operations

Item 11.1 Drill-to-Stop Large Sealed Sources (Check box)

☐ We have submitted procedures for conducting Drill-to-Stop well logging operations or an outline or summary that addresses important radiation safety aspects in the operating and emergency procedures.

Item 11.2 Measurement While Drilling, Logging While Drill (Check box)

☐ We have submitted procedures for conducting Measurement While Drilling, Logging While Drilling well logging operations or an outline or summary that addresses important radiation safety aspects in the operating and emergency procedures.

Item 11.3 Energy Compensation Sources (Check box)

☐ We have submitted operating and emergency procedures for using and handling energy compensation sources.

OR

☐ We have submitted an outline or summary of the operating and emergency procedures for using and handling energy compensation sources including instructions for leak testing energy compensation sources, if required, at intervals not to exceed 3 years, instructions for conducting physical inventories at least every 6 months, maintaining records of inventories required by **12VAC5-481-3220** and records of use for energy compensation sources.

OR

☐ We have submitted alternative procedures for agency review.

OR

☐ Energy compensation sources will not be used.

Item 11..4 Use of Sealed Sources or Neutron Generators in Fresh Water Aquifers (Check box)

☐ We will not conduct this prohibited activity.

OR

☐ We are requesting authorization for this prohibited activity and have included the required procedures as stated in 'Use of Sealed Sources or Neutron Generators in Fresh Water Aquifers' of VAREG, 'Guidance for Well Logging, Tracer, and Field Flood Study'.

Item 11.5 Tracer Studies in Single Well Applications (Check box)

No response is required for this section provided that the elements in the 'Tracer Studies in Single Well Applications' of VAREG 'Guidance for Well Logging, Tracer, and Field Flood Study' are contained in other sections.

Item 11.6 Field Flood and Secondary Recovery Applications (Tracer Studies in Multiple Wells) (Check box)

☐ Field flood studies using tracer materials will not be conducted unless authorized specifically by license conditions.

OR

☐ We are requesting authorization to conduct field flood studies in the enhanced recovery of oil and gas wells using the information provided in Appendix F of the VAREG 'Guidance for Well Logging, Tracer, and Field Flood Study'.

Item 11.7 Tracer Studies in Fresh Water Aquifers (Check box)

☐ We will not knowingly inject tracer material into a fresh water aquifer.

OR

☐ We are requesting authorization to inject licensed radioactive materials into a fresh water aquifer and are providing the reason(s) for this study and procedures to protect the worker(s) and the public. **Note:** Tracer and field flood studies require an environmental report.

Item 11.8 Radioactive Collar and Subsidence or Depth Control Markers (Check box)

☐ We will only use radioactive markers where each individual marker contains only quantities of licensed material not exceeding the quantities identified in **12VAC5-481-3730.**

OR

☐ We have submitted procedures for using radioactive markers that in excess of quantities listed in **12VAC5-481-3730.**

Item 11.9 Neutron Accelerators using Licensed Material (Check box)

☐ We will not use neutron generators (accelerators) in our well logging operations.

OR

☐ We will use neutron generators (accelerators) in accordance with the criteria in 'Neutron Accelerators using Licensed Material' of VAREG 'Guidance for Well Logging, Tracer, and Field Flood Study'.

Item 11.10 Depleted Uranium Sinker Bars (Check box)

☐ Depleted uranium sinker bars will be obtained under the provisions of a general license (**12VAC5-481-420 C**) and the appropriate VDH form will be filed, as required.

OR

☐ Depleted uranium sinker bars will not be obtained under provisions of a general license (**12VAC5-481-420 C**).

AND

Uranium sinker bars will be possessed and inspected as specified in **12VAC5-481-3260.**

AND

We request _____ kilograms of material.

OR

☐ Depleted uranium sinker bars will not be used.

WASTE MANAGEMENT

Item 12 Waste Management

☐ We will use Appendix T of VAREG 'Guidance for Well Logging, Tracer, and Field Flood Study'.

OR

☐ We will use Decay-In-Storage model waste procedure in Appendix T of VAREG, 'Guidance for Well Logging, Tracer, and Field Flood Study'.

AND/OR

☐ We will use Disposal of Liquids Into Sanitary Sewage (**12VAC5-481-930**) model waste procedure in Appendix T of VAREG, 'Guidance for Well Logging, Tracer, and Field Flood Study'.

OR

☐ We have attached our procedures for waste collection, storage, and disposal by any of the authorized methods and request authorization for the methods described.

LICENSE FEE

Item 13 License Fees (Refer to **12VAC5-490**).

Application Fee Enclosed:

☐ Yes Amount Enclosed $

CERTIFICATION (To be signed by an individual authorized to make binding commitments on behalf of the applicant.)

Item 14

I hereby certify that this application was prepared in conformance with **12VAC5-481, 'Virginia Radiation Protection Regulations'** and that all information contained herein, including any supplements attached hereto, is true and correct to the best of my knowledge and belief.

SIGNATURE - Applicant Or Authorized Individual	Date signed

Print Name and Title of above signatory