

U. S. DEPARTMENT OF ENERGY, OFFICE OF SCIENCE
INTEGRATED SUPPORT CENTER—CHICAGO OFFICE

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)
ENVIRONMENTAL EVALUATION NOTIFICATION FORM

To be completed by "Applicant," i.e., organization receiving funds and/or implementing Federal Actions as defined by 40 CFR § 1508.18. For assistance, refer to "Instructions for Preparing ISC-CH F-560, Environmental Evaluation Notification Form."

Solicitation/Award No. (if applicable): DE-SC0015220

Organization Name: University of Washington (Seattle, Washington)

Title of Proposed Action: Design of a U-230/Th-226 Generator System and Evaluation of Th-226 Chelation Chemistry

Total DOE Funding/Total Funding: \$450,000.00

I. Project Description: (Use explanation pages if additional space is required)

A. Proposed Project/Action (if applicable, delineate Federally funded/Non-Federally funded portions)

The proposed studies will be conducted as a collaboration between the Radiochemistry Division at the University of Washington (UW) and the Medical Isotopes group at the Los Alamos National laboratory (LANL) focused on the development of a generator system and chelation chemistry that will permit the short-lived alpha-emitting radionuclide Th-226 to be used in Molecular Radiotherapy applications. Development of the generator system will be done at LANL and development of the chelation chemistry will be done at UW. The generator system will have the parent U-230 (half-life = 20.2 days), which can be eluted (milked) to give the Th-226 (half-life = 30.7 min). The studies at UW will involve synthesis of a series of ligands that are designed to chelate Th radionuclides. Those ligands, along with some commonly used ligands that can be purchased and another ligand prepared at UBC, will be evaluated in chelation studies using Th-227 (half-life = 18.7 days) as a surrogate for Th-226.

B. Would the project proceed without Federal funding?

Yes No

If "yes," use explanation page.

II. Description of Affected Environment: (Use explanation pages if additional space is required)

These studies will be conducted in a radiochemistry laboratory at the University of Washington.

III. Preliminary Questions:

- | | | |
|---|--------------------------|-------------------------------------|
| | Yes | No |
| A. <u>Is the DOE-funded work routinely administrative or <i>entirely</i> advisory or a "paper study?"</u> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

If "Yes", ensure that the description in Section I reflects this and go directly to Section V.

- B. Is there any potential whatsoever for: (Provide an explanation for each "Yes" response)

- | | | | |
|-----|---|-------------------------------------|-------------------------------------|
| 1. | Work to be performed outdoors? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. | Major modification of a building interior? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. | Threat of violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. | Siting, construction or major expansion of waste treatment, storage, or disposal facilities? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. | Disturbance to hazardous substances, pollutants, or contaminants preexisting in the environment? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. | The presence of any environmentally-sensitive resources? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. | Potential for high consequence impacts to human health or the environment? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 8. | The work being connected to another existing/proposed activity that could potentially create a significant impact? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9. | Nearby past, present, and/or reasonably foreseeable future actions such that collectively significant impacts could result? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10. | Scientific or public controversy, uncertainty over potential impacts, or conflicts regarding resource usage? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

If "No" to ALL Section III.B. questions, go directly to Section V.

IV. Potential Environmental Effects: (Provide an explanation for each "Yes" response)

- A. Sensitive Resources: Could the proposed action potentially result in changes and/or disturbances to any of the following resources?

- | | | | |
|-----|--|--------------------------|-------------------------------------|
| | | Yes | No |
| 1. | Threatened/Endangered Species and/or Critical Habitats | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. | Other Protected Species (e.g., Burros, Migratory Birds) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. | Sensitive Environments (e.g., Tundra/Coral Reefs/Rain Forests) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. | Cultural or Historic Resources | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. | Important Farmland | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. | Non-Attainment Areas for Ambient Air Quality Standards | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. | Class I Air Quality Control Region | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8. | Special Sources of Groundwater (e.g. Sole Source Aquifer) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9. | Navigable Air Space | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10. | Coastal Zones | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11. | Areas with Special National Designation (e.g. National Forests, Parks, Trails) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 12. | Floodplains and/or Wetlands | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

- B. Regulated Substances/Activities: Would the proposed action involve any of the following regulated Items or activities?

- | | | | |
|-----|--|--------------------------|-------------------------------------|
| 13. | Natural Resource Damage Assessments | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 14. | Invasive Species or Exotic Organisms | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 15. | Noxious Weeds | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 16. | Clearing or Excavation (indicate if greater than one acre) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 17. | Dredge or Fill (under Clean Water Act, Section 404, greater than one acre) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

B. Regulated Substances/Activities: Would the proposed action involve any of the following regulated items or activities? (continued)

	Yes	No
18. Noise (in excess of regulations)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
19. Asbestos Removal	<input type="checkbox"/>	<input checked="" type="checkbox"/>
20. Polychlorinated biphenyls (PCBs)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
21. Import, Manufacture, or Processing of Toxic Substances	<input type="checkbox"/>	<input checked="" type="checkbox"/>
22. Chemical Storage/Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>
23. Pesticide Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>
24. Hazardous, Toxic, or Criteria Pollutant Air Emissions	<input type="checkbox"/>	<input checked="" type="checkbox"/>
25. Liquid Effluents	<input type="checkbox"/>	<input checked="" type="checkbox"/>
26. Spill Prevention/Surface Water Protection	<input type="checkbox"/>	<input checked="" type="checkbox"/>
27. Underground Injection	<input type="checkbox"/>	<input checked="" type="checkbox"/>
28. Hazardous Waste	<input type="checkbox"/>	<input checked="" type="checkbox"/>
29. Underground Storage Tanks	<input type="checkbox"/>	<input checked="" type="checkbox"/>
30. Radioactive or Radioactive Mixed Waste	<input checked="" type="checkbox"/>	<input type="checkbox"/>
31. Radiation Exposure	<input checked="" type="checkbox"/>	<input type="checkbox"/>
32. Nanoscale Materials	<input type="checkbox"/>	<input checked="" type="checkbox"/>
33. Genetically Engineered Microorganisms/Plants or Synthetic Biology?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
34. Ozone Depleting Substances	<input type="checkbox"/>	<input checked="" type="checkbox"/>
35. Greenhouse Gas Generation/Sustainability	<input type="checkbox"/>	<input checked="" type="checkbox"/>
36. Off-Road Vehicles	<input type="checkbox"/>	<input checked="" type="checkbox"/>
37. Biosafety Level 3-4 Laboratory	<input type="checkbox"/>	<input checked="" type="checkbox"/>
38. Research on Human Subjects or other Vertebrate Animals	<input type="checkbox"/>	<input checked="" type="checkbox"/>
39. Facility footprint exceeds 5,000 Square Feet	<input type="checkbox"/>	<input checked="" type="checkbox"/>


C. Other Relevant Information: Would the proposed action involve the following?

	Yes	No
40. Disproportionate Nearby Presence of Minority and/or Low Income Populations	<input type="checkbox"/>	<input checked="" type="checkbox"/>
41. Existing, Modified, or New Federal/State Permits	<input type="checkbox"/>	<input checked="" type="checkbox"/>
42. Involvement of Another Federal Agency (e.g. license/permit, funding, approval)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
43. Action in a State with NEPA-type law	<input type="checkbox"/>	<input checked="" type="checkbox"/>
44. Expansion of Public Utilities/Services	<input type="checkbox"/>	<input checked="" type="checkbox"/>
45. Depletion of a Non-Renewable Resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>
46. Subject to an Existing Institutional Work Planning and Control Process	<input type="checkbox"/>	<input checked="" type="checkbox"/>
47. Other Pertinent Information Which Could Impact Human Health or the Environment	<input type="checkbox"/>	<input checked="" type="checkbox"/>

V. Applicant Certification that to the best of their knowledge all information provided on this form is accurate:

Does this disclosure contain classified, confidential, or other exempt information that DOE would not be obligated to disclose pursuant to the Freedom of Information Act? Yes No

A. Organization Official (Name and Title): Ken Blucker

Signature:  Date: 1/26/2016
 e-mail: OSP@...edu Phone: 206-543-4043

B. Optional Secondary Approval (Name and Title): _____

Signature: _____ Date: _____
 e-mail: _____ Phone: _____

Remainder to be completed by DOE

VI. DOE Concurrence/Recommendation/Determination:

A. DOE Project Director/Program Manager or Contract/Grant Management Specialist:

Has the Applicant completed the Form correctly?
Does an existing Generic Categorical Exclusion apply?
If yes, indicate: _____

Yes No

Name and Title: _____

Signature: Cynthia Snider Date: January 29, 2016

B. DOE NEPA Team Review:

Is the class of action identified in the DOE NEPA Regulations (Appendices A-D to Subpart D (10 CFR § 1021))?
If yes, specify the class(es) of action: B3.12

Yes No

Name and Title: Peter Siebach

Signature: [Signature] Date: 1/29/2016

C. DOE Counsel (if requested):

Name and Title: _____

Signature: _____ Date: _____

D. DOE NEPA Compliance Officer:

The preceding pages are a record of documentation required under DOE Final NEPA Regulation, 10 CFR § 1021.400.

- Action may be categorically excluded from further NEPA review. I have determined that the proposed action meets the requirements for Categorical Exclusion referenced above.
- Action requires approval by Head of the Field Organization. Recommend preparation of an Environmental Assessment.
- Action requires approval by Head of the Field Organization or a Secretarial Officer. Recommend preparation of an Environmental Impact Statement.

Comments/limitations if any:

NEPA Compliance Officer:

Name: [Signature]

Signature: Peter R. Siebach Date: 1/29/2016

Optional Additional Narrative: (add additional detail to description to Sections I and II or explanations to responses in Sections III and IV.

Item IV.B. (Items with a "Yes" response)

#30. Proposed work involves: Radioactive or Radioactive Mixed Waste

The studies will involve the use of radioactive materials under an authorization (UW AUI #711) from the University of Washington Radiation Safety Program. The studies will be conducted in full compliance with the University of Washington Radiation Safety policies for training, procurement, use, and monitoring of radioactive materials. Experimental methods are reviewed by Radiation Safety personnel. There will be no radioactive mixed waste, except daughter radionuclides that are inherent in the decay of the parent thorium-227.

#31. Proposed work involves: Radiation Exposure

The studies will involve working with radioactive materials so there will be some radiation exposure. The radiation exposure is minimized through careful experimental planning. Radiation exposure is monitored by the UW Radiation Safety office. We use radioactive fume hoods approved for radioactive materials, appropriate shielding, and follow the ALARA program for minimizing the radiation exposure to workers. Radiation exposure is monitored through use of whole body and finger ring dosimeters, which are read monthly.