



Application of DOE NEPA Procedure: Categorical Exclusions A1 and A9, Applicable to General Agency Actions (10 CFR Part 1021, Subpart D, Appendix A) and Categorical Exclusion B3.6, Applicable to Specific Agency Actions (10 CFR Part 1021, Subpart D, Appendix B).

Rationale: The U.S. Department of Energy (DOE) National Nuclear Security Administration (NNSA) proposes to provide financial assistance to the *University of Nevada, Las Vegas* for scientific research related to the Predictive Science Strategic Academic Alliances Program II (PSAAP) in the topical area of Development of Useful Hard X-ray Induced Chemistry. The financial assistance would be given to the *University* over a 3-year period for equipment, supplies and materials, and subawards; for travel, fringe and indirects, tuition, salaries to graduate, and postdoctoral students, support staff (researchers, engineers, technicians, clerical) and senior/key person(s) and other university collaborators. The Principle Investigator is Michael Pravica. Based on extensive studies of synchrotron x-ray induced decomposition of a variety of substances subjected to extreme conditions inside a diamond anvil cell (DAC) undertaken by the UNLV group, the University proposes to strategically develop the novel field of **useful hard x-ray induced chemistry** as a method to initiate novel chemistry under extreme conditions, and to study highly nonequilibrium states of matter at high pressure, variable temperature, and high radiation flux to significantly aid in better-understanding the mechanisms associated with detonation. UNLV also will seek to find other useful decomposition reactions that can create other molecular species (e.g. CO₂ and NO₂). The researchers will also seek to expand their newly developed methods to produce F₂ in situ to expand fluorine chemistry at extreme conditions. Work would be performed at the following locations:

- Department of Physics and Astronomy, University of Nevada, Las Vegas, Las Vegas, NV
- Department of Chemistry, University of Nevada, Las Vegas, Las Vegas, NV
- Advanced Photon Source, Argonne National Laboratory, Argonne, IL
- National Synchrotron Light Source, Brookhaven National Laboratory
- Canadian Light Source, Saskatoon, Saskatchewan, Canada

A more in depth discussion on the objectives and activities can be found in the technical proposal submitted by the applicant. Non-proprietary information within this document is hereby incorporated by reference.

Categorical Exclusions A1 and A9 apply in cases of:

(A1) Routine actions necessary to support the normal conduct of DOE business limited to administrative, financial, and personnel actions.

(A9) Information gathering, data analysis, modeling, simulation, applied mathematics, information dissemination



Categorical Exclusion B3.6 applies in cases of:

....operation/ decommissioning of facilities for bench-scale research, conventional laboratory operations, small-scale research and development and pilot projects

This proposal fits within the parameters of Categorical Exclusions A1, A9, & B3.6.

Based upon the information from the environmental questionnaire, the technical proposal, my knowledge, this proposal does not present any extraordinary circumstances of a unique or uncertain nature. It is not connected to other actions with potentially or cumulatively significant impacts.¹

Supported by the information provided by the applicant and my understanding of these activities, the proposal would not²:

1. threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, including requirements of DOE and/or Executive Orders;
2. require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities;
3. disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; or
4. adversely affect environmentally sensitive resources (including but not limited to those listed in paragraph B.(4)); or
5. Involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10CFR Part 1021, Subpart D, Appendix B.

Therefore, this proposal meets the conditions that are the Integral Elements of the Class of Actions and application of Categorical Exclusions A1, A9, & B3.6 are appropriate.

If changes are made to the scope of actions as described in the proposals, or if the scope is expanded to encompass other actions, NEPA requirements for the action will need to be reassessed at that time.

¹ See 10 CFR § 1021.410(b)(2)and(3)for full text of regulation.

² See 10 CFR Part 1021 Subpart D Appendix B (B(1)through(5)).



NEPA Compliance Officer Rationale
Office of Acquisition and Project Management

APM 15-006

Grant # DE-NA0002912

**John E.
Weckerle**

Digitally signed by John E. Weckerle
DN: c=us, o=u.s. government,
ou=department of energy,
ou=Energy IT Services, ou=DOE
Common Operating Environment,
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John Weckerle
NEPA Compliance Officer
NNSA Office of General Council