

OVERVIEW INFORMATION

U.K. Environmental Nanoscience Initiative:

**UK Natural Environment Research Council
UK Engineering and Physical Sciences Research Council
UK Department of Environment, Food and Rural Affairs
Environment Agency of England and Wales**

U.S. Environmental Protection Agency

**Office of Research and Development
National Center for Environmental Research
*Science to Achieve Results (STAR) Program***

JOINT UK – US RESEARCH PROGRAM: ENVIRONMENTAL BEHAVIOR, BIOAVAILABILITY AND EFFECTS OF MANUFACTURED NANOMATERIALS

This is the initial announcement of this funding opportunity.

Funding Opportunity Number: EPA-G2008-STAR-R1
Catalog of Federal Domestic Assistance (CFDA) Number: 66.509

Solicitation Opening Date: *March 31, 2009*

Solicitation Closing Date: *August 5, 2009, 11:59:59 PM Eastern Time*

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SUMMARY OF PROGRAM REQUIREMENTS

Synopsis of Program:

UK Environmental Nanoscience Initiative (UKENI) [a collaborative initiative funded by the UK Natural Environment Research Council (NERC); the UK Engineering and Physical Sciences Research Council (EPSRC); the UK Government Department of Environment, Food and Rural Affairs (DEFRA); and the Environment Agency of England and Wales)], in conjunction with the U.S. Environmental Protection Agency (USEPA), as part of its Science to Achieve Results (STAR) program, is seeking joint applications from US and UK partners that:

- (1) propose *integrated model(s)* of fate, behaviour, bioavailability and effects for several important and representative nanomaterial classes over key environmental pathways using *intrinsic material properties* and *life cycle analysis* as a starting point for model development;
- (2) validate and refine these model(s) through interdisciplinary research, addressing key assumptions and areas of uncertainty; and

- (3) develop effective methods and tools to detect, assess, and monitor the presence of nanomaterials in biological and environmental samples.

The outputs of this program will be used to further scientific understanding of the fate, behaviour, bioavailability and effects of nanomaterials and risk management policy development.

Award Information:

Two consortia, made up of UK and US research institutions, will be selected for funding [for the purpose of this Announcement of Opportunity (AO)/Request for Applications (RFA), consortia are defined in section II. AWARD INFORMATION of this announcement.]

Anticipated Total Amount of Funding approximately £3 million for UK applicants and \$4 million for US applicants

Potential Funding per Consortium: Up to a total of £1.5 million for UK applicants¹ and \$2 million for US applicants, including direct and indirect costs.

Anticipated Type of Award: Grant

Estimated Number of Awards: Two awards, for each selected Consortium. The USEPA will make one award for each selected Consortium, for a total of two awards to eligible US institutions. The UK Consortium members will be funded through NERC on behalf of the UKENI partnership. NERC will make one or more award(s) for each selected Consortium. Awardees will be funded through their national funding agencies according to national funding guidelines.

Potential Funding per Award: Within each Consortium, the US and UK investigators will be awarded similar levels of funding, up to a maximum of \$2 million and £1.5 million¹, including direct and indirect costs, for US and UK applicants, respectively with a maximum duration of 4 years. Cost-sharing is not required. **Proposals with budgets exceeding the total award limits will not be considered.**

Eligibility Information:

This is a joint UK-US initiative in which a maximum of two consortia, each made up of partners from *both* the UK and US, will be funded.

¹ UK awards will be funded at "full economic costs" (FEC) levels - i.e. total NERC contribution will be 80% of total FEC, so maximum available funds per consortium are £1.2m for UK applicants.

US eligibility: Public nonprofit institutions/organisations (includes public institutions of higher education and hospitals) and private nonprofit institutions/organisations (includes private institutions of higher education and hospitals) located in the U.S., state and local governments, Federally Recognised Indian Tribal Governments, and U.S. territories or possessions are eligible to apply. See full announcement for more details.

UK eligibility: Institutions eligible for NERC thematic program funding. More information on eligibility criteria is available in the NERC Research Grants Handbook for Full Economic Cost Grants (<http://www.nerc.ac.uk/funding/available/researchgrants/handbook.asp>).

Applicants are strongly encouraged to discuss the composition of planned consortia with the relevant US or UK contacts (see below) to ensure eligibility prior to submission.

Application Materials:

The US applicants must submit the full joint Consortium application, on behalf of both US and UK Consortium members. For US applicants, all necessary forms and instructions can be found on the National Center for Environmental Research (NCER) web site, (<http://www.epa.gov/ncer/rfa/forms>). UK applicants should submit relevant application documents through their US partners (see below and section IV). Required application forms for UK applicants can be found at the NERC ENI website (<http://www.nerc.ac.uk/research/programmes/nanoscience>).

Applicants must submit the full application in PDF format via electronic mail to EPA-UK-NANO-APPS@epa.gov with the funding opportunity number (FON) in the subject line.

If you do not have the technical capability to utilise the electronic mail submission process for this solicitation, call 1-800-490-9194 or send a webmail message to (<http://es.epa.gov/cgi-bin/ncerqamail.pl>) at least 15 calendar working days before the submission deadline to assure timely receipt of alternate submission instructions. In your message provide the funding opportunity number and title of the program, specify that you are requesting alternate submission instructions, and provide a telephone number, fax number, and an email address, if available. Alternate instructions will be e-mailed whenever possible. Any applications submitted through alternate submission methods must comply with all the provisions of this AO/RFA, including Section IV, and be submitted by the solicitation closing date identified above.

UKNERC Contacts

Eligibility Contact: Jim Aland; phone: +44 (0) 1793 411629; email: jeal@nerc.ac.uk

Technical Contact: Dominique Balharry; phone: +44 (0) 1793 413301; nano@nerc.ac.uk

General ENI Program inquiries: Richard Owen; owenr@westminster.ac.uk

USEPA Contacts:

Eligibility Contact: William Stelz; phone: +1 202-343-9802; email: stelz.william@epa.gov

Submissions Contact: Ron Josephson; phone: +1 202-343-9643; email: josephson.ron@epa.gov

Technical Contact: Nora Savage; phone: +1 202-343-9858; email:savage.nora@epa.gov

I. FUNDING OPPORTUNITY DESCRIPTION

A. Introduction

A high-priority research area identified by the UK Government Nanotechnology Research Coordination Group (NRCG) and the USEPA Office of Research and Development (ORD) is to better understand the environmental risks posed by manufactured nanomaterials. The USEPA, through the ORD's National Center for Environmental Research (NCER) (<http://es.epa.gov/ncer>), currently supports a number of research grants that address the environmental fate, behaviour and effects of manufactured nanomaterials.

Similarly, the UK supports grants in this area within its Environmental Nanoscience Initiative (ENI), (<http://www.nerc.ac.uk/research/programmes/nanoscience>).

Understanding the risks posed by manufactured nanomaterials is a global challenge that is best met through international collaboration, drawing on the combined expertise of researchers in many disciplines, from material scientists and environmental chemists to ecotoxicologists and risk assessors. Through nanotechnology extramural research programs, the USEPA ORD and UKENI have developed strong research communities in the US and UK, respectively. Currently there is a need to bring these communities together to develop integrated and predictive models of fate, behaviour, bioavailability and effects for representative classes of nanomaterials of current relevance, and to validate them through interdisciplinary research that addresses key areas of uncertainty. The outcomes of such validated models should provide fundamental understanding that underpins more confident statements regarding exposure, bioavailability, and effects and effective tools for supporting management of risk posed by nanomaterials. This AO/RFA invites joint applications from UK and US scientists to meet this goal by working together within a balanced and interdisciplinary consortium that maximises the complementary strengths in both the US and UK.

B. Background

Nanotechnology is rapidly becoming a major enabling industry, with a projected market value of many billions of US dollars in the next decade. Nanotechnology has significant economic potential, as well as health and environmental benefits, including health care, renewable energy and environmental solutions (e.g., remediation and water purification). The technology is based on the observation that materials manufactured at the nanoscale (a billionth of a meter) have physico-chemical properties that can differ widely from those of homologous material manufactured in 'bulk.' Nanoparticles, one important category of nanomaterials, are not new, occurring widely from volcanic dust to atmospheric pollution. What is new is the manufacture of specifically engineered nanoparticles with novel or enhanced properties, prompting concerns that these materials may confer disruptive novel properties leading to enhanced risks to the

environment and human health. Until relatively recently, there was little information concerning the environmental sources, fate, behaviour and effects of manufactured nanoparticles. Few environmental scientists were working in this area, with the notable exception of those working on incidental ultrafine particles (e.g. in atmospheric pollution and vehicle emissions). In response to this lack of information, both the US and UK have commissioned research programs through the USEPA's ORD/NCER (<http://es.epa.gov/ncer/nano/>) and the UKENI (<http://www.nerc.ac.uk/research/programmes/nanoscience>).

The purpose of this international collaborative research program is to strengthen the support for research on the potential implications of nanotechnology and engineered nanomaterials on human health and the environment. The UKENI and the USEPA are particularly interested in supporting research related to: (1) environmental transport and transformation of manufactured nanomaterials; (2) exposure pathways; (3) quantitative assessment of nanomaterials in biological and environmental samples; and (4) environmental and health effects of released nanomaterials.

A better understanding of the fate, transport, transformation, bioavailability and exposure of manufactured nanomaterials and whether nanomaterials pose risks to human health and the environment is required. The scientific community must acquire additional information about the environmental impacts of nanomaterials used for anthropogenic products, and whether the exposure pathway to nanomaterials is unique and different from homologous bulk materials. Related to this, there is a critical need for effective tools to assess and predict the potential impact on human health and the environment. Environmental and other safety concerns about nanotechnology have been raised and a variety of research priorities identified (<http://www.epa.gov/ord/htm/researchstrategies.htm>).

In 2006, NERC, DEFRA and UKEA established the UKENI to: a) develop capacity, knowledge transfer and interdisciplinary working in the research community in the area of environmental nanosciences, and b) synthesise the research outputs into sound information for policy making. To date, the UKENI has undertaken two research calls and made 17 awards in the areas of environmental fate, behaviour, interaction and effects of manufactured nanoparticles, complementing further work on the human health impacts of nanoparticles made through the UK joint Environment and Human Health program, administered by NERC (<http://www.nerc.ac.uk/research/programs/humanhealth/>).

Through its STAR research grants program, USEPA has issued a number of research solicitations and awarded approximately \$36M for research on both environmental applications and implications of nanotechnology. Information regarding the USEPA's research interests can be found in the Nanotechnology White Paper (<http://www.epa.gov/osa/nanotech.htm>) and the Nanomaterial Research Strategy (<http://www.epa.gov/ord/htm/researchstrategies.htm>). In addition, information on current Agency extramural nanotechnology research can be found on the NCER web site (www.epa.gov/ncer/nano).

These research programs in the US and UK, as well as other significant international research programs and initiatives (e.g. the European Commissions Framework Program and work within the Organisation for Economic Co-operation and Development Working Party on Manufactured Nanomaterials) have been important in facilitating the development of communities of scientists

working in specific areas of environmental fate, behaviour and effects of manufactured nanoparticles. The UKENI and USEPA intend to work collaboratively, to maximise the complementary strengths of the scientific communities that have been developed and to bring these communities together to develop and validate predictive models of fate, behaviour, bioavailability and effects for representative nanomaterials of current relevance. By maximising complementary and interdisciplinary strengths, the outputs of such a collaborative endeavour should be the development of a comprehensive understanding and predictive tools for exposure, bioavailability and effects for key classes of nanomaterials to support more confident statements concerning the effects and appropriate response to mitigate potential risk.

The specific Strategic Goal and Objective from the USEPA's Strategic Plan that relate to this solicitation are:

Goal 4: Healthy Communities and Ecosystems, Objective 4.4: Enhance Science and Research.

The USEPA's Strategic Plan can be found at:
http://www.epa.gov/ocfo/plan/2006/entire_report.pdf

C. Authority and Regulations

USEPA's authorities for this AO/RFA and resulting awards are contained in the Safe Drinking Water Act, Section 1442, 42 U.S.C. 300j-1; the Toxic Substances Control Act, Section 10, 15 U.S.C. 2609; the Clean Air Act, Section 103, 42 U.S.C. 7403; the Clean Water Act, Section 104, 33 U.S.C. 1254; and the Solid Waste Disposal Act, Section 8001, 42 U.S.C. 6981.

For research with an international aspect, the above statutes are supplemented, as appropriate, by the National Environmental Policy Act, Section 102(2)(F).

Applicable US regulations include: 40 CFR Part 30 (Uniform Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Non-Profit Organisations), 40 CFR Part 31 (Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments) and 40 CFR Part 40 (Research and Demonstration Grants). Applicable OMB Circulars include: OMB Circular A-21 (Cost Principles for Educational Institutions) relocated to 2 CFR Part 220, OMB Circular A-87 (Cost Principles for State, Local and Indian Tribal Governments) relocated to 2 CFR Part 225, OMB Circular A-102 (Grants and Cooperative Agreements With State and Local Governments), OMB Circular A-110 (Uniform Administrative Requirements for Grants and Other Agreements with Institutions of Higher Education, Hospitals and Other Non-Profit Organisations) relocated to 2 CFR Part 215, and OMB Circular A-122, (Cost Principles for Non-Profit Organisations) relocated to 2 CFR Part 230.

D. Specific Research Areas of Interest/Expected Outputs and Outcomes

Note to applicant: The term "output" means an environmental activity or effort, and associated work products, related to a specific environmental goal(s), (e.g., testing a new methodology),

that will be produced or developed over a period of time under the agreement. The term “outcome” means the result, effect, or consequence that will occur from the above activity(ies) that is related to an environmental, behavioural, or health-related objective.

The USEPA and the UKENI are soliciting research from an interdisciplinary Consortium consisting of UK and US partners to meet the following objectives:

1. propose predictive, *integrated hypothetical model(s)* or tools of fate, behaviour, bioavailability and effects for several important and representative nanomaterial classes over key environmental pathways using *intrinsic material properties* and *life cycle analysis* as starting points for model development;
2. validate and refine these hypothetical model(s) through interdisciplinary research, addressing key assumptions and areas of uncertainty;
3. use these outputs (validated and integrated models) to support confident and more certain statements of environmental exposure, bioavailability, effects and risk that underpin appropriate management responses in an evidential way (the outcomes); and
4. develop effective tools and methods to detect, assess, and monitor the presence of nanomaterials in biological and environmental samples.

The objectives listed above must be achieved through five distinct work components described below. All five components must be addressed in an integrated way and delivered through an interdisciplinary Consortium that is balanced between US and UK research partners:

1. Proposal of hypothetical (i.e. conceptual) model(s) of environmental fate, behaviour, interaction, bioavailability and effects for one or more classes of nanomaterials of current relevance including carbon nanotubes, silver and cerium nanoparticles and fullerene – type carbon nanomaterials. The approach should use intrinsic physico-chemical properties (e.g. composition, surface chemistry) as a starting point, and be combined with life cycle analysis to propose important potential environmental pathways of exposure and bioavailability. An example from the field of metals geochemistry is the Biotic Ligand Model used to predict chemical speciation and bioavailability of metals in aquatic systems. Critical assumptions and uncertainties in the proposed model(s) must be identified, forming the basis of the subsequent validation phase.
2. Synthesis/acquisition and detailed characterisation of candidate nanomaterials.
3. Model validation through fundamental research of environmental fate and behaviour, interaction with biological systems and effects on the ecosystem and human health. A key area of understanding that validated models should address is bioavailability in complex environmental systems. Where appropriate, data should be compared with those for the same substances in ‘bulk’ or dissolved phase to identify and characterise the putative ‘nano’ effect. In the UK, it is expected that the NERC Facility for Environmental

Nanoparticle Characterisation and Analysis (FENAC) will be accessed for routine characterisation measurements to support work components 2 -4.

4. Model refinement for effective exposure, impact and risk assessment.

5. Development of novel tools/methods for detection, monitoring and quantitative assessment of exposure and bioavailability for high priority nanomaterials, supporting work component 3 above.

Note: For UK applicants, EPSRC has made £0.5M (i.e. £0.25M per Consortium) specifically available for work component 5. This work component is for the development of novel tools and methods where these do not currently exist, i.e. NOT systems that are already available at the NERC-FENAC or similar facilities which can be accessed for more routine characterisation requirements.

The five work components should be delivered by a balanced US - UK Consortium (i.e. approximately equal research effort from UK and US partners). Equal division of tasks within the various work components between UK and US partners is encouraged.

The outputs of this research will include the first generation of validated, predictive models of environmental fate, behaviour, bioavailability and effects for important classes of manufactured nanomaterials of current relevance through key environmental pathways (i.e. source – pathway – receptor) and effective tools for assessing exposure to nanomaterials.

The outcomes of this research will be a more confident understanding of environmental exposure, bioavailability, effects and risk to underpin appropriate management responses. Further outcomes of this program will be the fostering of collaborative interdisciplinary working relationships between US and UK scientists and funding agencies. It is anticipated that applications will demonstrate not only how the research will advance scientific understanding, but also describe the approach that will be used to evaluate the success of the project and identify the specific benefits to the public that are likely to be realised from successful completion of the project.

E. Special Requirements

In response to this AO/RFA, groups of two or more eligible US and UK organisations must form a Consortium and submit a single joint application.

Each joint application must identify an overall Project Lead (PL), a US Principal Investigator (USPI) and a UK Principal Investigator (UKPI), and Co-Investigators (CoIs) as appropriate.

Agency policy prevents USEPA technical staff and managers from providing individual applicants with information that may create an unfair competitive advantage. Consequently, USEPA employees will not review, comment, advise, and/or provide technical assistance to applicants preparing applications in response to this AO/RFA, nor will they endorse an

application or discuss in any manner how the Agency will apply the published evaluation criteria for this competition.

The application must include a plan (see “Data Management Plan” in section IV.B.6.c.) to make available to the public all data generated from observations, analyses, or model development (primary data) and any secondary (or existing) data used under an agreement awarded from this AO/RFA. The data must be available in a format and with documentation such that they may be used by others in the scientific community.

Because the manufacturing of nanomaterials is not currently widespread and nomenclature is not standard, researchers must indicate in their proposals which nanomaterials they will use and where they will obtain them, including any needed collaboration with a materials manufacturing corporation or research lab that is synthesising a commercially viable material. Thus, in the proposal, information on the source, potential use, composition, and present or future availability of the material being studied must be included.

II. AWARD INFORMATION

It is anticipated that a total of approximately \$4 million for US applicants and £3 million for UK applicants will be awarded under this announcement, depending on the availability of funds and quality of applications received. Awardees will be funded through their national funding agencies. For each selected Consortium, the US team members will be funded by the USEPA, according to USEPA guidelines; the UK team members will be funded through NERC, on behalf of the UKENI partnership.

The US and UK funding partners anticipate funding two consortia under this AO/RFA. Each consortium may request up to a total of £1.5 million and \$2 million, including direct and indirect costs. Within each consortium, the US and UK scientists will be awarded similar levels of funding, up to a maximum of £1.5 million for UK applicants and up to \$2 million for US applicants, respectively. Cost-sharing is not required. **Applications with budgets exceeding the total award limits, including direct² and indirect costs, will not be considered.**

The total project period requested in an application submitted for this AO/RFA may not exceed 4 years.

The UKENI and USEPA reserve the right to reject all applications and make no awards, or make fewer awards than anticipated, under this AO/RFA. The US and UK funding partners reserve the right to make additional awards under this announcement, consistent with Agencies’ policy, if additional funding becomes available after the original selections are made. Any additional selections for awards will be made no later than six months after the original selection decisions.

In appropriate circumstances, the USEPA and NERC reserve the right to partially fund proposals/applications by funding discrete portions or phases of proposed projects. If the USEPA

² UK partners should use the combined total of the directly incurred and directly allocated costs.

or NERC decide to partially fund a proposal/application (based on recommendations by reviewers and/or the moderating panel), they will do so in a manner that does not prejudice any applicants or affect the basis upon which the proposal/application, or portion thereof, was evaluated and selected for award, and therefore maintains the integrity of the competition and selection process.

The US and UK partners funding this action intend to award only grants under this announcement.

Under a *grant*, USEPA scientists and engineers are not permitted to be substantially involved in the execution of the research. However, USEPA encourages interaction between its own laboratory scientists and the PI after the award of an USEPA grant for the sole purpose of exchanging information in research areas of common interest that may add value to their respective research activities. This interaction must be incidental to achieving the goals of the research under a grant. Interaction that is “incidental” does not involve resource commitments.

III. ELIGIBILITY INFORMATION

A. Eligible Applicants

UK Eligibility:

Institutions eligible for NERC thematic program funding are eligible to apply. More information on eligibility criteria is available in the NERC Research Grants Handbook for Full Economic Cost Grants (<http://www.nerc.ac.uk/funding/available/researchgrants/handbook.asp>).

Potential UK applicants who are uncertain of their eligibility should contact Jim Aland; phone: +44 (0) 1793 411629; email: jeal@nerc.ac.uk

US Eligibility:

Public nonprofit institutions/organisations (includes public institutions of higher education and hospitals) and private nonprofit institutions/organisations (includes private institutions of higher education and hospitals) located in the U.S., state and local governments, Federally Recognised Indian Tribal Governments, and U.S. territories or possessions are eligible to apply. Profit-making firms are not eligible to receive assistance agreements from the USEPA under this program.

Eligible nonprofit organisations include any organisations that meet the definition of nonprofit in OMB Circular A-122, located at 2 CFR Part 230. However, nonprofit organisations described in Section 501(c) (4) of the Internal Revenue Code that lobby are not eligible to apply.

National laboratories funded by Federal Agencies (Federally-Funded Research and Development Centers, “FFRDCs”) may not apply. FFRDC employees may cooperate or collaborate with eligible applicants within the limits imposed by applicable legislation and regulations. They may participate in planning, conducting, and analysing the research directed by the applicant, but may not direct projects on behalf of the applicant organisation. The institution, organisation, or governance receiving the award may provide funds through its assistance agreement from the

USEPA to an FFRDC for research personnel, supplies, equipment, and other expenses directly related to the research. However, salaries for permanent FFRDC employees may not be provided through this mechanism.

Federal Agencies may not apply. Federal employees are not eligible to serve in a principal leadership role on an assistance agreement, and may not receive salaries or augment their Agency's appropriations in other ways through awards made under this program.

The applicant institution may enter into an agreement with a Federal Agency to purchase or utilise unique supplies or services unavailable in the private sector. Examples are purchase of satellite data, census data tapes, chemical reference standards, analyses, or use of instrumentation or other facilities not available elsewhere. A written justification for federal involvement must be included in the application. In addition, an appropriate form of assurance that documents the commitment, such as a letter of intent from the Federal Agency involved, should be included.

Potential US applicants who are uncertain of their eligibility should contact William Stelz; phone: +1 (202) 343-9802; email: stelz.william@epa.gov

B. Cost sharing

Institutional cost-sharing is not required.

C. Other

Applications must substantially comply with the application submission instructions and requirements set forth in Section IV of this announcement or they will be rejected. In addition, where a page limitation is expressed in Section IV with respect to parts of the application, pages in excess of the page limit will not be reviewed. Applications must be submitted to USEPA (see Section IV.E. "Submission Instructions" for further information) on or before the solicitation closing date and time in Section IV of this announcement or they will be returned to the sender without further consideration. Also, applications exceeding the funding limits or project period term described herein will be returned without review.

Applications that fail to demonstrate a public purpose of support or stimulation will not be funded.

In response to this AO/RFA, groups of two or more eligible US and UK organisations must form a Consortium and submit a single joint application. Each joint application must identify an overall Project Lead (PL), a UK Principal Investigator (UKPI), a US Principal Investigator (USPI), and Co-Investigators (CoIs) as appropriate.

Applications must address the specific objectives and work components described in Section I. D. (*Specific Research Areas of Interest/Expected Outputs and Outcomes*) above or they will not be funded. US applicants are reminded that to be eligible for funding consideration by the USEPA, the project must include activities that are within the statutory terms of USEPA's financial assistance authorities; specifically, the statutes listed in I.C. above. Generally, a project must address the causes, effects, extent, prevention, reduction, and elimination of air pollution, water pollution, solid/hazardous waste pollution, toxic substances control, or pesticide control

depending on which statutes are listed in I.C. above. These activities should relate to the gathering or transferring of information or advancing the state of knowledge. Proposals should emphasise this “learning” concept, as opposed to “fixing” an environmental problem via a well-established method. Proposals relating to other topics which are sometimes included within the term “environment” such as recreation, conservation, restoration, protection of wildlife habitats, etc., must describe the relationship of these topics to the statutorily required purpose of pollution prevention and/or control.

Applications deemed ineligible for funding consideration will be notified within fifteen calendar days of the ineligibility determination.

IV. APPLICATION AND SUBMISSION INFORMATION

A. Submission Process

The full joint application must be submitted electronically by the US Lead Applicant (USLA) via e-mail to **EPA-UK-NANO-APPS@epa.gov**.

Note for US applicants: All necessary forms are available at (<http://es.epa.gov/ncer/rfa/forms>).

Note for UK applicants: UK Consortium members should submit relevant documents including UK budget forms and justification (one per UK institution) (see below). UK applicants should also complete the USEPA Current and Pending Support Form. All required forms can be found at the NERC ENI website (<http://www.nerc.ac.uk/research/programmes/nanoscience>). All these forms should be submitted by the USLA on behalf of all UK partners with the full electronic application at **EPA-UK-NANO-APPS@epa.gov**.

Applications must substantially comply with the application submission instructions and requirements set forth in Section IV of this announcement or they will be rejected.

An email will be sent by NCER to the USPI and the Administrative Contact (see below) to acknowledge receipt of the application and transmit other important information. The email will be sent from receipt.application@epa.gov; emails to this address will not be accepted. *If you do not receive an email acknowledgment within 30 days of the submission closing date, immediately inform the Eligibility Contact shown in this solicitation. Failure to do so may result in your application not being reviewed.* See “Submission Instructions” for additional information regarding acknowledgment of receipt of electronically submitted applications.

B. Content and Form of Application Submission

The application is made by the USLA submitting the materials described below, on behalf of the UK-US consortium, and summarized in Table 1. **Applications must contain all information requested and be submitted in the formats described.**

Table 1. Application components

No.	Application component	Notes
	<u>Contact Information</u>	
1	Standard Form 424	One for US Applicant
2a	Key Contacts – USEPA Form 5700-540	One for US Consortium members
2b	Key Contacts – UK form	One for UK Consortium members
	<u>Project Narrative</u>	
3	List of Consortium Members and Roles	One on behalf of Consortium
4	Table of Contents	One on behalf of Consortium
5	Abstract	One on behalf of Consortium
6a	Research Plan	One on behalf of Consortium
6b	Quality Assurance Statement	One on behalf of Consortium
6c	Data Management Plan	One on behalf of Consortium
6d	Impact Plan	One on behalf of Consortium
6e	References	One on behalf of Consortium
	<u>Budgetary Information</u>	
7a	Summary Budget Table	One on behalf of Consortium
7b	US Itemised Budget Form	One on behalf of US Applicant
7c	US Budget Justification	One on behalf of US Applicant
7d	UK Itemised Budget Form	One on behalf of each UK Institution
7e	UK Budget Justification	One on behalf of all UK Consortium members
	<u>Other</u>	
8	Resumes	One per Consortium
9	Current and Pending Support Form	One per Consortium
10	Past Performance	One for the USPI and one for the UKPI
11a	Letters of Intent	As appropriate
11b	Letters of Support	As appropriate

1. Standard Form 424

The USLA must complete Standard Form 424 (SF424). Instructions for completion of the SF424 are included with the form. Note: The requested amount should reflect the total funding requested by the US applicant. The form must contain the original (or electronic) signature of an authorised representative of the US applying institution.

US applicants are required to provide a “Dun and Bradstreet Data Universal Numbering System” (DUNS) number when applying for federal grants or cooperative agreements. Organisations may receive a DUNS number by calling 1-866-705-5711 or by visiting the web site at <http://www.dnb.com> [EXIT Disclaimer](#).

Executive Order 12372, “Intergovernmental Review of Federal Programs,” does not apply to the ORD's research and training programs unless USEPA has determined that the activities that will be carried out under the applicants' proposal (a) require an

Environmental Impact Statement (EIS), or (b) do not require an EIS but will be newly initiated at a particular site and require unusual measures to limit the possibility of adverse exposure or hazard to the general public, or (c) have a unique geographic focus and are directly relevant to the governmental responsibilities of a State or local government within that geographic area.

If USEPA determines that Executive Order 12372 applies to an applicant's proposal, the applicant must follow the procedures in 40 CFR Part 29. The applicant must notify their state's single point of contact (SPOC). To determine whether their state participates in this process, and how to comply, applicants should consult <http://www.whitehouse.gov/omb/grants/spoc.html>. If an applicant is in a State that does not have a SPOC, or the State has not selected research and development grants for intergovernmental review, the applicant must notify directly affected State, area wide, regional and local entities of its proposal.

USEPA will notify the successful applicant(s) if Executive Order 12372 applies to its proposal prior to award.

2. Key Contacts

(a) Contact information for US Consortium members

The USLA must complete the “Key Contacts” form (Form 5700-54). The Key Contacts form should also be completed for major sub-agreements (i.e. primary investigators). Please make certain that all contact information is accurate.

(b) Contact information for UK Consortium members

Contact information for UK Consortium members should be recorded on the UK Key Contacts Form and submitted by the USLA.

3. List of Consortium Members and Roles (1 page)

Each Consortium must consist of both US and UK partners working together in a fully integrated team to address the research objectives. Provide a list of Consortium members and roles.

Note: Consortium members may fulfil a number of different roles.

Descriptions of the Different Roles:

Each proposal must have a **Lead Applicant**. This **MUST** be a US eligible organisation. The Lead Applicant must be the eligible US organisation that employs the USPI. The US Lead Applicant (USLA) will be responsible for the submission of the full application package, including all UK-specific documentation on behalf of UK applicant(s.) The USLA must **list the full Consortium membership in the application (including PL, USPI, UKPI and CoIs Name, Organisation, and Department)**.

Each project must identify a Project Lead (PL). **The USLA does NOT have to be the PL. The PL must be either the UK Principal Investigator (UKPI) or the US Principal Investigator (USPI).** The PL is expected to fulfil the following roles:

- overall management of the project outlined in the proposal
- coordinating the blending of US and UK work into a truly integrated transnational nanotechnology research program based on a shared vision
- writing the overall abstract for the Consortium in coordination with the other PI and the Co-PIs
- administering a small budget for overall Consortium operation (e.g., maintaining a web site, release of relevant publication materials, etc)
- coordinating timely reporting for the Consortium

Note: The Project Lead should be a full-time member of the faculty of one of the participating institutions.

Each project must also identify a **UKPI and a USPI. Either the UKPI or the USPI must be the PL. Both the UKPI and USPI** will be responsible for:

- co-ordinating and monitoring the performance of the various activities of the project, as described in their respective part of the overall proposal
- assisting the Project Lead in reporting and other administrative duties on behalf of the Consortium to the US and UK funding partners, respectively
- liaising between different components of the project, particularly regarding strategic and directional issues, and trouble-shooting when required
- providing intellectual leadership to enhance the quality and direction of the project

Each project must also identify Co-Investigators (**CoIs**). CoIs assist the PIs in the performance of the research and management of the project. There must be at least one CoI at each participating institution, member of the Consortium, who is responsible for leading the work at that institution.

Each project may also identify **Project Partners (PPs)**. PPs will not receive funding directly from the award, but will have an integral role in the proposed research. PPs may include UK, US, and/or overseas Research Organisations (including the user community). An organisation should only be named as a PP if it is providing specific contributions (either direct or indirect) to the project. Each PP must provide a detailed letter of intent of up to 2 pages. The letter of intent should confirm the organisation's commitment to the proposed project, identify the value, relevance and possible benefits of the proposed work to the Consortium, the period of support, the full nature of the collaboration and how the partner will be involved in the project and provide added value. Partners' cash or the equivalent value of any in-kind contributions should be explained in detail in the intent letter. Only letters from PPs listed in the Research Plan will be evaluated in the Review process. **Letters of intent from PPs are to be included as an addition to the budget justification documents (see subsection 11. (a) "Guidelines, Limitations, and Additional Requirements.")**

4. Table of Contents

Provide a list of the major subdivisions of the application indicating the page number on which each section begins.

5. Abstract (1 page)

The abstracts of applications that receive funding will be posted by the USEPA on the NCER web site. The abstract will also be posted on the UKENI web site. The abstract will be submitted on behalf of the full Consortium by the USLA.

The abstract should include the information described below (a-h).

- a. Funding Opportunity Title and Number for this Application
- b. Project Title: Use the exact title of your project as it appears in the application. The title must be brief yet represent the major thrust of the project. Because the title will be used by those not familiar with the project, strike a balance between highly technical words and phrases and more commonly understood terminology. Do not use general phrases such as “research on.”
- c. Investigators: List the names of the UKPI and USPI (indicating which is the PL), as well as the names of each CoI who will significantly contribute to the project. Provide a web site URL or an email contact address for additional information.
- d. Institutions: In the same order as the list of investigators, list the name, city, and country of each participating university or other applicant institution. The institutions requesting assistance must be clearly identified.
- e. Project Period and Location: Show the proposed project beginning and ending dates and the geographical location(s) where the work will be conducted.
- f. Project Cost: Show the total £(GBP) amount requested from UKENI funding partners and total \$(USD) amount requested from USEPA (include direct and indirect costs for all years.)
- g. Project Summary: Provide three subsections addressing: (1) the objectives of the study (including any hypotheses that will be tested); (2) the experimental approach to be used (a description of the proposed project); and (3) the expected results of the project and how it addresses the research needs identified in the solicitation, including the anticipated improvement in risk assessment or risk management that will result from successful completion of the proposed work.

- h. Supplemental Keywords: Without duplicating terms already used in the text of the abstract, list keywords to assist database searchers in finding your research. A list of suggested keywords may be found at: (<http://es.epa.gov/ncer/rfa/forms>).

6. Research Plan, Quality Assurance Statement, Data Management Plan, Impact Plan and References

(a) Research Plan (20 pages maximum)

The Research Plan must focus on the Consortium research objectives that adequately and clearly demonstrate that they meet the requirements set out in this AO/RFA. Explicitly state the main hypotheses that you will investigate, the data you will create or use, the analytical tools you will use to investigate these hypotheses or analyze these data, and the results you expect to achieve. Research methods must be clearly stated so that reviewers can evaluate the appropriateness of your approach and the tools you intend to use. A statement such as: “we will evaluate the data using the usual statistical methods” is not specific enough for peer reviewers.

This description must not exceed twenty (20) consecutively numbered (bottom centre), 8.5x11-inch pages of single-spaced, standard 12-point type with 1 inch margins. Pages in excess of 20 will not be reviewed. While these guidelines establish the minimum type size requirements, applicants are advised that readability is of paramount importance and should take precedence in selection of an appropriate font for use in the proposal.

The description must provide the following information:

- (1) Objectives: List the objectives of the proposed research and the hypotheses being tested during the project and briefly state why the intended research is important and how it fulfills the requirements of the solicitation. Include any background or introductory information that would help explain the objectives of the project. If the application is to expand upon research supported by an existing or former assistance agreement awarded by either USEPA or UKENI funders, indicate the number of the agreement and provide a brief report of progress and results achieved under it.
- (2) Approach/Activities: Outline the research design, methods, and techniques that you intend to use in meeting the objectives stated above.
- (3) Expected Results, Benefits, Outputs, and Outcomes: Describe the results you expect to achieve during the project (outputs) and the potential benefits of the results (outcomes). Discuss how the research results will lead to solutions to environmental problems and improve the public’s ability to protect the environment and human health. A clear, concise description will help peer reviewers understand the merits of the research.

- (4) **General Project Information:** Discuss other information relevant to the potential success of the project. This should include facilities, personnel expertise/experience, project schedules, interactions with other institutions, etc.
- (5) **Project Management:** Applications must provide a detailed plan describing how the project will be managed, including the functions of each investigator in each team (US and UK), methods of communication, and plans for data sharing. The plan should include a list of the work components involved in the delivery of the project and who will be responsible for each. Milestones and deliverables (with estimated dates of delivery) should be included, along with a Gantt chart.
- (6) Appendices may be included but must remain within the 20-page limit.

(b) Quality Assurance Statement (3 pages maximum)

The Quality Assurance Statement should be submitted by the USLA on behalf of the Consortium

For projects involving environmental data collection or processing, conducting surveys, modeling, method development, or the development of environmental technology (whether hardware-based or via new techniques), provide a Quality Assurance Statement (QAS) regarding the plans for processes that will be used to ensure that the products of the research satisfy the intended project objectives. Follow the guidelines provided below to ensure that the QAS describes a system that complies with ANSI/ASQC E4, *Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs*. Do not exceed three consecutively numbered, 8.5x11-inch pages of single-spaced, standard 12-point type with 1-inch margins.

NOTE: If selected for award, US applicants will be expected to provide additional quality assurance documentation.

Address each applicable section below by including the required information, referencing the specific location of the information in the Research Plan, or explaining why the section does not apply to the proposed research. (Not all will apply.)

- (1) Identify the individual who will be responsible for the quality assurance (QA) and quality control (QC) aspects of the research along with a brief description of this person's functions, experience, and authority within the research organisation. Describe the organisation's general approach for conducting quality research. (*QA is a system of management activities to ensure that a process or item is of the type and quality needed for the project. QC is a system of activities that measures the attributes and performance of a process or item against the standards defined in the project documentation to verify that they meet those stated requirements.*)
- (2) Discuss project objectives, including quality objectives, any hypotheses to be tested, and the quantitative and/or qualitative procedures that will be used to evaluate the

success of the project. Include any plans for peer or other reviews of the study design or analytical methods.

(3) Address each of the following project elements as applicable:

(i) Collection of new/primary data:

(Note: In this case the word “sample” is intended to mean any finite part of a statistical population whose properties are studied to gain information about the whole. If certain attributes listed below do not apply to the type of samples to be used in your research, simply explain why those attributes are not applicable.)

- Discuss the plan for sample collection and analysis. As applicable, include sample type(s), frequency, locations, sample sizes, sampling procedures, and the criteria for determining acceptable data quality (e.g., precision, accuracy, representativeness, completeness, comparability, or data quality objectives).
- Describe the procedures for the handling and custody of samples including sample collection, identification, preservation, transportation, and storage, and how the accuracy of test measurements will be verified.
- Describe or reference each analytical method to be used, any QA or QC checks or procedures with the associated acceptance criteria, and any procedures that will be used in the calibration and performance evaluation of the analytical instrumentation.
- Discuss the procedures for overall data reduction, analysis, and reporting. Include a description of all statistical methods to make inferences and conclusions, acceptable error rates and/or power, and any statistical software to be used.

(ii) Use of existing/secondary data (i.e. data previously collected for other purposes or from other sources):

- Identify the types of secondary data needed to satisfy the project objectives. Specify requirements relating to the type of data, the age of data, geographical representation, temporal representation, and technological representation, as applicable.
- Specify the source(s) of the secondary data and discuss the rationale for selection.
- Establish a plan to identify the sources of the secondary data in all deliverables/products.

- Specify quality requirements and discuss the appropriateness for their intended use. Accuracy, precision, representativeness, completeness, and comparability need to be addressed, if applicable.
- Describe the procedures for determining the quality of the secondary data.
- Describe the plan for data management/integrity.

(iii) Method development:

Note: The data collected for use in method development or evaluation should be described in the QAS as per the guidance in section 3(i) and/or 3(ii) above.

Describe the scope and application of the method, any tests (and measurements) to be conducted to support the method development, the type of instrumentation that will be used and any required instrument conditions (e.g., calibration frequency), planned QC checks and associated criteria (e.g., spikes, replicates, blanks), and tests to verify the method's performance.

(iv) Development or refinement of models:

Note: The data collected for use in the development or refinement of models should be described in the QAS as per the guidance in section 3(i) and/or 3(ii) above.

- Discuss the scope and purpose of the model, key assumptions to be made during development/refinement, requirements for code development, and how the model will be documented.
- Discuss verification techniques to ensure the source code implements the model correctly.
- Discuss validation techniques to determine that the model (assumptions and algorithms) captures the essential phenomena with adequate fidelity.
- Discuss plans for long-term maintenance of the model and associated data.

(v) Development or operation of environmental technology:

Note: The data collected for use in the development or evaluation of the technology should be described in the QAS as per the guidance in section 3(i) and/or 3(ii) above.

- Describe the overall purpose and anticipated impact of the technology.
- Describe the technical and quality specifications of each technology component or process that is to be designed, fabricated, constructed, and/or operated.
- Discuss the procedure to be used for documenting and controlling design changes.

- Discuss the procedure to be used for documenting the acceptability of processes and components, and discuss how the technology will be benchmarked and its effectiveness determined.
- Discuss the documentation requirements for operating instructions/guides for maintenance and use of the system(s) and/or process(s).

(vi) Conducting surveys:

Note: The data to be collected in the survey and any supporting data should be described in the QAS as per the guidance in section 3(i) and/or 3(ii) above.

Discuss the justification for the size of the proposed sample for both the overall project and all subsamples for specific treatments or tests. Identify and explain the rationale for the proposed statistical techniques (e.g., evaluation of statistical power).

(c) Data Management Plan (2 pages maximum)

Describe the anticipated data management activities (e.g. record-keeping procedures, data handling procedures, and the approach used for data storage and retrieval on electronic media). Include any required computer hardware and software and address any specific performance requirements for hardware/software configuration used.

Also provide a plan to make all data resulting from an agreement under this AO/RFA available in a format and with documentation/metadata such that they may be used by others in the scientific community. This includes both primary and secondary or existing data, i.e. from observations, analyses, or model development collected or used under the agreement. Applicants who plan to develop or enhance databases containing proprietary or restricted information must provide, within the two pages, a strategy to make the data widely available, while protecting privacy or property rights. UK applicants should be aware that NERC designated Data Centers can be approached for advice on data issues. In particular they should be consulted if projects will be requiring data as an input to research, or will be generating as output, major datasets that should be accorded a secure future. It is NERC policy that recipients of NERC funding must offer to deposit with NERC a copy of datasets resulting from the research, for use by other *bona fide* researchers, but without prejudice to the intellectual property rights of the originator of the data.

(d) Impact Plan (2 pages maximum)

Provide a description of how the potential impacts of this research will be realised and who will be specific users and beneficiaries of the research (e.g., academic community, commercial private sector, or the wider public in general.)

Detail how the proposed research project will be managed to engage users and beneficiaries and increase the likelihood of impacts. When completing the impact plan, consider and address the following if appropriate: methods for communications and engagement,

utilisation and collaboration, capability, and resources for the activity in the most effective and appropriate manner. Also detail your track record in this area and justify the costs of the activities outlined in your impact plan in the “budget justification” section of your application.

(1) Communications and Engagement

(i) Describe engagement with the identified beneficiaries, for example:

- How have beneficiaries been engaged to date, and how will they be engaged moving forward?
- How will the work build on existing or create new links?
- Outline plans to work with intermediary organisations or networks.

(ii) What activities will be undertaken to ensure good engagement and communication?

For example:

- Short-term exchange of research or user community staff
- Events aimed at a target audience
- Workshops to provide training or information dissemination
- Publications and publicity materials summarising main outcomes in a way that beneficiaries will be able to understand and use (newsletters, handbooks, user manuals, etc).
- Websites and interactive media
- Media relations
- Public affairs activities

(2) Utilisation and Collaboration

Identify the mechanisms in place for potential utilisation, both commercially and non-commercially. For example:

- Do you have any specific partnership, collaborative or utilisation agreements in place?
- How will the outputs with potential impact be identified?
- What structure and mechanisms can you put in place to utilise and protect research outputs during and at the end of the grant lifecycle?

(3) Capability

Who is likely to be undertaking the impact activities? For example:

- The PI or CoI
- PhD students and post-doctoral researchers who may be involved in activities in addition to research
- Specialised staff employed to undertake communication and utilisation activities
- Technical experts to write publications, web pages and user-friendly interfaces
- What previous and relevant experience do they have in achieving successful knowledge exchange and impact? How will they acquire the skills if they do not possess them?

(4) Resource for the activity

If there are any resource implications as a result of implementing the knowledge exchange and/or impact activities, ensure these are documented in the Budget Justification section of the proposal.

(e) References

References cited are in addition to other page limits (e.g. research plan, quality assurance statement, data management plan).

7. Budget and Budget Justification

(a) Summary Budget Table (Budget Table 1)

The USLA must submit an overall budget table for the Consortium. A recommended format for submitting this information is shown below.

	UK Institutions			US Institutions		
	Organisation name (All UK Institutions)	Direct Costs	Indirect costs	Organisation name (All US Institutions)	Direct costs	Indirect costs
	(one row per Institution)			(one row per Institution)		
<i>Total</i>						
Grand total						

(b) USEPA Itemised Budget Form (Budget Table 2)

The USLA must submit a budget table for funding requested from USEPA. The budget table should be attached to the Project Narrative Attachment Form electronic file [see Section E.3.iv].

If a subaward, such as a subagreement with an educational institution, is included in the application, provide a separate budget and budget justification for the subaward. Include the total amount for the subaward under “Other” in the budget form. Applicants may not use subagreements to transfer or delegate their responsibility for successful completion of their USEPA assistance agreement. Therefore, USEPA expects that subawards or subcontracts should not constitute more than 40% of the total direct cost of the total project budget. If a subaward/subcontract constitutes more than 40% of the total direct cost, additional justification may be required before award, discussing the need for the subaward/subcontract to accomplish the objectives of the research project.

Please note that institutional cost-sharing is not required. However, if cost-sharing is proposed, a brief statement concerning cost-sharing should be added to the budget justification, and estimated dollar amounts must be included in the appropriate categories in the budget table.

Please note that when formulating budgets for proposals/applications, the US applicants must not include management fees or similar charges in excess of the direct costs and indirect costs at the rate approved by the applicants cognisant audit agency, or at the rate provided for by the terms of the agreement negotiated with USEPA. The term "management fees or similar charges" refers to expenses added to the direct costs in order to accumulate and reserve funds for ongoing business expenses, unforeseen liabilities, or for other similar costs that are not allowable under USEPA assistance agreements. Management fees or similar charges may not be used to improve or expand the project funded under this agreement, except to the extent authorised as a direct cost of carrying out the scope of work.

(c) USEPA Budget Justification [3 pages in addition to the Section IV.B.6. page limitations, not including additions under Nos. (6) and (7) below to support contracts and subawards]

Describe the basis for calculating the personnel, fringe benefits, travel, equipment, supplies, contractual support, and other costs identified in the itemised budget. The budget justification should not exceed three consecutively numbered (bottom centre), 8.5x11-inch pages of single-spaced, standard 12-point type with 1-inch margins.

Sufficient detail must be provided to link the budgeted costs to specific activities performed by the US investigators and described in the research plan. Budget information for US applicants should be supported at the level of detail described below:

- (1) Personnel: List all staff positions by title. Give annual salary, percentage of time assigned to the project, and total cost for the budget period.
- (2) Fringe Benefits: Identify the percentage used and the basis for its computation.
- (3) Travel: Specify the estimated number of trips, locations, and other costs for each type of travel. Include travel funds for annual US-UK program progress reviews and a final workshop to report on results. Explain the need for additional travel, paying particular attention to travel outside the United States.
- (4) Equipment: Identify all tangible, non-expendable personal property to be purchased that has an estimated cost of \$5,000 or more per unit and a useful life of more than one year. (Personal property items with a unit cost of less than \$5,000 are considered supplies.)
- (5) Supplies: "Supplies" means tangible property other than "equipment." Identify categories of supplies to be procured (e.g., laboratory supplies or office supplies). Specifically identify computers to be purchased or upgraded.

- (6) Contractual: Identify each proposed contract for services/analyses or consultants and specify its purpose and estimated cost. Contracts must have a separate itemised budget and budget justification, not to exceed one additional page each, included as part of the application.
- (7) Other: List each item in sufficient detail for the USEPA to determine the reasonableness of its cost relative to the research to be undertaken. Note that subawards, such as those with other universities for members of the research team, are included in this category. Subawards must have a separate itemised budget and budget justification, not to exceed one additional page each, included as part of the application.
- (8) Indirect Costs: If indirect costs are included in the budget, indicate the approved rate and base with an explanation of how the indirect costs were calculated.

(d) UKENI Itemised Budget Form(s)

For UK Consortium members, the UK budget forms (one per UK institution) and justification (one for ALL UK institutions) can be found at the NERC ENI website (<http://www.nerc.ac.uk/research/programmes/nanoscience>). UK applicants should submit these forms through the USLA.

All Research Council (RC) research grant applications are awarded on a full economic cost (FEC) basis. Universities are required to calculate the FEC using the “TRAC” (Transparent Approach to Costing) methodology. Other research organisations (ROs) use an equivalent methodology, which has been validated by the RCs. For more information, please go to the RCs’ Dual Support Reform web pages, which include guidance notes and FAQs for peer reviewers (<http://www.pparc.ac.uk/jes/DualSupport.asp>).

UK Universities and RC Institutes will be supported at 80% of the FEC.

Resources are summarised under the following fund headings:

- (1) **Directly Incurred Costs** – costs that are specific to the project, will be charged as the amount actually spent and can be supported by an audit record. These include:
 - Staff costs dedicated to project
 - Travel and subsistence
 - Equipment (capital costs plus maintenance and related costs that are not included as part of estates)
 - Consumables specific to project
 - Books specifically purchased for project
 - Survey fees
 - Purchase/ hire of vehicles if necessary for project
 - Publication costs

- (2) **Directly Allocated Costs**– costs of resources that are shared by other activities and will be charged on the basis of estimates rather than actual costs, including:
- Investigators’ costs (unless DI or non-chargeable)
 - Costs of pooled staff effort
 - Estates costs (building and premises costs, basic services and utilities, lease/rent/rates, insurance, cleaning/portering/security/safety, staff facilities, any clerical staff and equipment maintenance not separately included as DI or DA)
 - Usage costs of major research facilities, such as animal and glass houses)
 - Central and distributed computing (if not possible to identify as separate cost may form part of estates or indirect costs)
 - Charge out rates for shared equipment
- (3) **Indirect Costs** – a share of common resources that cannot be attributed to individual projects, including:
- General office and basic laboratory consumables
 - Library services / learning resources
 - Typing/Secretarial
 - Finance, personnel, public relations and departmental services
 - Central and distributed computing if not DA
 - Cost of capital employed (includes redundancy costs)
 - Proposal preparation and peer review
- (4) **Exceptions** – Directly Incurred costs that NERC will fund at 100% FEC (equipment over £50k) or items outside FEC (e.g. project students).

(e) **UKENI Budget Justification** (3 pages in addition to the Section IV.B.6. page limitations)

The UKPI should provide a budget justification for the same areas as those identified in section IV.B.7.c above, excluding (2) and (8), i.e. Fringe Benefits and Indirect Costs, respectively. This budget justification statement should include the costs for all UK Consortium members.

8. Resumes

Provide resumes for each investigator and important co-worker. The resume for each individual must not exceed two consecutively numbered, 8.5x11-inch pages of single-spaced, standard 12-point type with 1-inch margins. UK applicants should submit their resumes through the USLA.

9. Current and Pending Support

Identify current and pending research support for the USPI, UKPI and CoIs. Provide this information in the format provided at <http://www.epa.gov/ncer/rfa/forms>. Include all current and pending research support regardless of source.

10. Past Performance (3 pages maximum each for the USPI and UKPI)

Provide information on the proposed USPI and UKPI's past performance and reporting history under prior assistance agreements (assistance agreements include grants and cooperative agreements but not contracts) in terms of: (i) the level of success in performing each agreement, and (ii) how progress towards achieving the results intended under each agreement was reported. This information is required only for the proposed USPI and UKPI's performance under assistance agreements initiated within the last three years that were similar in size and scope to the proposed project.

The specific information required for each agreement is shown below. A maximum of three pages will be permitted per PI for the response; excess pages will not be reviewed.

1. Name of Granting Agency.
2. Grant/Cooperative agreement number.
3. Grant/Cooperative agreement title.
4. Brief description of the grant/cooperative agreement.
5. A description of how the agreement is similar in size and scope to the proposed project and whether or not it was successfully performed; if not successfully performed, provide an explanation.
6. Information relating to the proposed PI's past performance in reporting on progress towards achieving the expected results (outputs/outcomes) under the agreement. Include the history of submitting timely progress/final technical reports, describe how progress towards achieving the expected results was reported/documented, and if such progress was not being made, provide an explanation of whether, and how, this was reported.
7. Total (all years) grant/cooperative agreement dollar value/pounds sterling value.
8. Project period.
9. Technical contact (project officer), telephone number, and E-mail address (if available).

This document must be submitted on 8.5x11-inch pages of single-spaced, standard 12-point type with 1-inch margins.

Note: If no prior past performance information and/or reporting history exists, you will be asked to so state.

11 Guidelines, Limitations, and Additional Requirements

(a) Letters of Intent (2 pages maximum per letter)

Letters of intent from PPs to provide resources for the proposed research or to document intended interactions are limited to two pages committing the availability of a resource (e.g., use of a person's time or equipment) or intended interaction (e.g., sharing of data, as-

needed consultation) that is described in the Research Plan. Letters of intent should be submitted through the USLA as an attachment to the application package.

(b) Letters of Support

All letters that do not commit a resource vital to the success of the proposal are considered *letters of support*. Letters of support must not exceed one brief paragraph (excluding letterhead and salutations).

Note: Letters of intent and letters of support must be submitted as part of the full application; letters submitted separately will not be accepted. Any transactions between the successful applicant and parties providing letters of support or intent financed with USEPA grant funds are subject to the funding restrictions described in Section IV. D.

(c) Funding Opportunity Number (FON)

At various places in the application, applicants are asked to identify the FON.

The Funding Opportunity Number for this AO/RFA is:

Joint US – UK Research Program: Environmental Behaviour, Bioavailability and Effects of Manufactured Nanomaterials, EPA- G2008-STAR-R1

(d) Confidentiality

By submitting an application in response to this solicitation, the applicant grants the USEPA and UKENI funding partners permission to make limited disclosures of the application to technical reviewers both within and outside the funding Agencies for the express purpose of assisting the Agencies with evaluating the application. Information from a pending or unsuccessful application will be kept confidential to the fullest extent allowed under law; information from a successful application may be publicly disclosed to the extent permitted by law.

In accordance with 40 CFR 2.203, US applicants may claim all or a portion of their application/proposal package as confidential business information. USEPA will evaluate confidentiality claims in accordance with 40 CFR Part 2. Applicants must clearly mark applications/proposals or portions thereof that they claim as confidential. If no claim of confidentiality is made, USEPA is not required to make the inquiry to the applicant otherwise required by 40 CFR 2.204(c)(2) prior to disclosure. However, competitive proposals/applications are considered confidential and protected from disclosure prior to the completion of the competitive selection process.

C. Submission Dates and Times

Applications must be submitted no later than 11:59:59 pm Eastern Time on the solicitation closing date. Applications submitted after the closing date and time will be returned to the sender without further consideration.

It should be noted that this schedule may be changed without prior notification because of factors not anticipated at the time of announcement. In the case of a change in the solicitation closing date, a new date will be posted on the NCER web site (<http://www.epa.gov/ncer/>) and the NERC ENI website (<http://www.nerc.ac.uk/research/programmes/nanoscience/>).

Solicitation Closing Date: August 5, 2009, 11:59:59 pm Eastern Time.

NOTE: Customarily, applicants are notified about evaluation decisions approximately six months after the solicitation closing date. Awards are generally made 9-12 months after the solicitation closing date.

D. Funding Restrictions

US applicants should be aware of the following funding restrictions. The funding mechanism for all awards issued under STAR solicitations will consist of assistance agreements from the USEPA. All award decisions are subject to the availability of funds. In accordance with the Federal Grant and Cooperative Agreement Act, 31 U.S.C. 6301 et seq., the primary purpose of an assistance agreement is to accomplish a public purpose of support or stimulation authorized by federal statute, rather than acquisition for the direct benefit or use of the Agency. In issuing a grant, the USEPA anticipates that there will be no substantial USEPA involvement in the design, implementation, or conduct of the research. However, the USEPA will monitor research progress through annual reports provided by grantees and other contacts, including site visits, with the Principal Investigator(s).

If you wish to submit applications for more than one STAR funding opportunity, you must ensure that the research proposed in each application is significantly different from any other that has been submitted to the USEPA or from any other financial assistance you are currently receiving from the USEPA or other federal government agency.

USEPA awards funds to one eligible applicant as the recipient even if other eligible applicants are named as partners or co-applicants or members of a coalition or consortium. The recipient is accountable to USEPA for the proper expenditure of funds.

Funding may be used to provide subgrants or subawards of financial assistance, which includes using subawards or subgrants to fund partnerships, provided the recipient complies with applicable requirements for subawards or subgrants including those contained in 40 CFR Parts 30 or 31, as appropriate. Applicants must compete contracts for services and products, including consultant contracts, and conduct cost and price analyses to the extent required by the procurement provisions of the regulations at 40 CFR Parts 30 or 31, as appropriate. The regulations also contain limitations on consultant compensation. Applicants are not required to identify subawardees/subgrantees and/or contractors (including consultants) in their proposal/application. However, if they do, the fact that an applicant selected for award has

named a specific subawardee/subgrantee, contractor, or consultant in the proposal/application USEPA selects for funding does not relieve the applicant of its obligations to comply with subaward/subgrant and/or competitive procurement requirements as appropriate. Please note that applicants may not award sole-source contracts to consulting, engineering or other firms assisting applicants with the proposal based solely on the firm's role in preparing the proposal/application.

Successful applicants cannot use subgrants or subawards to avoid requirements in USEPA grant regulations for competitive procurement by using these instruments to acquire commercial services or products from for-profit organisations to carry out its assistance agreement. The nature of the transaction between the recipient and the subawardee or subgrantee must be consistent with the standards for distinguishing between vendor transactions and subrecipient assistance under Subpart B Section .210 of OMB Circular A-133, and the definitions of subaward at 40 CFR 30.2(ff) or subgrant at 40 CFR 31.3, as applicable. USEPA will not be a party to these transactions. Applicants acquiring commercial goods or services must comply with the competitive procurement standards in 40 CFR Part 30 or 40 CFR Part 31.36 and cannot use a subaward/subgrant as the funding mechanism.

Section V of this document describes the evaluation criteria and evaluation process that will be used to make selections under this announcement. During this evaluation, except for those criteria that relate to the applicant's own qualifications, past performance, and reporting history, the review panel will consider, if appropriate and relevant, the qualifications, expertise, and experience of: (i) an applicant's named subawardees/subgrantees identified in the proposal/application if the applicant demonstrates in the proposal/application that if it receives an award that the subaward/subgrant will be properly awarded consistent with the applicable regulations in 40 CFR Parts 30 or 31. For example, applicants must not use subawards/subgrants to obtain commercial services or products from for profit firms or individual consultants; (ii) an applicant's named contractor(s), including consultants, identified in the proposal/application if the applicant demonstrates in its proposal/application that the contractor(s) was selected in compliance with the competitive procurement standards in 40 CFR Part 30 or 40 CFR 31.36 as appropriate. For example, an applicant must demonstrate that it selected the contractor(s) competitively or that a proper non-competitive sole-source award consistent with the regulations will be made to the contractor(s), that efforts were made to provide small and disadvantaged businesses with opportunities to compete, and that some form of cost or price analysis was conducted. USEPA may not accept sole source justifications for contracts for services or products that are otherwise readily available in the commercial marketplace. USEPA will not consider the qualifications, experience, and expertise of named subawardees/subgrantees and/or named contractor(s) during the proposal/application evaluation process unless the applicant complies with these requirements.

Both UK and US applicants should be aware that each proposed project must be able to be completed within the project period and with the initial award of funds. Applicants should request the entire amount of money needed to complete the project. Recipients should not anticipate additional funding beyond the initial award of funds for a specific project.

E. Submission Instructions

Please read this entire section before submitting your application.

The USLA must submit the full joint Consortium application, on behalf of both US and UK Consortium members. The USLA **must submit the full application package, as described in Section IV.B, in PDF format via electronic mail to EPA-UK-NANO-APPS@epa.gov with the funding opportunity number (FON) in the subject line.**

Note: The electronic submission of your application package must be made by an official representative of the USLA who is authorised to sign for Federal assistance. Submission instructions are updated on an as-needed basis. Please provide your authorised representative with a copy of the following instructions to avoid submission delays that may occur from the use of outdated instructions.

(1) **Preparing for Submission.** All required forms can be found at <http://es.epa.gov/ncer/rfa/forms>.

For UK applicants, all required forms can be found at the NERC ENI website (<http://www.nerc.ac.uk/research/programmes/nanoscience>). UK applicants should also complete the US EPA Current and Pending Support Form. These forms should be submitted by the USLA on behalf of all UK partners.

(2) **Acknowledgement of Receipt.** The complete application must be submitted to **EPA-UK-NANO-APPS@epa.gov** no later than 11:59:59 pm Eastern Time on the solicitation closing date (see “Submission Dates and Times”). *The only official documentation that the application has been received by NCER is the e-mail acknowledgement sent by NCER to the USPI and the Administrative Contact which will be copied to the UKENI Technical Contact (nano@nerc.ac.uk).* This email will be sent from receipt.application@epa.gov; emails to this address will not be accepted. **If an email acknowledgment from NCER has not been received within 30 days of the solicitation closing date, immediately inform the USEPA Eligibility Contact shown in this solicitation. Failure to do so may result in your application not being reviewed.**

(3) **Application Package Preparation.** The application package consists of (i) through (iii) below.

- (i). Application for Federal Assistance (SF 424): Complete the form except for the “competition ID” field.
- (ii). USEPA Key Contacts Form 5700-54 and UK Key Contacts Form: Complete the forms. If additional pages are needed, see (iii) below.
- (iii). Attach a single electronic file labelled “Application” that contains the items described in Section IV.B.3. through IV.B.11.b (List of Consortium Members and Roles, Table

of Contents, Abstract, Research Plan, Quality Assurance Statement, Data Management Plan, Impact Plan, References, Budget and Budget Justification, Resumes, Current and Pending Support, Past Performance, Letters of Intent, Letters of Support,) of this solicitation. ***In order to maintain format integrity, this file must be submitted in Adobe Acrobat PDF.*** Please review the PDF file for conversion errors prior to including it in the electronic application package; requests to rectify conversion errors will not be accepted if made after the solicitation closing date and time. If Key Contacts Continuation pages (see <http://www.epa.gov/ncer/rfa/forms>) are needed, place them before the List of Consortium Members and Roles (IV.B.3.).

(4) **Submitting the application.** The full application package must be e-mailed to **EPA-UK-NANO-APPS@epa.gov** by an authorised representative of the USLA. *Note: Minor problems are uncommon, but may still occur, with electronic mailing of files.*

(5) **E-mail Transmission Difficulties.**

Please note that if you choose to submit your materials via email, you are accepting all risks attendant to email submission including server delays. Email submissions exceeding 15MB will experience delays and may not be received on time by the Agency. For these size submissions, applicants should submit their application materials via hardcopy or else they may be received late and not considered for funding.

If you do not have the technical capability to utilise the electronic mail submission process for this solicitation, call 1-800-490-9194 or send a webmail message to (<http://es.epa.gov/cgi-bin/ncerqamail.pl>) at least 15 calendar working days before the submission deadline to assure timely receipt of alternate submission instructions. In your message provide the funding opportunity number and title of the program, specify that you are requesting alternate submission instructions, and provide a telephone number, fax number, and an email address, if available. Alternate instructions will be e-mailed whenever possible. Any applications submitted through alternate submission methods must comply with all the provisions of this AO/RFA, including Section IV, and be submitted by the solicitation closing date identified above.

If transmission difficulties that result in a late transmission, no transmission, or rejection of the transmitted application are experienced, send an email to Josephson.Ron@epa.gov and copy the UKENI Technical Contact (nano@nerc.ac.uk) with the FON in the subject line within 2 days after the closing date. The email should detail the transmission problems experienced and include any error messages. The email should also include information demonstrating that you attempted to submit the application package by the due date in Section IV of the AO/RFA.

The funding partners for this AO/RFA may decide to review the application if it is clearly demonstrated that transmission difficulties were due solely as a result of problems associated with USEPA servers and documentation that these instructions were followed is provided. The decision regarding acceptance of the application for review will be made by the Program Executive Board for this joint solicitation and provided to the applicant within ten working days of the request.

V. APPLICATION REVIEW INFORMATION

A. Review Process

All eligible applications will be subjected to rigorous peer review by experts who will review them against the criteria stated below. The written individual peer reviews for each application will be collated by the Call Secretariat, which will be based at NERC, and sent to the Project Lead for the sole purpose of giving the applicant an opportunity to address points of clarification identified in the reviews. Applicants may respond in writing to these points of clarification identified by the external peer reviewers by sending their response to the Call Secretariat. Applicants will have a limited time to respond, and the deadline for return of responses will be stipulated at the time the reviewers' comments are made available to the applicant. It is stressed that this is an opportunity for clarifications only, and it is not an opportunity for the applicants to rewrite or revise their application or provide new information (the application cannot be edited, revised or changed in any way during this process).

The application, collated reviewers' evaluations and any clarifying comments by the applicants will be made available to the USEPA, UKEA and DEFRA who will then provide written assessments on the policy relevance of the proposed research. It is important that the Consortium provides research outputs that are directly relevant to all the Program funders needs (i.e. research priorities.) USEPA Policy drivers and research priorities relevant to this solicitation can be found at <http://www.epa.gov/osa/nanotech.htm> and <http://www.epa.gov/ord/htm/researchstrategies.htm>. The UK Government research for policy development is co-ordinated by the NRCG (<http://www.defra.gov.uk/environment/nanotech/policy/index.htm>).

The Call Secretariat will compile the applications, external reviews, any clarifying comments by the applicants, and the policy relevance assessments from the funding Agencies and provide these to the Moderating Panel, as described below, for its consideration. The Moderating Panel will be composed of both science and policy experts, including policy experts nominated by the USEPA, the UKEA and the DEFRA. The membership of the Moderating Panel will be agreed to by the Program Executive Board (i.e. representatives from all of the funding partners of the call: NERC, USEPA, EPSRC, UKEA and DEFRA). During the Moderating Panel deliberations, each application will be introduced by panel members who are designated as lead and secondary Introducers for that application. The Introducers will summarise and synthesise the application, external peer reviews and evaluation results, the applicant's comments, and the policy relevance assessment provided by the funding Agencies. The Panel will then discuss each application, taking into account the peer review results and applicant's comments, the policy relevance assessment of the proposed project, and the evaluation criteria described below, and then reach a decision of the final ranking for each application. The Panel will then provide its ranking and recommendations to the Program Executive Board, which will meet separately.

Final funding decisions will be made by the Program Executive Board. Applicants may request feedback on their applications based on the procedures set forth in the Disputes clause in Section VI of this AO/RFA.

External peer reviewers and moderating panel members will apply the criteria below to assess the merit of applications. Criteria 1-6 are listed in descending order of importance:

1. Scientific Aspects

Scientific excellence is the most important criterion.

Scientific aspects will be assessed by means of the following criteria, all of which are of equal importance:

- a. originality and creativity of the proposed research
- b. clarity of hypotheses and objectives
- c. appropriateness and adequacy of the proposed research methods used to test hypotheses and meet the stated objectives
- d. presentation, i.e. that the proposal is well prepared, cohesive, integrated and with supportive information that is self-explanatory or readily understandable
- e. feasibility, i.e. that the research approach is practical and technically defensible
- f. adequacy of the Quality Assurance Statement
- g. appropriateness of the data management plan

2. Investigators

- a. quality of the consortium, i.e. that the Principal Investigator(s) and other consortium partners are sufficiently qualified to deliver the proposed work components and that all members of the consortium possess knowledge of pertinent literature and have sufficient, relevant experience and publication records.
- b. The past performance of the USPI and UKPI under grants and cooperative agreements (not contracts) initiated within the last three years that were similar in size and scope to the proposed project in two areas: First, in successfully performing these prior assistance agreement projects, including whether there is a satisfactory explanation for any lack of success. Second, in reporting progress towards achieving results under these agreements, including the proposed USPI and UKPI history of submitting timely progress/final technical reports that adequately describe the progress toward achieving the expected results (outputs/outcomes) under the agreements. Any explanation of why progress towards achieving the results was not made will also be considered. PIs without relevant past performance and/or reporting history, or for whom this information is not available, will be evaluated neither favourably nor unfavourably on these elements.

3. Fit to AO/RFA Priorities

Research should lead to a better understanding of environmental exposure, bioavailability and risks posed by manufactured nanoparticles of current relevance. This should be underpinned by robust high quality research that reduces uncertainty through the advancement of fundamental knowledge.

Proposals will be assessed against the following criteria which are of equal importance:

- responsiveness, i.e. that the proposal adequately addresses all the objectives specified in Section I D above (Specific Research Areas of Interest/Expected Outputs and Outcomes) in an integrated and cohesive manner.
- research importance, i.e. that the proposed research will significantly advance fundamental knowledge that will also be of benefit to end users.

4. Knowledge Exchange (Impact of Research)

The consortium will be assessed as to whether it has identified a clear and effective communication strategy for both stakeholders and the public. Specifically, the knowledge exchange process should facilitate uptake of the scientific outputs in well articulated policy and/or regulatory contexts.

5. Project management

The following criteria will be used to assess resource and project management aspects of the proposal (all are of equal importance):

- a. project completion and resource allocation, i.e. that the project can be performed within the proposed time period and that the proposed staffing is appropriate in terms of disciplines covered and time commitment.
- b. availability and/or adequacy of the facilities and equipment proposed for the project, i.e. that there are no deficiencies that may interfere with the successful completion of the research.
- c. risk register, i.e. that the proposed approach does not present any risks to successful completion of the project, or that any risks are identified and managed.
- d. integration and cohesiveness within the consortium, i.e. that the consortium is sufficiently balanced between US and UK partners, with complementary strengths that add value as a whole.
- e. governance of the consortium, i.e. that sufficient governance exists to ensure successful project completion, with effective communication and mechanisms for issue management and resolution.
- f. disclosure, i.e. that other relevant sources of funding and links with related programs have been disclosed.

6. Budget

Although budget information does not reflect on the application's scientific merit, the reviewers are asked to provide their view on the appropriateness and/or adequacy of the proposed budget and its implications for the potential success of the proposed research. Input on requested equipment is of particular interest.

B. Funding Decisions

The Program Executive Board, consisting of representatives from all funders of the Call (NERC, USEPA, EPSRC, UKEA and DEFRA) will make the final decision on the applications to be funded based on the rankings and recommendations of the Moderating Panel as described above. In making the funding decisions, the Program Executive Board will consider the recommendations of the Moderating Panel, any of the information used by the Moderating Panel including the evaluations by external reviewers and take into account strategic issues such as program balance and available funds. Applicants selected for funding may be required to provide additional information listed below under "Award Notices".

VI. AWARD ADMINISTRATION INFORMATION

A. Award Notices

Customarily, applicants are notified about evaluation decisions approximately six months after the solicitation closing date. A summary statement of the scientific review by the peer panel will be provided to each applicant with an award or declination letter.

Awards to UK Consortium partners will be made through NERC on behalf of all the UK funding partners. Awards to US Consortium partners will be made through USEPA's Grants and Interagency Agreement Management Division on behalf of US funding partners.

US Applicants recommended for funding will be required to submit additional certifications and an electronic version of the revised project abstract. They may also be asked to provide responses to comments or suggestions offered by the peer reviewers and a revised budget. USEPA Project Officers will contact the USPI to obtain these materials. Before or after an award, applicants may be required to provide additional quality assurance documentation.

Note that non-profit US applicants recommended for funding under this announcement may be subject to pre-award administrative capability reviews consistent with Sections 8b., 8c. and 9d. of EPA Order 5700.8 - Policy on Assessing Capabilities of Non-Profit Applicants for Managing Assistance Awards (http://www.epa.gov/ogd/grants/award/5700_8.pdf). In addition, non-profit applicants that qualify for funding may, depending on the size of the award, be required to fill out and submit to the Grants Management Office the Administrative Capabilities Form with supporting documents contained in Appendix A of EPA Order 5700.8.

The official notification of an award to US applicants will be made by the USEPA's Grants and Interagency Agreement Management Division. Applicants are cautioned that only a grants officer is authorised to bind the Government to the expenditure of funds.

B. Disputes

Disputes related to this assistance agreement competition will be resolved by the USEPA and NERC. Disputes will be resolved in accordance with the USEPA dispute resolution procedures set forth in 70 FR 3629, 3630 (January 26, 2005) which can be found at <http://www.epa.gov/ogd/competition/resolution.htm>. USEPA will consult with NERC on the resolution of any disputes.

C. Administrative and National Policy Requirements

Expectations and responsibilities of grantees are summarised in this section. US award holders should see <http://www.epa.gov/ncer/guidance> for the full terms and conditions associated with an award, including which activities require prior approval from the USEPA. UK award holders should refer to the NERC Research Grants Handbook for further details (<http://www.nerc.ac.uk/funding/available/researchgrants/handbook.asp>)

1. Meetings: Principal Investigators will be expected to budget for, and participate in annual US-UK program progress reviews and a final workshop to report on results.

2. Approval of Changes after Award: Prior written approval is required from the funding partners if there will be a significant change from the work described in the application. Such requests should be directed to the USEPA and UKENI Technical Contacts. Decisions on such requests will be made by the Program Executive Board. Examples of these changes are contained in 40 C.F.R. 30.25. Note: prior written approval is also required from the USEPA for incurring costs more than 90 calendar days prior to award.

3. Human Subjects: A US grant recipient must agree to meet all USEPA requirements for studies using human subjects prior to implementing any work with these subjects. These requirements are given in 40 CFR § 26. Studies involving intentional exposure of human subjects who are children or pregnant or nursing women are prohibited by Subpart B of 40 CFR § 26. For observational studies involving children or pregnant women and fetuses please refer to Subparts C & D of 40 CFR § 26. U.S. Department of Health and Human Services regulations at 45 CFR § 46.101(e) have long required "... compliance with pertinent Federal laws or regulations which provide additional protection for human subjects." EPA's regulation 40 CFR § 26 is such a pertinent Federal regulation. Therefore, the applicant's Institutional Review Board (IRB) approval must state that the applicant's study meets the EPA's regulations at 40 CFR § 26. No work involving human subjects, including recruiting, may be initiated before the EPA has received a copy of the applicant's IRB approval of the project and the EPA has also provided approval. Where human subjects are involved in the research, the recipient must provide evidence of subsequent IRB reviews, including amendments or minor changes of protocol, as part of annual reports.

4. Animal Welfare: A US grant recipient must agree to comply with the Animal Welfare Act of 1966 (P.L. 89-544), as amended, 7 U.S.C. 2131-2156. The recipient must also agree to abide by the "U.S. Government Principles for the Utilisation and Care of Vertebrate Animals used in Testing, Research, and Training" (50 Federal Register 20864-20865. May 20, 1985).

UK grant recipients must comply with the EU Animals Directive (86/609). NERC also endorses the expectations regarding responsibility in the use of animals in bioscience research as laid out by the National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs).

5. Data Access and Information Release: After award, all data (including primary and secondary or existing data) generated as a result of USEPA funding must be made available to the NCER Project Officer without restriction and be accompanied by comprehensive metadata documentation adequate for specialists and non-specialists alike to be able to understand how and where the data were obtained and to evaluate the quality of the data. If requested, the data products and their metadata must be provided to the NCER Project Officer in a standard exchange format no later than the due date of the grant's final report or the publication of the data product's associated results, whichever comes first.

Congress, through OMB, has instructed each US federal agency to implement Information Quality Guidelines designed to "provide policy and procedural guidance...for ensuring and maximising the quality, objectivity, utility, and integrity of information, including statistical information, disseminated by Federal agencies." The USEPA's implementation may be found at <http://epa.gov/quality/exmural.html#genreqts>. These procedures may apply to data generated by grant recipients if those data are disseminated as described in the Guidelines.

The Office of Management and Budget (OMB) Circular A-110 located at 2 CFR Part 215 has been revised to provide public access to research data through the Freedom of Information Act (FOIA) under some circumstances. Data that are (1) first produced in a project that is supported in whole or in part with federal funds and (2) cited publicly and officially by a federal agency in support of an action that has the force and effect of law (i.e. a regulation) may be accessed through FOIA. If such data are requested by the public, the USEPA must ask for it, and the grantee must submit it, in accordance with A-110 and the USEPA regulations at 40 C.F.R. 30.36.

Recipients of UK funding must offer to deposit with NERC a copy of datasets resulting from the research, for use by other *bona fide* researchers, but without prejudice to the intellectual property rights of the originator of the data.

6. Reporting: Award recipients must agree to provide annual progress reports, with associated summaries, and a final report with an executive summary. The summaries will be posted on both the NCER and UKENI websites.

UK award recipients will also be expected to comply with the reporting and monitoring requirements described in Section G of the NERC Research Grants Handbook (<http://www.nerc.ac.uk/funding/available/researchgrants/handbook.asp>).

US grant recipients must agree to provide copies of any peer reviewed journal article(s) resulting from the research during the project period. In addition, the recipient should notify the USEPA Project Officer of any papers published after completion of the grant that were based on research supported by the grant. NCER posts references to all publications resulting from a grant on the NCER web site.

7. Acknowledgement of Support: All journal articles, oral or poster presentations, news releases, interviews with reporters and other communications supported in full or in part by the funding partners of this AO/RFA should acknowledge this support and should cite the award reference number(s) by including the following statement:

This work was supported by the funding partners of the UK Environmental Nanoscience Initiative (Natural Environment Research Council, Engineering and Physical Sciences Research Council, UK Environment Agency and the Department for Environment, Food and Rural Affairs) [NERC research grant reference number xxx] and STAR Research Assistance Agreement No. _____ awarded by the U.S. Environmental Protection Agency. It has not been formally reviewed by the USEPA or the funders of the UKENI. The views expressed in this document are solely those of [name of recipient]; the USEPA and UKENI do not endorse any products or commercial services mentioned in this publication.

Award recipients are also expected to acknowledge funders on all oral and poster presentations using their respective logos. The USEPA graphic is located at http://es.epa.gov/ncer/guidance/star_images.html. Graphics for NERC, EPSRC, UKEA and DEFRA will be provided by the UK Technical Contact (nano@nerc.ac.uk).

Further guidance on acknowledgement of sources of funding is available from the Research Information network (see <http://rin.ac.uk/funders-acknowledgement>).

VII. CONTACT INFORMATION

Further information, if needed, may be obtained from the officials indicated below. Information regarding this AO/RFA obtained from sources other than these Contacts may not be accurate. Email inquiries are preferred.

US EPA Contacts:

Eligibility Contact: William Stelz; phone: +1 202-343-9802; email: stelz.william@epa.gov

Submissions Contact: Ron Josephson; phone: +1 202-343-9643; email: josephson.ron@epa.gov

Technical Contact: Nora Savage; phone: +1 202-343-9858; email:savage.nora@epa.gov

UK NERC Contacts

Eligibility Contact: Jim Aland; phone: +44 (0) 1793 411629; email: jeal@nerc.ac.uk

Technical Contact: Dominique Balharry; phone: +44 (0) 1793 413301; email: nano@nerc.ac.uk,

General ENI Program inquiries: Richard Owen; email: owenr@westminster.ac.uk