

**[Billing Code 4140-01-P]**

**DEPARTMENT OF HEALTH AND HUMAN SERVICES**

**National Institutes of Health**

**Announcement of Requirements and Registration for the NIEHS Climate Change and Environmental Exposures Challenge**

**Authority:** 15 U.S.C. 3719

**SUMMARY:** To assist the country in preparing for the potential health risks from climate change, the National Institutes of Health (NIH) through the National Institute on Environmental Health Sciences (NIEHS) is sponsoring the NIEHS Climate Change and Environmental Exposures Challenge (the “Challenge”) under the America COMPETES Reauthorization Act of 2010. This Challenge calls on talented software developers, data scientists, and other innovators from around the country to create data visualizations, tools, and applications that use the best available science on environmental exposures and the relationship of these exposures to increased temperature, precipitation, flooding, and sea level rise. The Challenge has two goals: to raise awareness of how environmental

health risks may be exacerbated by climate change in communities, and to enable protective decision-making from local to national levels.

**DATES:** The Challenge begins [FEDERAL REGISTER PLEASE INSERT THE DATE OF PUBLICATION]

- 1) Submission period begins 9 AM EDT September 28, 2015
- 2) Submission period ends 12 PM EDT December 4, 2015
- 3) Judging Period: December 7, 2015 to January 6, 2016
- 4) Winners Announced: January 12, 2016

**ADDRESSES:** To register for this Challenge, participants can access either the <http://www.challenge.gov> website (search for the Challenge's title) or the Climate and Health Innovation Challenge Series website at <http://www.challenge.gov/agency/health-and-human-services/climate-and-health-innovation-challenge-series/>.

**FOR FURTHER INFORMATION CONTACT:** John Balbus, M.D., M.P.H., Senior Advisor for Public Health, National Institute of Environmental Health Sciences, Phone 301.496.3511. [john.balbus@nih.gov]

**SUPPLEMENTARY INFORMATION:** Communities currently face risks from hazardous wastes and deposits of industrial chemicals, air pollution, harmful algal

blooms and toxic contaminants in food, and exposures to pesticides. While the impacts of climate change on many of these environmental health risks are not well understood or addressed at present, newly released data and tools, in combination with other publicly available datasets, allow for innovative approaches to identifying, demonstrating and assessing those risks. Protective decisions at the local level may include siting of schools, day care centers, new housing, or critical infrastructure such as new water intakes for drinking water systems; design or siting of urban waste water drainage or green infrastructure; placement of monitoring equipment or other sensors; or other permits or regulations. Nationally, protective decisions about prioritizing remediation efforts or other interventions, or setting national standards or policies may be informed by greater understanding of the influence of climate change on the magnitude and spatial distribution of potential environmental exposures.

**Statutory Authority:** Pursuant to Section 402 of the Public Health Service Act, 42 U.S.C. § 285, the general purpose of the National Institute of Environmental Health Sciences (NIEHS) is the conduct and support of research, training, health information dissemination, and other programs with respect to factors in the environment that affect human health, directly or indirectly. Supported by the NIEHS, the Challenge furthers the Institute's statutory authority by advancing research to understand the potential health risks from climate change. This Challenge aligns with both the mission of NIEHS to

“discover how the environment affects people in order to promote more healthier lives” as well as elements of the Institute’s 2012-2017 Strategic plan, including:

Goal 5: Identify and respond to emerging environmental threats to human health, on both a local and global scale (<https://www.niehs.nih.gov/about/strategicplan/>).

**Subject of the Challenge:** The Challenge calls on talented software developers, data and exposure scientists, public health students and professionals, and other innovators to produce a data visualization or visualization tool or application (each a “submission”) to help convey potential risks of environmental exposures in the United States that may be exacerbated by climate change. Submissions may be produced using existing tools and platforms or created with newly developed applications. The geographic scale can be as small as the neighborhood or community level or as large as the regional or national level. Prizes will be made available in two categories according to the scale of the submission; one for state level or smaller, one for multi-state or national.

Submissions should help identify potential areas or zones of increased exposure and/or the degree of changes in exposure or health risk resulting from climate change. Participants may consider a short-term time scale (e.g., 0 to 20 years) for impacts associated with extreme events, or a longer time scale (e.g., 2050 or beyond) for impacts associated with sea level rise or other phenomena whose greatest impact will clearly be decades from now. These exposures may include:

1) toxic chemicals released from hazardous waste, mining or other industrial sites by rising sea level, increased temperatures and permafrost melting, changes in wind patterns, or other climate-related ecological processes;

2) air pollutants, including ozone and particulate matter, that may increase or decrease in concentration in certain regions because of increased temperatures and changing weather patterns;

3) toxins created by molds or waterborne bacteria or algae;

4) pesticides, whose usage or dispersion patterns may be influenced by changes in climate.

Participants in the Challenge may also propose environmental exposures not listed here. If a participant wishes to explore a different environmental exposure, the submission should include a statement explaining the importance of the exposure to human health and the relationship between climate change and changes in that exposure in the future.

This Challenge is most interested in submissions that show the interaction between these three data layers:

1) locations and concentrations of harmful agents (i.e., exposures);

2) locations of potentially exposed populations; and

3) geographic and climatologic parameters conveying changing risks of exposure.

At a minimum, all submissions should include a data layer related to location of potential harmful agents and a data layer related to changes in levels of exposure to those potential agents cause by factors related to climate change.

Potentially useful datasets can be found at [climate.data.gov](http://climate.data.gov) and on the Climate and Health Innovation Challenge Series website

(<http://www.challenge.gov/agency/health-and-human-services/climate-and-health-innovation-challenge-series/>). Participants are also encouraged to seek out additional scientifically valid datasets for their submissions.

Participants in the Challenge should specify the target audience for their submission. Potential target audiences include local public health and environmental officials, clinical health professionals, urban planners, emergency preparedness and response officials, and the general public.

**Rules for Participating in the Challenge:**

- (1) To be eligible to win a prize under this Challenge, an individual or entity—
  - a. Shall have registered to participate in the Challenge under the rules promulgated by the NIEHS as published in this Notice;
  - b. Shall have complied with all the requirements set forth in this Notice;
  - c. In the case of a private entity, shall be incorporated in and maintain a primary place of business in the United States, and in the case of an individual, whether

participating singly or in a group, shall be a citizen or permanent resident of the United States 18 years of age or older;

d. May not be a Federal entity;

e. May not be a Federal employee acting within the scope of the employee's employment and further, in the case of HHS employees, may not work on their submission(s) during assigned duty hours;

f. May not be an employee of the NIH, a judge of the Challenge, or any other party involved with the design, production, execution, or distribution of the Challenge or the immediate family of such a party (i.e., spouse, parent, step-parent, child, or step-child).

(2) Federal grantees may not use Federal grant funds to develop their Challenge submissions unless use of such funds is consistent with the purpose of their grant award and specifically requested to do so due to the Challenge design, and as announced in the Federal Register.

(3) Federal contractors may not use Federal funds from a contract to develop their Challenge submissions or to fund efforts in support of their Challenge submission.

(4) Submissions must not infringe upon any copyright or any other rights of any third party.

(5) By participating in this Challenge, each individual (whether competing singly or in a group) and entity agrees to assume any and all risks and waive claims against the Federal government and its related entities (as defined in the America COMPETES Act), except

in the case of willful misconduct, for any injury, death, damage, or loss of property, revenue, or profits, whether direct, indirect, or consequential, arising from participation in this Challenge, whether the injury, death, damage, or loss arises through negligence or otherwise.

(6) Based on the subject matter of the Challenge, the type of work that it will possibly require, as well as an analysis of the likelihood of any claims for death, bodily injury, property damage, or loss potentially resulting from Challenge participation, no individual (whether competing singly or in a group) or entity participating in the Challenge is required to obtain liability insurance or demonstrate financial responsibility in order to participate in this Challenge.

(7) By participating in this Challenge, each individual (whether competing singly or in a group) and entity agrees to indemnify the Federal government against third party claims for damages arising from or related to Challenge activities.

(8) An individual or entity shall not be deemed ineligible because the individual or entity used Federal facilities or consulted with Federal employees during the Challenge if the facilities and employees are made available to all individuals and entities participating in the Challenge on an equitable basis.

(9) By participating in this Challenge, each individual (whether participating singly or in a group) and entity grants to the NIH an irrevocable, paid-up, royalty-free nonexclusive worldwide license to post, link to, share, and display publicly on the Web the submission.

Each participant will retain all other intellectual property rights in their submissions, as applicable.

(10) NIH reserves the right, in its sole discretion, to (a) cancel, suspend, or modify the Challenge, and/or (b) not award any prizes if no submissions are deemed worthy.

(11) Each individual (whether participating singly or in a group) or entity agrees to follow all applicable federal, state, and local laws, regulations, and policies.

(12) Each individual (whether participating singly or in a group) and entity participating in this Challenge must comply with all terms and conditions of these rules, and participation in this Challenge constitutes each such participant's full and unconditional agreement to abide by these rules. Winning is contingent upon fulfilling all requirements herein.

**Registration Process for Participants:** To register for this Challenge, participants can access either the <http://www.challenge.gov> website (search for the Challenge's title) or the Climate and Health Innovation Challenge Series website at <http://www.challenge.gov/agency/health-and-human-services/climate-and-health-innovation-challenge-series/>

**Amount of the Prize:** There will be two prize categories, one for data visualizations, tools or applications at the regional (multi-state) or national level, and one for data visualizations, tools or applications at the local or municipal level, with a grand prize,

second prize, and third prize available for each category. Each category may award up to \$17,500 in prizes (total prize amount available is \$35,000) to the best overall projects in that category, based on the established judging criteria. For each category:

Grand Prize – \$10,000

Second Prize - \$5,000

Third Prize - \$2,500

The Award Approving Official will be Linda S. Birnbaum, Ph.D., D.A.B.T., A.T.S.,  
Director, National Institute of Environmental Health Sciences.

**Payment of the Prizes:** Prizes awarded under this Challenge will be paid by NIEHS by electronic funds transfer and may be subject to Federal income taxes. HHS/NIH/NIEHS will comply with the Internal Revenue Service withholding and reporting requirements, where applicable.

**Basis upon Which Winners Will Be Selected:** The judges will evaluate submissions based upon the following criteria: scientific validity, innovative use of data and visualization tools or applications, and clarity of presentation. In order for submissions to be evaluated, they must include clear, detailed processes on how they were produced, including any code if applicable. The processes can be submitted in a text document.

More details on the specific judging criteria and the judging panel can be found on the Challenge website.

- 34% Scientific validity – associations between exposures and climate change phenomena must be scientifically credible
- 33% Innovative use of data and visualization tools or applications – creative selection of datasets and ways to display data overlays; inclusion of new ideas and types of data
- 33% Clarity – depiction of vulnerability and risk easily understood to a general public audience

In order for a submission to be eligible to win this Challenge, it must meet the following requirements:

1. Submission: The following items constitute a complete submission for this Challenge: A short (less than 250 words) description of the visualization and its value in improving our understanding of the relationship between environmental exposures and climate change; a detailed description of the visualization, tool, or application, including the technical basis for combining data layers and references to the scientific literature supporting the relationships between climate change, altered exposures, and human health outcomes where relevant (limited to 1000 words, not including figures or references); the visualization tool and any application or code needed to run the tool; instructions on how to install and

operate any application behind a visualization tool; system requirements required to run the application; and a description of, rationale for selecting, and complete copy of the data set. For data sets contained within [climate.data.gov](http://climate.data.gov) or otherwise easily obtainable from federal sources, the URLs for the datasets are sufficient. Alternatively, instead of providing the tool or application itself, participants may provide either a link to a visualization generated by the tool or application; a video demonstrating the tool or application; or one or more pdfs of example visualizations.

2. Participants must provide continuous access to any submissions that include web postings through the Challenge period until January 12, 2016.
3. Challenge submissions must be submitted via the Challenge's homepage on [challenge.gov](http://challenge.gov).
4. Submissions must be in English.
5. The tool or application must not use HHS's or NIH's logos or official seals in the submission, and must not claim or imply endorsement by the Federal government.
6. The data visualization tool or application must be designed for use with existing web, mobile, voice, or other platform for supporting interactions of the content provided with other capabilities.
7. A submission may be disqualified if the visualization tool or application fails to function as expressed in the description provided by the participant, or if the tool or application provides inaccurate or incomplete information.

8. Submissions must be free of malware. Participant agrees that NIH may conduct testing on the visualization tool or application to determine whether malware or other security threats may be present. NIEHS may disqualify the submission if, in NIEHS' judgment, the visualization tool or application or any other part of the submission may damage government or others' equipment or operating environment.

**Additional Information:** To help the public understand the health implications of climate change and improve the nation's ability to be resilient to negative impacts, HHS has organized the Climate and Health Innovation Challenge Series. This Challenge Series spotlights the over 150 climate and health data sets that have become available via the Climate Data Initiative, while also identifying and promoting additional relevant data sets. The Challenge Series will include challenges aimed at one or more of the following goals:

1. Create appealing applications that empower the public to take action by providing information about climate change's impacts on health or about the potential health benefits of personal actions to reduce greenhouse gas emissions.
2. Create climate change and health decision support tools for health professionals and, potentially, other professionals (e.g. urban planners).

3. Empower the academic and technology communities to analyze data in innovative ways, moving research forward in key areas (products may range from data visualizations to useful indices/metrics to adopt).
4. Challenge the private sector to combine government data with their own data to develop innovative decision support tools or address research questions.

Dated: September 4, 2015

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Linda S. Birnbaum, Ph.D., D.A.B.T., A.T.S, Director  
National Institute of Environmental Health Sciences

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