Project: Monitoring Health Impacts from Extreme Heat Events

1. **Two-year budget: C$600,000**

2. **Short statement of the need identified (including current status), the project objective and outcomes (achievable by June 2019) to address it**:

   Climate projections indicate that extreme heat events (EHEs) will increase in frequency and severity in the coming years in North America. These events already result in a large number of deaths and illnesses, especially among vulnerable populations, and will continue to increase public health risks. Only a few health agencies incorporate real-time health data to adequately prepare for and respond to EHEs. This project aims to fill this gap by supporting additional communities (e.g., in Manitoba (Canada), Chihuahua (Mexico), Arizona (United States)) to implement syndromic surveillance (SyS) systems to monitor heat-related health outcomes, and by developing evidence-based tools for the identification, prevention and treatment of heat-related illnesses among the most vulnerable populations. The project will provide essential decision-making tools to public health professionals and emergency management officials for early detection of heat-related illness and enhance preparedness and response during EHEs. This project builds upon the successful results of work completed under the CEC's 2015–2016 Operational Plan (OP): establishment of the first pilot SyS system in Mexico, the automation of the State of Michigan's system, the addition of Tele-health data to Ottawa's system, and development of a guidance document on SyS systems for EHEs. Based on guidance and lessons learned from these communities, this project will expand the establishment and use of SyS systems in North America targeting new pilot communities, promote awareness and use of the guidance document, develop an evidence-based framework for evaluating SyS systems, and develop an online training course that will respond to the needs of public health practitioners across North America in terms of surveillance of health outcomes from EHEs.

3. **Explain how the project can achieve more impact by working trinationally and why the CEC is the most effective vehicle to undertake this work:**

   While public health risks from extreme heat events are a transboundary issue, the capacity of public health agencies to prepare for, prevent, and respond to these events varies widely. This CEC project fosters sharing of information, expertise and resources across the three countries to enhance public health agencies' efforts to address the impact of EHEs, protecting particularly vulnerable populations in North America. Under the 2015-16 OP, scientific collaboration between public health and environmental agencies resulted in the establishment of the first North America-wide community of practice, whose goal is a better use and integration of weather and climate data in SyS systems to achieve efficiencies and enhanced public health

outcomes. In this project, the expansion of syndromic surveillance to other communities will leverage these efforts and will maximize the benefits of lessons learned from the pilot communities.

4. **Describe how the project may capitalize on, or advance, the relationship between ecosystems, job creation, gender impacts, and income generation:**

   Extreme heat can have debilitating health impacts, ranging from illnesses that require hospitalization, to mortality, in particular for vulnerable populations. These adverse outcomes have significant economic implications, including absenteeism in school and work, loss of employment, and lower family income from the hospitalization or death of a family member. Response to heat stress is also influenced by gender. SyS systems can detect the risk from extreme heat early enough to protect the lives and livelihood of vulnerable populations. They can also be a valuable source of information for gender-based analyses to assess the impacts of heat on women and men, while factoring in their socio-economic and occupational statuses.

5. **Describe how the project complements or avoids duplication with other national or international work:**

   This project is a continuation and expansion of efforts made under OP 2015-16, where a literature review on the use of SyS systems has shown a strong need to either develop real-time SyS for heat, or adapt existing systems to effectively detect, and thereby help prevent and treat, heat-related illness and deaths. The outcomes from this project will fill this gap and will complement the work being done by North American public health authorities and other national and international organizations such as the Council for State and Territorial Epidemiologists (CSTE) and the International Society for Disease Surveillance (ISDS). This project complements the activities of the North American Working Group on Climate Change and Human Health, established under an agreement between Health Canada, the US Centers for Disease Control and Prevention (US CDC), and Mexico's Federal Commission for the Protection Against Sanitary Risk (*Comisión Federal para la Protección contra Riesgos Sanitarios*—Cofepris).

6. **Describe opportunities for inclusion of traditional ecological knowledge (TEK), if applicable, and how these opportunities are incorporated into the project**:

   The project will involve collaboration with indigenous health authorities or public health authorities serving indigenous communities, in order to establish or enhance a pilot SyS system. This will provide the opportunity to include TEK in adapting heat-health messaging and raising awareness among indigenous populations, considering their local knowledge about climate and culture.

7. **Describe opportunities for youth engagement, if applicable, and how these opportunities are incorporated into the project:**

   Youth engagement is key to help local communities achieve the project objectives. For example, health sciences and medical students in Hermosillo, Mexico, were directly involved in data collection activities at local hospitals, to support the State of Sonora's pilot syndromic surveillance system. This project will also offer similar opportunities for students from relevant disciplines in the three countries, as well as direct involvement in analyses of relevant health and environment data (and in the development of an evaluation framework). The online course will be a unique opportunity to raise awareness among health-care workers, including medical residents and public health professionals, of the health risks from extreme heat, and to provide technical guidance on how heat-related illnesses can be diagnosed, coded, treated and prevented.

8. **List significant involvement of other levels of government, Indigenous groups, local communities, experts, private sector, civil society and others, as applicable:**
   - Michigan Department of Public Health
   - Manitoba Health
   - Department of Health of the State of Sonora
   - Coesprison—*Comisión Estatal de Protección Contra Riesgos Sanitarios en Sonora* (Commission for the Protection against Sanitary Risk of the State of Sonora)
   - Department of Health of the State of Chihuahua
   - Department of Health of the State of Tamaulipas
   - Ottawa Public Health
   - KFL&A Public Health
   - Public Health Ontario
   - *Institut national de santé publique du Québec* (National Institute for Public Health of Quebec)
   - Arizona Department of Health
   - Council for State and Territorial Epidemiologists
   - International Society for Disease Surveillance

9. **Identify relevant committee members and their federal agencies in each country committed to developing this project and implementing it, if approved:**

Canada: Abderrahmane Yagouti, Health Canada.

Mexico: Matiana Ramírez and José Herrera, Cofepris—Federal Commission for the Protection against Sanitary Risk
United States: Shubhayu Saha, US Centers for Disease Control and Prevention

10. List the objectives and activities to be conducted to achieve measurable results:

Objectives	Main activities to achieve objectives	Measurable results
By 30 June 2019, real-time SyS systems for heat are implemented or enhanced in additional regions / communities in North America.	**Activity 1** Final selection of additional pilot communities and/or regions	4 new agencies (and/or communities) agreed to develop a SyS system based on guidance document and advice from pilot communities from OP 2015-16 (Phase I)
	Activity 2 Design, develop, and implement real-time SyS systems for heat using lessons learned and guidance	Real-time SyS systems for heat in use, increased capacity to monitor and respond to adverse health outcomes resulting from extreme heat
By 30 June 2019, an evaluation framework is available to agencies and used to assess the performance of SyS systems, including the pilot systems undertaken in Phase- I of the project.	**Activity 1** Develop a framework to evaluate the implementation and performance of SyS systems for EHEs	Health agencies have the capacity to assess the performance of SyS systems for EHEs and to demonstrate their utility to detect heat-related illnesses
	Activity 2 Collect and analyze relevant health and population data from the pilot communities;	Pilot communities have a better understanding of the health impacts from extreme heat.
	Activity 3 Collect and analyze information from partner health agencies participating in the project	Lessons learned from these case studies are shared with other health agencies and communities including stakeholders from academia
By 30 June 2019, an online interactive training course on SyS systems is available for public health	**Activity 1** Develop the content material to be included in the interactive training course	Public health professionals and clinical practitioners have access to evidence-based information on the use of SyS systems for EHE

Objectives	Main activities to achieve objectives	Measurable results
professionals and clinical practitioners.	**Activity 2** Design the structure of the online course	Public health professionals and clinical practitioners have access to a user-friendly platform for training on SyS for EHE
	Activity 3 Host the online course by a third party (e.g., university or NGO)	Public health professionals and clinical practitioners are better trained to use SyS systems for EHE
	Activity 4 Promote the online course among the public health community	Public health stakeholders in North America are aware of the online course
	Activity 5 Host a final workshop to share and disseminate the final deliverables from the project	Information and lessons learned from the project are available to key public health stakeholders