Environmental Research and Education Foundation Issues Targeted Request for Proposals: High Need Topics in Solid Waste Research

Raleigh, NC (February 12, 2014) – The field of solid waste management continues to change and such changes continually bring new aspects to the sustainable management of the wastes that we, as a society, throw away. Coupled with the initiative to ensure research funded reflects the long-term strategic direction of the solid waste industry, it has also been recognized that there are specific research topics that are more urgent than others, having potential impacts that are both long and short term. To this end, this request for proposals (RFP) is intended to address high need topics, as identified by the solid waste industry via the Environmental Research & Education (EREF) Board of Directors and Research Council.

High Need Research Topics
Proposals are invited that address topics in the following four areas, which have been identified as critical needs by the solid waste field.

1. **Leachate Management**
   Leachate management is becoming more critical to successful landfill operations, both from a cost and regulatory perspective. Discharge of leachate to the local treatment plant, either through the sewer or by hauling, has been the common practice in the industry. As regulations have tightened, the need for cost-effective pretreatment and/or identification of sustainable alternative disposal options has become more important. Proposals submitted in this area should focus on topics that can translate into operational improvements to leachate management strategies and treatment options that aim to minimize cost, yet are operationally reliable and environmentally compliant. Examples of research topics in this area include, but are NOT limited to:
   a. Evaluating leachate impacts on UV transmittance and formulating approaches to mitigate such impacts
   b. Comparative analysis of existing and new/innovative treatment technologies or strategies
   c. Impact of special wastes (e.g. coal ash, oil/gas wastes, magnesium, aluminum, etc.) on leachate quality and treatment options
   d. Management options for refractory dissolved organic nitrogen (rDON) that include policy, such as the development of regulatory variance approaches for permits with nitrogen limits
   e. Evaluation of policies that impact leachate management
   f. Variability in leachate quality and its impact on treatment strategies
   g. Efficacy and improving the use of evaporative systems for leachate management, including design considerations on enhancing evaporation rates
2. Post-closure Care
Upon closure of a landfill, current Subtitle D regulations require a post-closure monitoring period of at least 30 years. However, the guidance surrounding this requirement is vague and does not provide definitive criteria for determining when monitoring can be reduced or terminated. Proposals submitted in this area should evaluate aspects of post-closure from a policy and operational perspective that consider welfare of human health and the environment while at the same time minimizing the level of monitoring required and demonstrating how long the monitoring periods should be based on landfill management practices. Aspects of ‘de minimus’ long-term care options after the regulatory post-closure care period has ended are also of interest. It is preferred that proposals submitted in this area align with or build upon previous research funded by EREF, which led to the development of the EREF extended post-closure care (EPCC) methodology. Details on this research can be found below.

Description of EPCC Methodology:
http://erefdn.org/index.php/resources/publicationdonation/performance_based_system_for_post_closure_care_at_msw_landfills_a_procedure/

Evaluation of Critical Data Requirements for the EPCC Methodology (a multi-site evaluation):

3. Elevated Temperatures in Landfills
One of the most poorly understood phenomena relate to landfills that experience higher than normal temperatures, which ultimately influence landfill microbiology and can severely impact operations. In some cases, gas production from such landfills has ceased or gas composition has transitioned from being dominant in methane to the generation of atypical gases (e.g. hydrogen). In other cases, temperature increases have resulted in types of exothermic reactions. While specific information is not well characterized, current data suggests that the reasons for abnormally high temperatures in landfills could be attributed to one or more of the following:

a. The presence of special and/or reactive wastes (e.g. aluminum)
b. Heat accumulation and/or poor dissipation in spatially localized areas within the waste
c. Non-conventional mechanisms of oxygen intrusion
d. Management practices coupled with one or more of the above that contribute to temperature increases

Proposals submitted in response to this topic should address: (i) underlying causal factors and mechanisms that contribute to heat generation, (ii) methods to identify heat build-up/hot spots, either remotely or via direct measurement, and (iii) the development of mitigation and best practice techniques/strategies.

4. Organics Management
There is increasing interest in diverting the organic fraction of MSW (e.g. food waste, yard waste, industrial organics, etc.) from landfills. This trend is driven by various factors, including the desire for increased sustainability, energy production/recovery, and pending or active policies that either promote organics diversion or prohibit the disposal of organics to landfills. Proposals submitted in this area should focus on the evaluation of organics management strategies and technologies that help define the best options under various operating and regulatory scenarios. Examples of research topics in this area include, but are NOT limited to:

a. Economic or cost/benefit analyses
b. Comparative analysis of existing and new/innovative strategies
c. Evaluation of dry anaerobic digestion strategies
d. Comparative performance of anaerobic digestion strategies under different waste compositions and operating scenarios

e. Assessing when to implement particular food waste management strategies (e.g. composting, anaerobic digestion, thermal treatment)

Proposals submitted in response to this RFP that do not fit within the topical areas noted herein will not be reviewed. Projects and research previously funded by EREF can be viewed on its Web site at www.erefdn.org. Previously awarded grants have ranged from $15,000 to over $500,000 with the average grant amount in recent years being $160,000. Typical project durations are 2 to 3 years.

Submittal Deadline
The submittal deadline for this RFP is April 10, 2014. Proposals will be accepted 10 days prior to the deadline listed above up to the close of business (5:00 p.m. eastern time) on the deadline date. If not received by this time, proposals will not be considered.

The full Request for Proposals can be downloaded at www.erefdn.org.

EREF is a 501(c)3 class charity that funds and directs scientific research and educational initiatives for waste management practices to benefit industry participants and the communities they serve. For more complete information on EREF funded research, its scholarship program and how to donate to this great cause, visit www.erefdn.org.

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