Research and the State Registration and Abstract Submission Instructions

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Go to the Research Forums webpage to access the link to the online application/abstract upload form.

ABSTRACT SUBMISSION

- **Download** the abstract template document from the Research Forums webpage.

- **Save the document** using the following file name format: **Last Name,First Name.docx**
  (E.g., "Smith,John.docx")
  - The ".docx" format is preferred, but if you are unable to save the file in this format, saving as ".doc" is acceptable.

- **VERY IMPORTANT: KNOW YOUR AUDIENCE - Your abstract needs to be written in a way that students and faculty from a variety of academic disciplines and the general public can understand**. You will be presenting your work to a diverse audience at Research and the State, and if you are selected to participate in the Capitol Graduate Research Summit, you will be sharing your work with a very diverse audience, including state legislators who are not experts in your field, and many do not have advanced degrees. An abstract for this event needs to be written much differently than an abstract you would submit for a professional conference in your discipline.
  - **You are encouraged to make an appointment with the Writing Center for guidance on preparing an abstract for this specific audience.**

- **All abstracts must follow the same formatting style**. Maintain the formatting used in the abstract template.
  - All margins should be .5 inches
  - Single space throughout the abstract with the exception of spacing between sections as shown in the abstract template
  - Times New Roman, 12 point font throughout the abstract
  - Title in bold and all caps (lowercase, italics, superscripts, and subscripts may be used when technically necessary)
  - First and last names of all authors in the order determined appropriate by the authors. DO NOT include professional titles (e.g., use "John Smith," NOT "Dr. John Smith).
  - **Include headers** for the broad sections in your abstract (e.g., Background, Method, Results and Conclusion).
  - References and funding sources do NOT need to be acknowledged in the abstract, but they should be acknowledged in the poster.
  - Your abstract **must not exceed 250 words**. Title, author information, and section headers are not included in the word count.

- **Refer to the sample abstracts** below for examples of appropriate formatting or view abstracts in previous abstract booklets. **NOTE** the differences in authorship formatting between the two samples.
  - In **Sample A**, both authors are from the KSU Department of Civil Engineering. Therefore, the affiliation is listed only once, and superscripts are not included. Abstract Sample A also shows that for KSU authors, the department and college affiliations are listed but the university is not.
  - In **Sample B**, authors represent multiple institutions. Therefore, numeric superscripts are used after author names and before affiliations to link authors with their respective affiliations.

- **Review and proofread your abstract.** Please make sure your abstract should is free of grammatical errors.

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  - You must receive approval of all co-authors and advisors prior to submitting your abstract.
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SAMPLE ABSTRACT A

UTILIZATION OF HIGH LIGNIN RESIDUE ASH (HLRA) IN CONCRETE MATERIALS

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BACKGROUND AND PURPOSE: Cement, an essential ingredient of concrete, is the most expensive and energy-intensive product in most concrete. Considering the threat of climate change and global warming, efforts have been put forward to reduce the amount of CO_2 emission from the cement industry by considering alternative methods for producing more environmental friendly cement and concrete. One such way is using supplementary cementitious materials (SCMs) as a partial replacement of cement in concrete. It has been shown that agricultural residues can be potential resources for CSMs production. It is well established that dilute acid pretreatment techniques enhance the reactivity of agricultural residues ash (ARA) in concrete materials. However, the impact of dilute acid pretreatment followed by enzymatic hydrolysis or agricultural residue on the pozzolanic property of the ARA has not been addressed yet. **METHOD:** In this study, pozzolanic reactivity of ash produced by burning high lignin residue (HLR) is documented. HLR, a byproduct of bioethanol production from corn stover, is actually dilute acid pretreated and enzymatic hydrolyzed corn stover. **RESULTS AND CONCLUSION:** Based on heat of hydration, calcium hydroxide consumption, and compressive strength experiments, it was concluded that the ash produced by burning HLR is a very reactive pozzolanic material that can be used as a partial replacement of cement in concrete materials. Thus, HLR which are byproducts of biochemical conversion of AR can be utilized as valuable materials for CSMs production for concrete.

Relevance of Research to State-related Topic(s)

Climate change and global warming caused by greenhouse gas, particularly carbon dioxide, emission is a major concern worldwide. Cement, an essential ingredient of concrete, is responsible for 8% global carbon dioxide emission. Therefore, my research aims to reduce the cement percentage in concrete materials and thus to lower the energy intensity and carbon footprint of concrete materials. My research investigates the utilization of agricultural residue ash (ARA) as a low cost and environmentally-friendly highly reactive supplementary cementitious material (SCM) that can be used as a partial replacement of cement in concrete. This will reduce carbon footprint as well as increase the durability of concrete materials, the most used material after water.

SAMPLE ABSTRACT B

SANITATION CAN INFLUENCE THE EFFICACY OF AEROSOL INSECTICIDES IN MILLING FACILITIES

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BACKGROUND AND PURPOSE: Literatures have shown that accumulated dust and food residues in flour mills can potentially decrease the efficacy of contact insecticides used against stored product insects. However, there is limited information on the effectiveness of aerosol insecticides, potential component of food facility IPM. PURPOSE: A study was conducted to evaluate effects of flour residues on the efficacy of synergized pyrethrin aerosol against different life stages of the confused flour beetle, *Tribolium confusum* (Tenebrionidae). **METHOD:** Twenty individuals of the adult, pupal, and larval stages were exposed to aerosol spray separately in Petri dishes containing 0, 0.1, 1, 5 or 10 g of wheat flour held inside empty sheds. After 2 h of exposure, the dishes were taken out of the sheds and placed in an incubator set at 27°C-60% RH. Adult mortality was assessed at 2, 5, 8, and 15 days post-exposure, while pupae and larval mortality were assessed at 21 and 28 days post-exposure respectively. Additionally, adult recovery after exposure was recorded for each of the flour depths. **RESULTS:** Mortality of adult beetles decreased with increasing depth of flour. Also, recovery of moribund insects increased with depths of 5 and 10 g flour compared to dishes with 0, 0.1, or 1 g of flour. Similarly, larvae and pupae were less affected when exposed in deeper flour dishes. **CONCLUSION:** Results suggest accumulated flour residues during application of an aerosol can reduce effectiveness; therefore sanitation should be emphasized prior to aerosol application.

Relevance of Research to State-related Topic(s)

Methyl bromide (MB), the major structural fumigant of the food processing industries, is being phased out within the United States, in accordance to the Montreal Protocol. Other currently used pest control methods such as heat treatments, phosphine, and sulfuryl floride (SF) can be cost-intensive, require long periods of facility shutdown, and have potential negative effects on structures. Our study shows that aerosolized insecticides could be a promising alternative for MB. However, presences of dust and food residues in the facilities can influence the efficacy of applied aerosol. Therefore, this study emphasizes on through cleaning of facilities prior to aerosol application. Our results may help in the establishment of aerosol application as an easy, cost effective and safe method of pest control in the food facilities. Further, it may replace or reduce the use of heat treatments, phosphine, and SF.