PMC-EF2a
(2.04.02)

U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION

RECIPIENT: The Ohio State Research Foundation **STATE:** OH

PROJECT TITLE : The Program of Excellence in Natural Rubber Alternatives

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-EE0000409		GFO-10-040	0

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:
Description:

A9 Information gathering (including, but not limited to, literature surveys, inventories, audits), data analysis (including computer modeling), document preparation (such as conceptual design or feasibility studies, analytical energy supply and demand studies), and dissemination (including, but not limited to, document mailings, publication, and distribution; and classroom training and informational programs), but not including site characterization or environmental monitoring.

B3.6 Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).

Rational for determination:

Ohio State University's (OSU), Ohio Agriculture Research and Development Center (OARDC) would demonstrate the feasibility of using the Russian Dandelion, Taraxacum kok-saghyz (TKS) as a natural rubber (NR) alternative. The location of the laboratory would take place at the OSU OARDC, Horticulture and Crop Science Department (HCS) in Wooster, Ohio. The project would be divided into six tasks:

Task 1.0 Program of Excellence in Natural Rubber Alternatives (PENRA) Implementation
OARDC would coordinate activities related to the core function of PENRA in administration and research related activities. The research scientist would: establish contacts and relationships with The Ohio State University Foundation, industry and university collaborators and other administrative entities as necessary; seek additional funding; author and assist on presentations, reports, seminars and publishable material related to this project; work on level budget control processes, establish project management systems to track current projects and coordinate achievement of agreed on milestones; provide updates on project, assist on analysis of research data, hypothesis development, experiments and collection of data. Specific reports required by this project would be assigned to this scientist. Reports and other deliverables would be provided in accordance with the Federal Assistance Reporting Checklist following the instructions included therein. For clarification, we would seek additional funding based on request for proposals from federal and state agencies. Lobbying activities would not be performed within the scope of this project.
Expected outcome: To significantly increase capacity for research and development

Subtask 1.1. Increase collaboration with a leading University
Purpose: to scale up TKS crop development to a national level.
Approach: by collaborating with leading universities on bioproducts development PENRA would jump start proof of concept of TKS viability and sustainability. Experimental testing in diverse environmental conditions (soils and weather) is essential to establish TKS as an alternative crop.
Subtask 1.2. Increase collaboration with industry
Purpose: to increase coordination of business development and collaborating company interactions.
Approach: increase collaboration with industry would be achieved by hiring specialized and highly knowledgeable professionals in the rubber/tire industry.

Task 2.0 Crop Development
The crop development team would use a combination of TKS plants crossing to generate seeds, and propagation to generate copies of high rubber yield plants. All TKS genotypes generated in 5 years of studies are available to undergo propagation by root cuttings and/or top replanting. High priority genotypes are those with potential high yield

containing 10%-20% NR by dry weight and/or those with specific interesting characteristics such as hardiness. To achieve these goals, the CDT would increase personnel number by hiring a 2.0 FTE Research Assistants that would, along with research aides already working on the TKS related projects, develop a systematic methodology to increase the number of plants and effectively propagate genotypes in greenhouses and high-tunnels environments.

Expected outcome: a substantial increase in number and quality of new plants, seed inventory and amount of rubber produced should be expected by the end of budget period (1) considering that environmental factors on high-tunnels are adequate through the year.
Task 3.0 Life Cycle Analysis
Approach: PENRA would collaborate with a specialized center to develop such analysis. Targeted processes could include TKS farming, harvesting and transport, and NR production and use in tires. Farming would consider fertilizer and fossil fuel inputs and critical resources/services such as land, water, soil, and carbon sequestration. NR production from Hevea would be used as a reference product for comparison but the system boundary would also consider inulin and its production.
Expected outcome: A LCA would define viability of the TKS crop, possible positive/negative impacts and indentify sustainability bottlenecks of a TKS based rubber industry.

OARDC claims no additional permits are needed and there would be no generation of air emissions associated with this work. Vented gas cabinets and fume hoods are used with scrubbers to prevent release of air pollutants. OARDC claims that all hazardous waste is disposed of according to university, local, state, and federals regulations. According to the universities, a Chemical Hygiene Plan, waste disposal, and safety protocols are in place monitored by the university Environmental Health and Safety office. All the plants are grown in laboratories and greenhouses.

This project comprises of bench-scale research projects and conventional laboratory operations to conserve energy, therefore the DOE has categorized this into Categorical Exclusions A9, and B3.6.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

none

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 12/15/09
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☐ Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

☐ Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
☐ Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____
Field Office Manager