

EXECUTIVE SUMMARY

Item Name: **Approval of Regents' Grants Proposal #3 – Arizona's Need for a Cost-effective Technology to Remediate PFAS ("Forever Chemicals") Contaminated Water**

Action Item

Requested Action: The universities and the board office ask the board for approval of its Regents' Grants Proposal for Arizona's Need for a Cost-effective Technology to Remediate PFAS ("Forever Chemicals") Contaminated Water.

Background/History of Previous Board Action

Arizona law established TRIF from Proposition 301 state sales tax revenue and gives ABOR the authority to administer the fund on the universities' behalf. The board manages and administers the TRIF revenues through awarding and allocating revenues.

One of the options the board has is to award TRIF revenues to the universities through the recently developed Regents' Grant process.

The purpose of Regents' Grants is to address and deliver solutions to critical issues facing the State of Arizona and its citizens.

The board office engaged with Governor's Office, the Department of Administration, and the Department of Environmental Quality (AzDEQ), Department of Health Services (AzDHS) and Department of Water Resources (AzDWR) to develop a list of problem statements.

The universities received ADEQ's initial problem statements in November of 2021 and engaged in a Q&A session held in January to answer faculty questions regarding the problem statements. ADEQ's problems statements are:

1. Currently we do not understand how the unique southwest natural environment and potential ozone precursor sources in Arizona--nitrogen oxides (NOx), volatile organic compounds (VOCs), and biogenic volatile organic compounds (BVOCs) impact or assist in the production of ozone in Arizona. Thus, it is not clear which types of controls can be put in place or voluntary actions Arizonans can take to reduce ozone and improve air quality. Beyond the existing photochemical air modeling and analysis, Arizona needs a better predictive method to establish the independent and reasonably controllable variables influencing ozone in Arizona.

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EXECUTIVE SUMMARY

2. Arizona would benefit from a cost-effective solution and/or options to identify an optimal fallow field plan that minimizes wind-blown PM10 (~dust) emissions and Valley Fever spores.
3. Need cost effective technology to remediate PFAS contaminated water and need a cost-effective means to replace current AFFF supplies with a more benign but effective fire suppressant.
4. Arizona needs a comprehensive assessment identifying potentially hazardous mine features impacting surface and groundwater. Arizona needs a cost-effective solution or mitigation technology that can limit the spread of contaminants via water and air.
5. Arizona would benefit from an economic feasibility study to manage recycling by municipality size. The study should detail recycling options for Arizona and highlight pros and cons for each community size.

The universities submitted their proposals in response to the state's problem statements in February and ADEQ, AzDHS and ABOR reviewed the proposals.

Discussion

Based on the reviews of the multi-university proposals submitted in response to Problem Statement #3 regarding Arizona's need for a cost-effective technology to remediate PFAS ("Forever Chemicals") contaminated water.

The board is asked to review and approve for Regents' Grant Funding the following proposal in response to this problem statement:

Context:

One drop of poly- and perfluoroalkyl substances (PFAS or "Forever Chemicals"), can contaminate 18 million gallons of drinking water. States Environmental Protection Agency (US EPA) established the health advisory levels at 70 parts per trillion (ppt, or ng/L), but widespread using of PFAS fire retardants has meant that unhealthy levels of this compound have found their way into important water resources. Standard PFAS sorbents like granulated activated charcoal require high/expensive energy for regeneration. As a result, PFAS-loaded carbon is often incinerated at high cost. Readings above EPA Health Advisory Levels are impacting large volumes of groundwater near military installation, airports and in drinking water systems.

EXECUTIVE SUMMARY

Team:

Northern Arizona University
University of Arizona:

Proposal Summary

The goal of this project is to create a cost-effective technology to remediate different types of PFAS in water. The approach uses advanced sorbents (“sponges”) that can be modified to remove all types of PFAS from water under a wide range of conditions. These sponges are constructed from low-cost, environmentally friendly materials (cellulose) and are regenerable. Advanced sensors are employed to provide real-time monitoring of PFAS concentrations during operation, which allows rapid adjustments to optimize the treatment system. The universities expect that the unique properties of the new sorbents, in combination with real-time monitoring, will provide an innovative, cost-effective method for treating PFAS-contaminated waters.

Why it Matters to Arizona

At the time of this writing, there are multiple sites in Arizona that the EPA has identified as having PFAS contamination.

Budget

Annual	Three-Year
\$500,000	\$1,500,000

Project Length

Three years.

Committee Review and Recommendation

The Research and Health Sciences Committee reviewed this item at its March 25, 2022 meeting and recommended forwarding the item to the full board for approval.

Statutory/Policy Requirements

A.R.S. § 15-1648 “Technology and Research Initiative Fund”

ABOR Policy 3-412 “Administration of Technology and Research Initiative Fund”