

Tribal Opportunities at EPA's National Center for Environmental Research

Thomas O. Barnwell, Jr.
Senior Science Advisor
National Center for Environmental Research
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Overview

- The Environmental Protection Agency
- Tribal Science at the EPA
- Fellowship Opportunities
- P3 – People, Prosperity and the Planet – Award Program: A National Student Design Competition for Sustainability
 - How it works
 - Example Project
 - Educational Benefits
 - Future Directions





Background on EPA

- Founding of the Environmental Protection Agency
 - July 1970 President Nixon declared intention to establish Environmental Protection Agency
 - Independent regulatory agency responsible for implementing federal laws designed to protect the environment
 - EPA came into being on December 2, 1970
- First Earth Day held on April 22, 1970
 - nationwide grassroots demonstration on behalf of the environment
 - 20 million individuals including representatives from thousands of schools and local communities

Mission of EPA

...to protect human health and the environment

- **Establish and enforce** environmental protection standards consistent with national environmental goals
- **Conduct research**
 - on adverse effects of pollution
 - on methods and equipment for controlling it
 - to gather information on pollution and use it to strengthen environmental protection programs and recommend policy
- **Assist others**, through grants, technical assistance and other means, in arresting pollution of the environment
- Assist the Council on Environmental Quality in developing and recommending to the President new policies for the protection of the environment

Tribal Science Council

Monica Rodia – Executive Secretary



Tribal Science Council

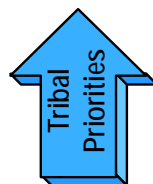
- Formed in 1999 at the request of the National Tribal Caucus in partnership with tribal representatives to help integrate Agency and Tribal interests concerning environmental science issues
- Provides a cross-Agency forum for tribal and EPA scientists to discuss national tribal science issues
- Seeks to increase tribal involvement in EPA's scientific activities – building bridges between tribal and Agency programs by focusing on priority tribal science issues

Tribal Science Council (continued)

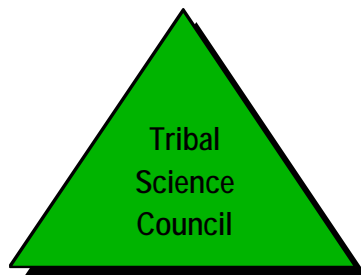
- Members include one representative from each...
 - Region with Federally-recognized tribes, plus a representative from the Alaska native communities
 - Program Office and Regional Office
- Current co-chairs
 - Curtis Munoz, Kiowa Tribe, Region 6
 - Roland Hemmett, EPA Region 2
- Coordinates with the National Tribal Caucus to integrate science priorities into the Agency's annual planning and budget process

TSC Addressing Science in Indian Country

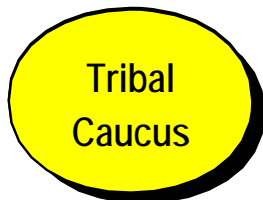
Tribal Science Priorities



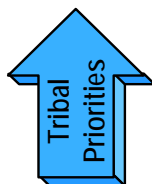
The TSC directs priorities to appropriate Programs, Regions, or ORD and develops collaborative approaches to addressing scientific issues of importance to the Tribes.



TSC Membership:
Tribal RTOC Representatives (1 from each Region)
EPA Program Offices
EPA Regions
EPA ORD

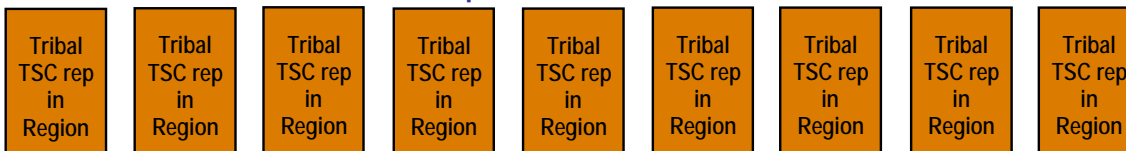


Tribal Caucus
endorses national
set of tribal priorities



The Tribal representatives to the TSC work together to develop a set of tribal science priorities for TC endorsement.

Input from the Tribes



Tribal representatives to the TSC work within their RTOCs and EPA Regions to identify tribal science priorities.

Development of the Priorities

- Tribally-driven process
- National level priorities
- Purpose:
 - Understand tribal issues and related EPA activities
 - Develop collaborative solutions
 - Ensure consideration in the Agency's planning process
- Paper summarizing tribal priorities was published in Spring 2006

Tribal Science Priorities

- Endocrine disrupting chemicals
- Dioxin and dioxin-like compounds
- Persistent bioaccumulative toxics source reduction
- Pharmaceuticals in wastewater
- Habitat loss
- Environmental triggers for respiratory distress with special emphasis on mold
- Contaminated precipitation
- Biological stressors

National Tribal Science Forum

- Conducted first ever National Forum on Tribal Environmental Science
 - Developed around the tribal science priorities
 - Emphasized promoting tribal relationships

National Forum on Tribal Environmental Science Conference Summary

- Theme “Tribal Science Priorities and Success Stories” explored in four tracks: Air, Water, Earth and Community Health
- Held September 23-28, 2006 in Ocean Shores, WA and hosted by Quinault Indian Nation
- Approximately **300** participants representing over **125** American Indian tribes and Alaskan Native Villages, intertribal consortia, academic institutions, federal, state, and local governments as well as private and non-profit organizations
- Quinault Indian Nation awarded close to **50** travel scholarships to students and tribal scientists in almost all regions where tribes are represented

National Forum on Tribal Environmental Science Conference Proceedings and Executive Summary

- Organized by the EPA Tribal Science Council
- Developed around the tribal science priorities and emphasized promoting tribal relationships
- Contains environmental research highlighting tribal success stories, summaries of panel discussions, speeches and notes from the plenary sessions

<http://www.epa.gov/osp/tribes/announce/National%20Forum.htm>

Informational Resources

EPA's Science and American Indians website provides information on:

- National EPA-Tribal Science Council
- Science Topics
- Announcements – Events, News, Funding Opportunities

<http://www.epa.gov/osp/tribes.htm>

Fellowship Opportunities

Stephanie Willett – Program Manager



- **STAR Graduate Fellowships**
- **GRO Graduate and Undergraduate Fellowships**
- **American Association for the Advancement of Science (AAAS) Fellowships**
- **American Schools of Public Health (ASPH) Fellowships**
- **Marshall Scholars Program**
 - **3 scholarships to US students to pursue graduate environmental programs in the UK.**
- **ORD Post Doc Term Appointments**

2008 Fellowship Programs

Announcements: Mid-Summer, 2007

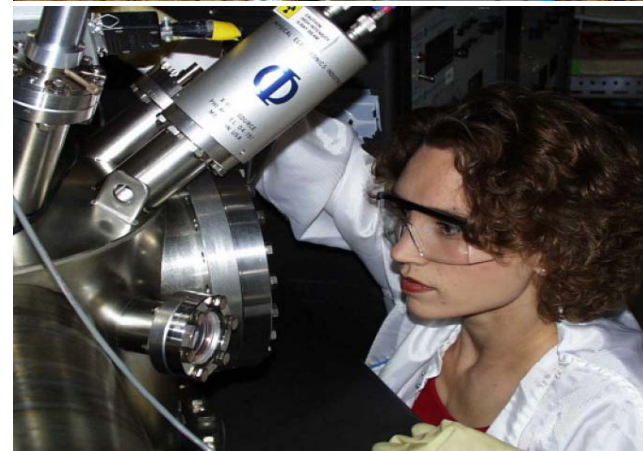
Deadlines: November 2007

- **STAR Graduate Fellowships**
- **Greater Research Opportunity (GRO) fellowships for graduate environmental study**
- **Greater Research Opportunity (GRO) undergraduate student fellowships**

STAR Graduate Fellowships For Study In The Environmental Sciences

Started in 1995 as part of STAR program: Received 1732 applications in 2005, fund 125 per year

- **Tenable at any accredited U.S. College or University**
- **Fellowship for two-year Master's or three-year Doctoral Degrees**
- **Environmental Management, including Physical, Biological, and Social Sciences, and Engineering**
- **Stipend \$37,000 per year: Tuition allowance + Stipend + \$5000 Expenses**
- **Competitive!**



Greater Research Opportunities Graduate Fellowships For Environmental Study

First year 1998: Received 232 applications in 2005, fund 20 per year

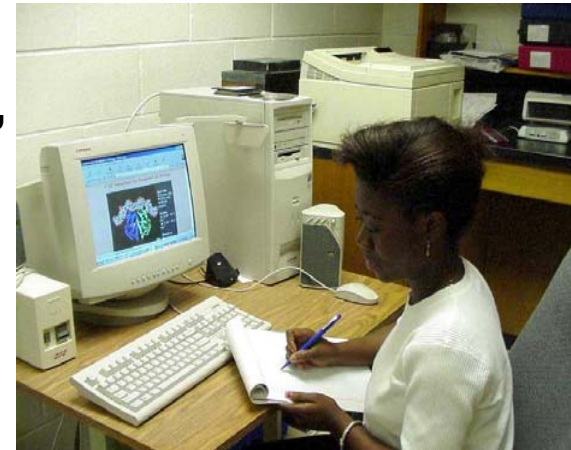
- **Tenable at Institutions Receiving Less than \$35M Federal Funding including most HBCUs, Hispanic-Serving Institutions, Tribal Colleges, Native Hawaiian Serving Institutions, Alaska Native Serving Institutions**
- **Fellowships for two-year Master's or three-year Doctoral Degrees**
- **Environmental Sciences, including Economics and Social Science, Mathematics, and Computer Science**
- **Stipend \$37,000 per year: Tuition allowance + Stipend + \$5000 Expenses**
- **Competitive!**



Greater Research Opportunities Undergraduate Fellowships

Started in 1983: On average receive 50 applications, fund 15 per year

- **Tenable at Institutions Receiving Less than \$35M Federal Funding including most HBCUs, Hispanic-Serving Institutions, Tribal Colleges, Native Hawaiian Serving Institutions, Alaska Native Serving Institutions**
- **Two-year Fellowship for last two years of undergraduate study**
- **Major in environmental science, physical or biological sciences, computer science, environmental health, social science, mathematics, or engineering**
- **Stipend: \$17,000 per year**
- **Summer Paid Internship at EPA Laboratory (\$7,500)**
- **Competitive!**



P3-People, Prosperity and the Planet- Award Program: A National Student Design Competition for Sustainability *Cynthia Nolt-Helms – Program Manager*



EPA's P3 Award Program: Background

- Launched in 2004 as two-phase grant competition
- Designed to harness the energy and creativity of interdisciplinary student teams
- Infuse students with an awareness of their impact on the economy, society, and the planet
- Attempt to integrate sustainability principles into engineering curricula
- Launched with over 40 partners from industry, government, NGOs, and professional societies



P3 Project Areas

- Open to sustainability challenges in **developed** and **developing** world
 - **Agriculture**
 - e.g. irrigation practices, reduction or elimination of pesticides
 - **Built Environment**
 - e.g. environmental benefits through innovative green buildings, transportation and mobility strategies, and smart growth
 - **Materials & Chemistry**
 - e.g. materials conservation; renewable, bio-based feedstocks; inherently benign materials and chemicals through green chemistry and green engineering; biotechnology

P3 Project Areas, continued

–Energy

- e.g. reduction in air emissions through innovative strategies for energy production and energy distribution; energy conservation; inherently benign energy through renewable technologies, green chemistry, green engineering, biotechnology

–Information Technology

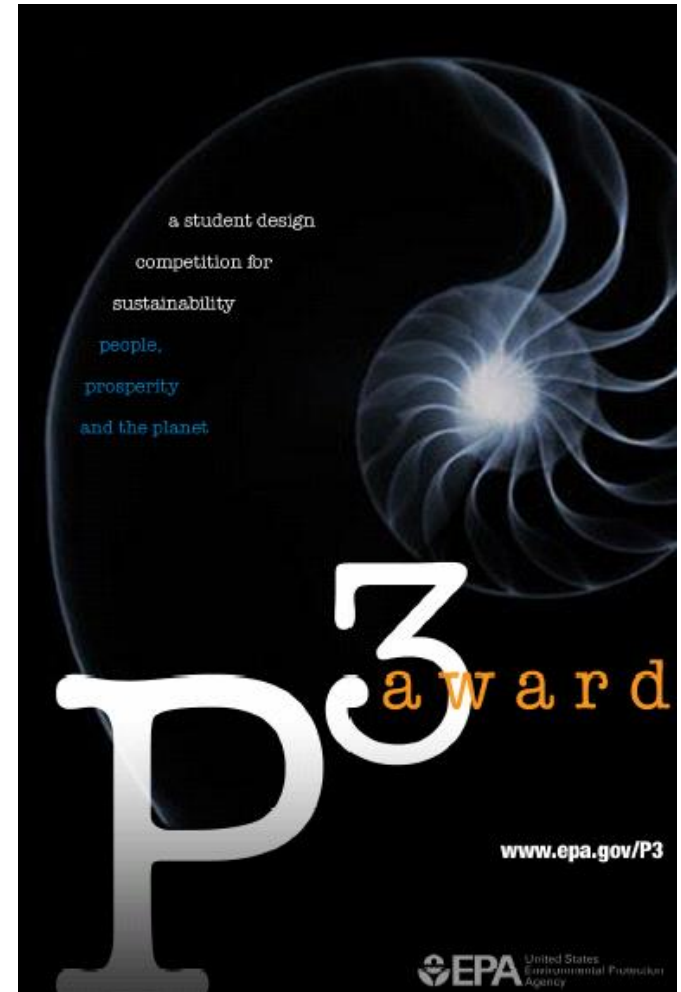
- e.g. delivery of and access to environmental performance, technical, educational, or medical information

–Water

- e.g. water quality, quantity, conservation, availability, and access

P3 Program Process- Phase I

- Solicitation open Aug-Dec
- Student teams compete for \$10,000 award to develop their designs
- Proposals evaluated by panel of outside experts
- Phase I awards made beginning following academic year
- Student teams prepare Final Report of their Phase I activities and Proposal for Phase II
- Students bring their designs to the National Mall at the National Sustainable Design Expo in April



National Sustainable Design Expo

- Public event on National Mall
- Opportunity to engage businesses, governments and non-profits
- Opportunity to interact with P3 teams from other schools
- Provide educational opportunities for local schools



P3 Program Process- Phase II

- In the Spring, Phase I winners compete for P3 Award and \$75,000 funding at the National Sustainable Design Expo
- Panel of outside expert judges convened to evaluate Phase I projects and Phase II proposals
- Judges use evaluation criteria articulated in solicitation
- Teams are encouraged to match contributions from industry or NGOs for implementation, but not required



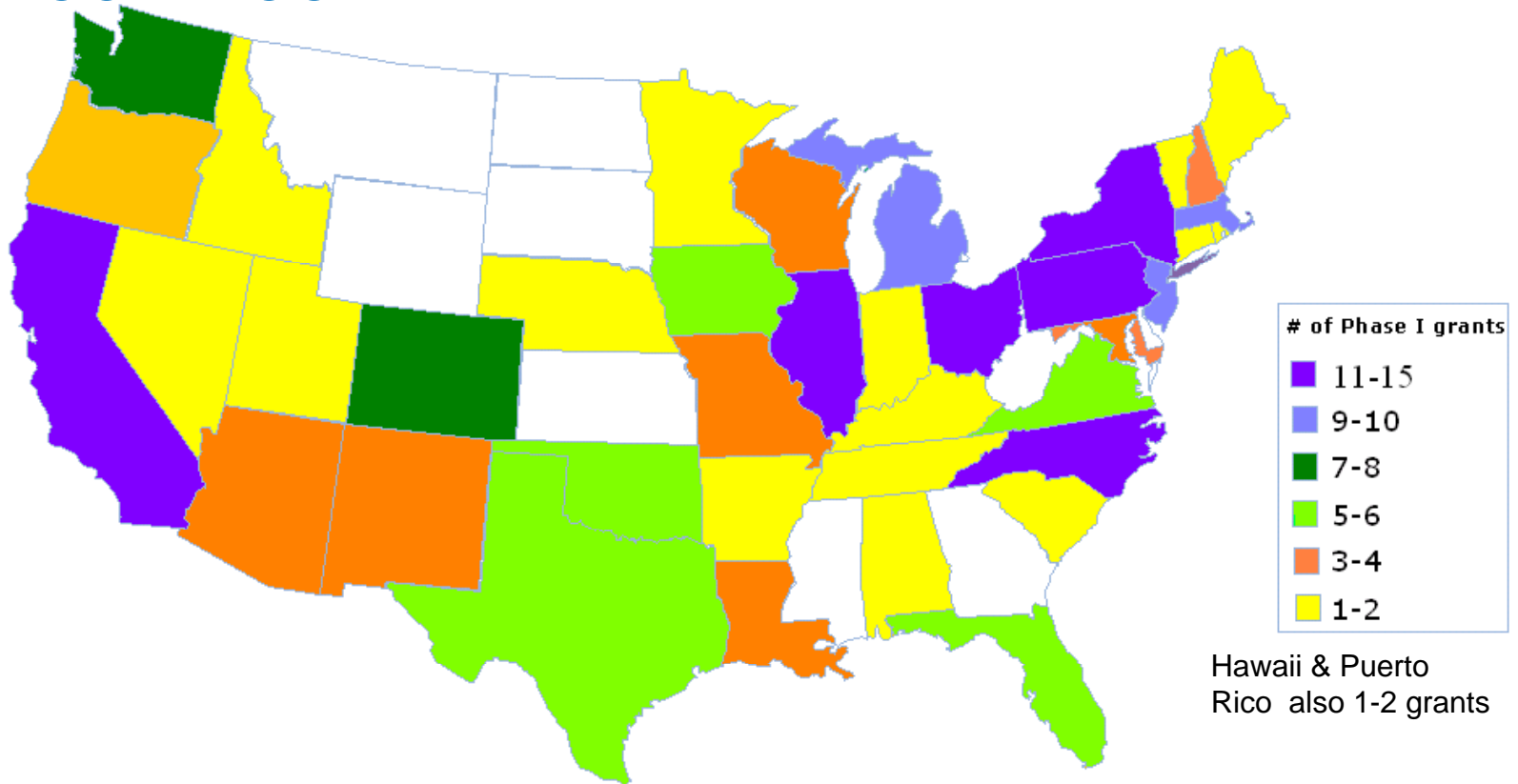
Aspects of P3 Projects

- P3 teams are student-led and inter-disciplinary
- Requires integration of P3's sustainability concepts as an educational tool
- All projects must quantify benefits to society, the economy and the environment
- Encourages development of small businesses
 - To date, P3 projects have resulted in the founding of 4 start-up companies

Partnerships & the P3 Award Program

- Within the University
 - Interdisciplinary teams including representatives from multiple engineering departments and/or departments of chemistry, architecture, industrial design, business, economics, policy, social science, and others are strongly encouraged
- Beyond the University
 - Teams are also strongly encouraged to develop partnerships with industry, Non-Governmental Organizations (NGOs), government, and the scientific community for guidance, research and development, contributions, and implementation strategies

Distribution of P3 Phase I Grants 2004-2007



P3 Projects: On Campus

- Reducing the use and generation of hazardous substances in academic laboratories
- Purchasing locally grown, organic food for the dining halls
- Production and use of biodiesel fuel on campus
- Growth strategies
- Conservation strategies
- Education of broader student/college community about energy use
- Sustainable buildings, green roofs

P3 Projects: Within the Community

- Civic stormwater gardens
- Master planning for urban redevelopment/infill and watersheds
- Waste exchanges and waste-to-value strategies
- Biomass management (i.e., composting, energy recovery, etc.)
- Alternative, renewable energy
- Environmental education activities

P3 Projects: Developed World

- Green Buildings including living roofs, smart windows, improved energy efficiency, solar power
- Real-time feedback of environmental performance
- “Biosphere” cities
- Recycling logistics, infrastructure, and strategies
- Policy analyses
- Sustainability indicators
- Fuel cell advances
- Sustainable energy technologies: wind, solar, bio-methane, biodiesel, biohydrogen
- Bioremediation of agricultural chemicals
- Educational programs on sustainability or energy

P3 Projects: Developing World

- Water treatment: point-of-use or small, centralized facilities
- Water conservation, extraction or delivery
- Strategies for improved sanitation
- Alternative pest management strategies
- Appropriate construction materials
- Sustainable housing
- Renewable energy: wind, solar
- Planning for growth

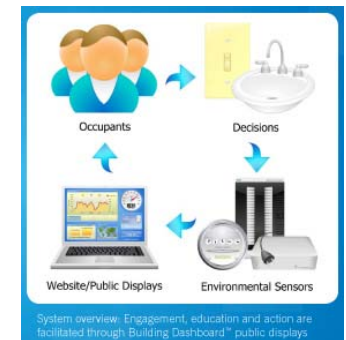
P3 Success Stories – Developing World

- Sustainable water system for town in Honduras (Lafayette College)
 - Based on site-appropriate technologies and local materials
 - **Client/Outcome example:** Yoro and other communities in Central America have a process to design, develop, and implement sustainable water projects.
- Designed small wind turbines and solar cookers (Univ. of Colorado-Denver)
 - Implemented in a tribal village in India
 - After additional safety testing, larger wind turbines to be installed in Sri Lanka



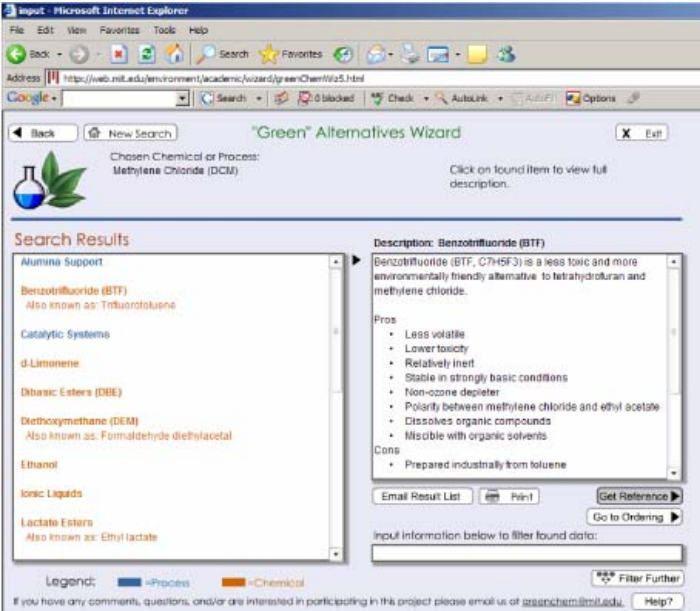
P3 Success Stories – Developed World

- Wireless Real-time Feedback of Energy Use & Water Consumption (Oberlin College)
 - Demonstrated real time environmental feedback increased energy and water savings and subsequent cost savings
 - Lucid Design Group, small business
 - **Client/Outcome example:** Provided data to OAR-Green Buildings workgroups' implementation strategy that real time environmental information leads to improved environmental performance.
 - **Client/Outcome example:** Provided General Services Administration (GSA) with a tool to meet the “Greening the Government” Executive Order.



P3 Success Stories – Developed World

- Database to promote use of less toxic and less polluting alternatives to commonly used toxic chemicals in university and research laboratories (Mass. Institute of Technology)
 - Demonstrated reductions in the purchasing and subsequent disposal of priority chemicals from MIT laboratories.
 - **Client/Outcome example:** Supported EPA's Green Chemistry program by demonstrating envt'l and economic benefits associated with Green Chemistry
 - **Client/Outcome example:** Provided tool for testing and implementation to Los Alamo National Laboratory in their ISO 14000 certification process



Educational Benefits

- Promotes collaboration between students with different backgrounds
- Provides valuable research and field work experience
- Raises campus's awareness of sustainability and the environment
- Publication of research in a professional journal
- Provides an opportunity to travel to the developing world
- Has the potential to be the springboard for further research and more funding

Integration of P3 concepts as an Educational Tool

- Sustainability principles integrated into an existing course
- Development of new courses
- Seminars
- Community outreach
- Field Trips/Cross-cultural Interactions
- Experiential learning in the developing world
- Credit Options for P3 Projects
 - Receive course credit that counts towards their major or as an elective
 - Receive credit for a senior design course
 - Receive “independent study” credit

Integration of P3 concepts as an Educational Tool

- Senior design projects
- Master's thesis
- Peace Corp technical assistance
- Certifications/Concentrations in Sustainability
- Engineers without Borders /Engineers for Sustainable World
- Living Laboratory
- Spots for campus radio and TV
- The research performed by the P3 team can affect the syllabi of courses not associated with the P3 project

Where did students end up?

- Often participating in the P3 project will inspire students to focus on environmental protection, or can cultivate a preexisting passion
- After the P3 experience, many students choose to receive advanced degrees in environmental majors, or choose to work for employers who are committed to sustainability

EPA's P3 Award Program: Protecting Human Health and the Environment

- Generate innovative, inherently benign, integrated, and interdisciplinary designs that will advance the scientific, technical, and policy knowledge necessary to further the goals of sustainability
- Minimize use and generation of hazardous substances, utilize resources and energy effectively and efficiently, and simultaneously advance goals of economic competitiveness, human health, and environmental protection for societal benefit

5th Annual P3 Award



www.epa.gov/P3

Nolt-Helms.Cynthia@epa.gov

A landscape photograph showing the silhouettes of various cacti against a sunset sky. The sky is filled with soft, colorful clouds in shades of orange, yellow, and blue. The cacti are dark against the bright background of the setting sun.

Thank You!

Questions?