

# EPA Tribal Science Bulletin



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NATIONAL EPA-TRIBAL SCIENCE COUNCIL



As the National EPA-Tribal Science Council (TSC) Tribal Co-Chair, I hope that you enjoy this issue. In these times of uncertainty, it is important to remember the key issues that surround us while celebrating our history. The TSC and its members have a long history of making a difference, like Mike Durglo, Region 8 Tribal Representative, who recently received the 2017 Climate Adaptation Leadership Award for Natural Resources. His efforts focus on climate change, an important issue that affects tribes and must be addressed. The Science Update features Region 7 tribal composting and water quality efforts as well as information about solar geoengineering. Finally, it is important to remember our origins, how we got to where we are today, and what makes us unique. To celebrate its past, present and future, the Ponca Tribe of Nebraska organized its Remembrance Walk, detailed on page 4. May you find this issue informative.

Yaw'ko,  
Jeff Mears, Oneida Nation, TSC Region 5 Tribal Representative and Tribal Co-Chair  
[jmears@oneidanation.org](mailto:jmears@oneidanation.org)○

## The TSC: Making a Difference

When the TSC was formed in 1999, a need existed for a workgroup designed to provide scientific technical support in Indian country. The National Tribal Caucus determined that this workgroup also would be charged with increasing tribal involvement in EPA's scientific activities—building bridges between tribal and Agency programs. The Council's founders envisioned tribal and EPA scientists lending their expertise to collaborative approaches for addressing priority science concerns. The Council was officially established in 2001. Even after 16 years the TSC still continues to make a difference!



Mike Durglo, Jr.

The TSC is making a difference because of people like Mike Durglo, a member of the

Confederated Salish and Kootenai Tribes in Montana. Since joining the TSC in 2011, Mike has served effectively as Co-Chair and guided the TSC in addressing its two tribally identified priority science issues: traditional ecological knowledge (TEK) and climate change. In 2013, the TSC hosted an unprecedented TEK Workshop in Syracuse, New York, with the Onondaga Nation. This workshop ignited robust discussion within EPA and other federal agencies. Mike used this platform to develop a TSC-sponsored Climate Change Roundtable for Federal Partners and to co-author the *Guidelines for Considering Traditional Knowledges in Climate Change Initiatives*. In 2016, EPA's Office of Land and Emergency Management published its *Interim Approach for Considering Traditional Ecological Knowledge During the Cleanup Process*. By opening a dialogue in 2011, the TSC accomplished one of its intended outcomes, incorporating respect for the diversity of TEK within EPA's programs and policies.

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Last month, the TSC participated in the Region 8 Regional Tribal Operations Committee meeting in Rapid City, South Dakota. Mike invited the TSC to partner with Region 8 tribes to improve understanding of science issues. On Thursday afternoon, Mike hosted a discussion on the Environmental Advocates for Global and Local Ecological Sustainability (EAGLES) program that he and his brother founded for youth in grades K-12 and beyond. As he spoke, it was easy to see Mike's passion—leaving a legacy for his children, grandchildren and future generations of tribal youth. Mike desires to leave young people with something they value that is tied directly to the environment and their cultural and traditional ways. The presentation was reminiscent of the mission of the TSC. It is easy to see that the TSC's founders and visionary leaders like Mike make programs matter because they care, and they leave an inspiring legacy for others to build on.○

# SCIENCE UPDATE

## Student Composting Efforts at Haskell Indian Nations University

Haskell Indian Nations University has improved its composting system this semester with support from EPA and the Kansas Department of Health and Environment (KDHE). Haskell students met with a KDHE composting expert, Arthur Fink, who explained how to best monitor and adjust the pile, helping waste to break down into healthy compost. Food waste collection for the new system began in early March. "It's exciting because I think improving waste management is the best way to target pollution prevention and reduction," said Liz Blackburn, the EPA tribal solid waste coordinator helping with this effort.

EPA Region 7 has assisted students in bringing composting to Haskell since 2015, building on previous joint efforts from a Memorandum of Agreement between EPA and the university. Blackburn said that she's proud to continue strengthening that partnership.

In 2015, a Haskell student group set out to improve the school's food waste management with grant assistance through EPA's Tribal ecoAmbassadors Program. The new composting system is a major piece of the waste reduction plan, which arose after assessments at Haskell's dining hall showed how much food could be composted. Haskell started

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composting with a one-bin system shortly after the assessments, but the students wanted to improve their methods so they sought out ideas from EPA, nearby tribal nations and others.

Based on what they learned, students built three adjacent bins with reused, untreated wood pallets. The pallets allow for airflow, which keeps the compost from producing methane. Having three bins allows for older piles to break down while a new one begins. Food waste becomes nutrient-rich compost anywhere from 2 months to 2 years.

Fink said that one key aspect to help it break down is temperature. He provided a long composting thermometer, which measures the temperature underneath the pile's surface. "At 140°F, most pathogens will be destroyed," he said. "It also denatures any seeds." If the temperature drops to 120°F and the waste has not been broken down, it is time to turn the pile.

One of the big benefits of composting and diverting food, Fink said, is that food takes up a lot of landfill space and is heavy to transport. Also, in landfills food often breaks down without oxygen, giving off methane as a product.



**Arthur Fink explains the benefits of adding the right amount of wood chips to a compost pile. Photo courtesy EPA Region 7.**

Steven Peña, a student in Haskell's American Indian Studies Program, said that he hopes this effort is successful enough that in a couple of years, the university can build something more permanent with concrete.

"Also, composting is something you can use at home," Peña said. "We're hoping people here take this habit with them."○

**The wooden pallets that will be used to hold Haskell's food waste as it breaks down. Photo courtesy EPA Region 7.**



## Solar Geoengineering: Going Volcanic on Climate Change

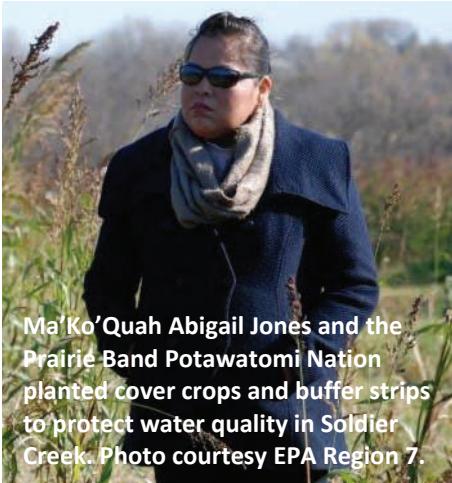
Solar geoengineering has been suggested as a way to reduce greenhouse gases and cool the planet. Some resistance exists, however, because of the scale of atmospheric manipulation. Read the full article about this potential course of action to address climate change and a similar natural event that had global effects, including helping to shape the course of Native American nations for decades to come, at [www.epa.gov/sites/production/files/2017-07/documents/bulletin-solar-summer2017.pdf](http://www.epa.gov/sites/production/files/2017-07/documents/bulletin-solar-summer2017.pdf).○

# SCIENCE UPDATE

## Cover Crops Help Prairie Band Potawatomi Nation Meet Water Quality Goals

Cover crops improve water and soil quality by helping water stay available to the plants; they help maintain crop yields through better weed management. EPA and other federal and state partners attended the Prairie Band Potawatomi Nation's Cover Crop Workshop in November 2016 to better understand how to help landowners use cover crops as part of their farming operations. The workshop was aimed at farmers in the region who might be interested in using cover crops but have questions about the practice.

EPA Region 7 staff, including Heather Duncan, attended the workshop in support of EPA's partnership with tribal communities. "It's rewarding to hear directly from the producers about how cover crops fit and



**Ma'Ko'Quah Abigail Jones and the Prairie Band Potawatomi Nation planted cover crops and buffer strips to protect water quality in Soldier Creek. Photo courtesy EPA Region 7.**

enhance their farming operations," Duncan said. "Their expertise is invaluable to their neighbors who might consider cover crops in the future. Farmers will sell farmers on these practices better than the tribe or EPA ever could."

Cover crops are plants that mix in with the main crops or are planted after the harvest to improve soil health and water quality. These crops allow less water to run off into streams and more to infiltrate into the soil. Less water runoff also results in fewer pollutants getting to the stream and less intense flooding. Cover crops have other benefits, too. The soil stores more water, so that when a drought hits, a moisture reserve still exists. Because the crops provide more soil cover, soil is less vulnerable to wind and water erosion. They also suppress weeds and naturally aerate the soil. In livestock systems, cover crops provide feed for the animals. The livestock graze and lay down manure, which gives nutrients to the soil, a practice similar to what bison were doing before the settlers came.

Chris Dakota manages the tribe's farmland. Because cover crops suppress weeds, the tribe only needs one spray of the herbicide glyphosate for the entire growing

season. "We'd like to see cover crops on all our fields," Dakota said.

Dakota also showed attendees the filter strips placed between the field and the stream banks.

Filter strips are vegetated areas that buffer a stream against pollution. They slow down water runoff, trap sediment and pollutants, and control stream bank erosion. Combining filter strips with cover crops makes for even better outcomes, Dakota said.

### COVER CROPS IMPROVE SOIL HEALTH AND WATER QUALITY.

Workshop participants were able to visit the tribe's forested riparian buffer on Soldier Creek, where trees have been planted to help keep sediment out of the stream and make the stream banks more stable.

Ma'Ko'Quah Abigail Jones, the tribe's Clean Water Act 319 Program Coordinator, said that the project incorporated tribal knowledge with modern management techniques, and she consulted tribal elders to plant trees that are significant to the Potawatomi culture.

Jones and Duncan agreed that the workshop was a success. "The tribe pulled together a fantastic tour that highlighted its water quality work and its environmental partnerships," Duncan said. ◎

### KEY DATES & EVENTS

- Tribal Lands and Environment Forum, August 14–17, Tulsa, OK
- Region 10 Regional Tribal Operations Committee Meeting, September 12–14, Seattle, WA
- National Tribal Operations Committee Meeting, September 2017, Washington, D.C.

- USET Annual Meeting, October 8–12, Cherokee, NC
- Region 1 Tribal Leaders Summit and Tribal Environmental Conference, November 1–3, Aquinnah, MA
- TSC Fall 2017 Face-to-Face Business Meeting, December 4–8, Phoenix, AZ

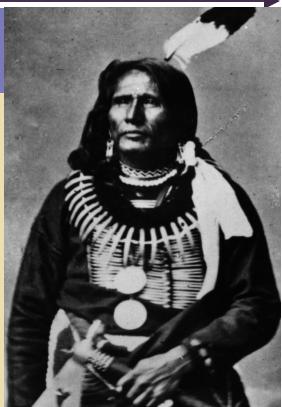
The National Enforcement Training Institute eLearning Center provides online eLearning, live webinar and classroom training opportunities to federal, state, tribal and local environmental enforcement personnel. For more information, visit [www.epa.gov/compliance/national-enforcement-training-institute-net-elearning-center](http://www.epa.gov/compliance/national-enforcement-training-institute-net-elearning-center).

# PONCA REMEMBRANCE WALK

The Ponca Tribe of Nebraska and citizens of the Ponca Tribe of Oklahoma honored their past and celebrated where they are today through the 12-day Ponca Remembrance Walk. The 282-mile walk began with a ceremony on April 29 in Niobrara, near the northern border of Nebraska, and concluded on May 11 in Barneston, near the southern border. Other stops on the journey included Verdigre, Neligh, Newman Grove, Genoa, Columbus, David City, Seward, Milford, Crete, DeWitt and Beatrice.

**"WE HONOR  
OUR ANCESTORS  
WHO HAVE  
GONE BEFORE  
US."**

The route closely retraced the tribe's forced removal from its homelands in the 1870s. Tribal elders commenced the walk, and participants commemorated two important Ponca members, Chief Standing Bear and his daughter, Prairie Flower, along the trail. A deed-signing ceremony took place on May 11 in Barneston, at which the tribe received ownership of a 19.5-mile segment of the Chief Standing Bear Trail. Participants walked, ran or rode bicycles along the route. Nebraskans' reactions along the walk were positive.



Chief Standing Bear (Ma<sup>n</sup>chú-Na<sup>n</sup>zhí<sup>n</sup> in the Ponca language), for whom the trail is named, was a

Ponca chief who fought the forced removal of the tribe. In 1877, he lived in a modern (for the times) house that he had built himself, practiced Christianity, dressed in European-American clothing, and possessed a significant net worth. In April 1879, after he was arrested as a fugitive for living on tribal lands that the U.S. government hadn't approved, he sued for a writ of *habeas corpus* in the landmark United States *ex rel.* Standing Bear v. Crook case against the U.S. Army. During the trial, Standing Bear was reported to have testified that, "That hand is not the color of yours, but if I prick it, the blood will flow, and I shall feel pain. The blood is of the same color as yours. God made me, and I am a man." Ultimately, the judge ruled that "an Indian is a person" within the meaning of *habeas corpus*, setting a precedent that, under



the law, Indians are entitled to its rights and protection. Following the decision, which still guides Indian treaty laws and trust responsibilities today, Standing Bear became an advocate for Indian rights in the United States and Europe.

In commemorating these events, the life of Standing Bear, and the resilience of the tribe, Ponca Tribe of Nebraska Chairman Larry Wright, Jr., stated, "As we mark the 140th anniversary of the forced removal of the Ponca Nation, we honor our ancestors who have gone before us and commemorate their sacrifice and loss while also celebrating where we are as a nation today and look forward for our future generations."



All photos courtesy the Ponca Tribe of Nebraska.

DO YOU HAVE QUESTIONS ABOUT THE TSC OR THE NEWSLETTER? CONTACT MONICA RODIA, TSC EXECUTIVE SECRETARY, EPA OFFICE OF SCIENCE POLICY, AT [RODIA.MONICA@EPA.GOV](mailto:RODIA.MONICA@EPA.GOV) OR (202) 564-8322.